Junnunmäen tuulivoimahankkeen meluselvitys



wpd Suomi Oy
Keilaranta 19
02510 Espoo
www.wpd.fi

Emma Berkovits
Gesa Franz

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SISÄLLYSLUETTELO

1 Johdanto 3

2 Tuulivoimaloiden melun syntymekanismit 3

3 Alueen tuuliolosuhteet ja niiden vaikutukset meluun 4

4 Tuulivoimaloiden melupäästön ohjearvot 5

5 Mallinnusmenetelmät 6

5.1 Melupäästöarvot 6

5.2 Havaintopisteet 7

5.3 Laskentaparametrit 7

5.4 Maaston kovuuden määrittely 9

5.5 Pienitaajuinen melu 10

5.6 Yhteisvaikutusten mallintaminen 10

6 Tulokset ja yhteenveto 11

6.1 Toteutusvaihtoehtojen melupäästöt 11

6.2 Pienitaajuinen melu 15

6.3 Tulosten yhteenveto 18

7 Viitteet 19

Liitteet 20

1 Johdanto

Wpd Suomi Oy suunnittelee enintään 33 tuulivoimalan rakentamista Kuopion kaupungin ja Tervon kunnan alueelle. Ympäristövaikutusten arvioinnissa on tarkasteltu kahta toteutusvaihtoehtoa sekä 0-vaihtoehtoa, jossa hanketta ei toteuteta. Toteutusvaihtoehdot tuulivoiman osalta ovat VE1, jossa alueelle rakennettaisiin enintään 33 uutta tuulivoimalaa, sekä VE2, jossa rakennettaisiin enintään 24 uutta tuulivoimalaa. Tässä selvityksessä on mallinnettu Junnunmäen tuulivoimahankkeen YVA-selostuksessa tarkasteltavien toteutusvaihtoehtojen mukaisten tuulivoimalaitosten ympäristöön aiheuttama melupäästö sekä tarkasteltu pienitaajuisen melun leviämistä.

Melumallinnus on toteutettu SoundPlan 8.2 -ohjelmistolla ympäristöministeriön julkaiseman ”Tuulivoimaloiden melun mallintaminen” -raportin mukaisilla laskentaparametreilla ja Nord2000 -melulaskentamallia käyttäen. Pienitaajuisen melun leviäminen on mallinnettu ympäristöministeriön ohjeiden mukaisesti WindPRO 3.6 -ohjelmistolla soveltaen Tanskan ympäristöministeriön julkaiseman DSO 1284 -määräyksen menetelmää. Pienitaajuisen melun mallintamisessa on huomioitu myös suomalaisten pientalojen ilmaääneneristävyys, jonka arvot perustuvat Turun ammattikorkeakoulussa tehtyyn tutkimukseen (Keränen et al. 2019).

Mallinnuksessa käytetyn voimalamallin mittasuhteet vastaavat Junnunmäen tuulivoimahankkeen YVA-menettelyssä määriteltyjä maksimimittoja, joiden mukaan voimalan napakorkeus on enintään 200 metriä, roottorin halkaisija enintään 200 metriä ja voimalan kokonaiskorkeus enintään 300 metriä. Tämän kokoluokan tuulivoimaloita ei selvityksen laatimishetkellä ole vielä kaupallisessa käytössä eikä niiden melupäästöarvoja ole saatavilla, minkä vuoksi voimalan lähtömelutasona on käytetty voimalavalmistajan ilmoittamia Nordex N175 6.8 -voimalan melupäästöarvoja, joihin on lisätty varmuusarvo +2 dB.

2 Tuulivoimaloiden melun syntymekanismit

Tuulivoimalan ääni muodostuu roottorin lapojen liikkeestä eli aerodynaamisesta äänestä sekä voimalan koneiston osien aiheuttamasta mekaanisesta äänestä. Aerodynaaminen ääni on haittavaikutusten kannalta yleensä mekaanista ääntä merkittävämpi tekijä. Tuulivoimalan tuottama ääni syntyy roottorin korkeudella ja on lapojen pyörimisliikkeen vuoksi jaksottaista. Tuulivoimaloiden ääni on laajakaistaista ja se sisältää myös pienitaajuisia ääniä, joiden taajuus on n. 20–200 Hz. Hankealueen ympäristössä havaittavan äänen ominaisuudet, kuten voimakkuus, taajuus ja ajallinen vaihtelu, riippuvat muun muassa tuulivoimaloiden koosta, lukumäärästä ja sääolosuhteista. [1, s. 76]

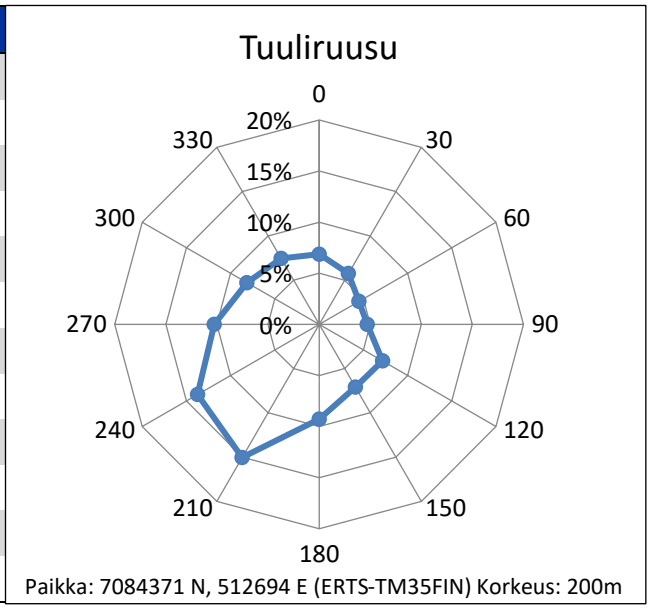
Maaston pinnanmuodot, kasvillisuus ja sääolot vaikuttavat tuulivoimaloiden äänen leviämiseen ympäristössä. Veden yllä ääni leviää yleensä laajemmalle kuin maan pinnalla, sillä vesi välittää ääntä huomattavasti tehokkaammin kuin ilma. Pienitaajuinen ääni etenee muuta ääntä laajemmalle alueelle, sillä se ei vaimene ilmakehässä yhtä nopeasti kuin korkeataajuinen ääni. Tuulivoimaloiden äänen havaittavuuteen ja häiritsevyyteen vaikuttavat ympäristön taustaäänet, kuten tuulen humina tai aaltojen kohina. [1, s. 76]

3 Alueen tuuliolosuhteet ja niiden vaikutukset meluun

Tuuliolosuhteet vaihtelevat alueella jatkuvasti, ja vallitsevat tuulet vaikuttavat tuulivoimaloiden äänitasoon. Sääolosuhteet ja maasto vaikuttavat myös äänen kulkeutumiseen alueella. Melumallinnukset perustuvat tilanteeseen, jossa tuulennopeus ja -suunta tuottaisivat suurimman mahdollisen äänitason tuulivoimaloista kaikkiin ilmansuuntiin vapaassa tilassa. Todellinen äänitaso riippuu aina vallitsevista tuuliolosuhteista. Hankealueen vallitseva tuulensuunta on lounaasta, joten melumallinnuksen tasot toteutuvat todennäköisemmin hankealueen koillispuolella. Vastaavasti alueen lounaispuolella eli päätuulensuunnassa mallinnuksen mukaisia olosuhteita koetaan koillispuolta huomattavasti harvemmin.

Kuvassa 1 on esitetty ns. tuuliruusu, joka kuvaa tuulen vuosittaista jakautumista eri ilmansuuntiin hankealueella. Vallitseva päätuulensuunta on ilmansuunnista 210°–240°, joiden suhteellinen osuus vuoden tuulitilastossa on yhteensä 28,8 %. Tuulitiedot on haettu Suomen tuuliatlaksesta [2].

Tuulen suunta [°]	Osuus	Tuulen nopeus [m/s]
0	6,9 %	6,60
30	5,8 %	6,20
60	4,5 %	5,70
90	4,7 %	6,30
120	7,2 %	6,80
150	7,1 %	7,30
180	9,3 %	8,00
210	15,0 %	8,80
240	13,7 %	8,40
270	10,3 %	7,90
300	8,2 %	7,40
330	7,4 %	7,00



Kuva 1. Hankealueen tuulen vuosittainen jakautuminen eri ilmansuuntiin 200 metrin korkeudessa.

4 Tuulivoimaloiden melupäästön ohjearvot

Tuulivoimalarakentamisen suunnitteluohjearvot ovat riskienhallinnan ja suunnittelun apuväline. Niiden avulla voidaan tunnistaa tuulivoimarakentamiseen parhaiten soveltuvat alueet.

Tuulivoimaloiden aiheuttaman melun osalta suunnittelua ohjaa valtioneuvoston asetus tuulivoimaloiden ulkomelutason ohjearvoista (1107/2015). Asetuksessa on määritelty suurimmat sallitut melun keskiäänitasot tiettyjen kohteiden ulkopuolella päivä- ja yöaikaan. Ohjearvot on esitetty taulukossa 1. [3]

Taulukko 1. Tuulivoimaloiden aiheuttaman ulkomelutason ohjearvot.

Kohteen tyyppi	L_{Aeq} päivällä klo 07–22 [dB(A)]	L_{Aeq} yöllä klo 22–07 [dB(A)]
Pysyvä asutus	45	40
Vapaa-ajan asutus	45	40
Hoitolaitokset	45	40
Oppilaitokset	45	-
Virkistysalueet	45	-
Leirintäalueet	45	40
Kansallispuistot	40	40

Lisäksi asumisterveysasetuksessa (545/2015) on määritetty ohjearvot pienitaajuisen melun taajuuspainottamattomille keskiäänitasoille nukkumiseen tarkoitetuissa sisätiloissa. Ohjearvot on esitetty taulukossa 2. [4, s. 8]

Taulukko 2. Pienitaajuisen sisämelun tunnin keskiäänitason toimenpiderajat nukkumiseen tarkoitetuissa tiloissa (Sosiaali- ja terveysministeriön asumisterveysasetus, 2015).

Taajuus [Hz]	20	25	31,5	40	50	63	80	100	125	160	200
$L_{eq,1h}$ [dB]	74	64	56	49	44	42	40	38	36	34	32

5 Mallinnusmenetelmät

Melumallinnus on tehty SoundPlan 8.2-ohjelmistolla Nord2000-laskentamallia käyttäen ja ympäristöministeriön 28.2.2014 julkaiseman ”Tuulivoimaloiden melun mallintaminen” -raportin mukaisilla laskentaparametreilla [5].

5.1 Melupäästöarvot

Melumallinnuksessa voimalamallina on käytetty nk. Future F200 -voimalaa, jonka roottorin halkaisija on 200 metriä, napakorkeus 200 metriä ja kokonaiskorkeus 300 metriä, mikä vastaa hankkeen ympäristövaikutusten arvioinnissa tarkasteltavaa maksimikorkeutta. Voimalan nimellisteho on 9 MW. Voimalamallilla pyritään ennakoimaan tuulivoimaloiden kokonaiskorkeuden mahdollista kasvua lähitulevaisuudessa.

Melupäästöarvot pohjautuvat Nordex N175 6.8 -voimalan melupäästöarvoihin 6,8 MW:n nimellisteholla ja hammastetuilla lavoilla. Lapojen hammastukset eli serraatiot pienentävät voimalan melupäästöjä. Ympäristöministeriön ohjeistuksen mukaan mallinnuksissa tulisi käyttää voimalavalmistajan ilmoittamia, standardin IEC TS 61400-14 mukaisia melupäästön takuuarvoja. Junnunmäen tuulivoimahankkeen mallinnuksissa N175 6.8 -voimalan melupäästöarvoihin on lisätty varmuusarvo +2 dB, koska melupäästön arvoa ei tässä tilanteessa voida määrittää standardin IEC TS 61400-14 mukaisesti. Varmuusarvon lisäyksen jälkeen melupäästön arvot vastaavat ympäristöministeriön ohjeistuksen mukaisia melupäästön takuuarvoja [6].

Liitteessä 1 on esitetty melupäästön taajuusjakauma 1/3-oktaaveittain keskitaajuuksilla 10 Hz – 10 kHz voimalavalmistajan Nordexin dokumentin F008_278_A17_EN Rev. 03 (13.10.2023) mukaisesti sekä +2 dB:n varmuusarvon lisäyksellä [7].

Mallinnuksissa käytetyt melupäästöarvot perustuvat voimalamalliin, jonka lavoissa on melua vähentävät hammastukset. Mikäli Junnunmäen tuulivoimahanke toteutuu, valitaan lopullinen tuulivoimalamalli hankkeen toteutussuunnitteluvaiheessa. Valittu voimalamalli voi olla vastaavanlainen tai hiljaisempi malli kuin melumallinnuksessa käytetty voimalamalli, ja tarvittaessa voidaan hyödyntää lapojen hammastuksia tai muita vaimennusmenetelmiä.

Taulukko 3. Melumallinnuksissa käytettyjen voimaloiden tiedot.

	Voimaloita [kpl]	Voimalamalli, johon melupäästöarvot perustuvat	Lähtömelu-taso [dB(A)]	Hammas-tukset	Napa-korkeus [m]	Roottorin halkaisija [m]	Kokonais-korkeus [m]
VE1	33	Nordex N175 6.8	106,9 + 2	Kyllä	200	200	300
VE2	24	Nordex N175 6.8	106,9 + 2	Kyllä	200	200	300

5.2 Havaintopisteet

Melumallinnuksessa melupäästön arvot lasketaan tietyille reseptoreille eli havaintopisteille hankealueen ympäristössä. Junnunmäen hankealueen ympäriltä on valittu 52 havaintopistettä. Havaintopisteet ovat loma- tai asuinrakennuksia, joihin saattaa niiden sijainnin perusteella kohdistua tuulivoimahankkeen meluvaikutuksia. Lomarakennuksia on yhteensä 28 ja asuinrakennuksia 24. Asuin- ja lomarakennusten sijainti- ja käyttötarkoitustiedot perustuvat Kuopion kaupungin ja Tervon kunnan rakennusrekisteritietoihin, jotka on haettu loka-marraskuussa 2023.

Selvityksen taulukoissa ja kartoissa lomarakennuksia kuvaa lyhenne HH (lomarakennus = holiday house) ja asuinrakennuksia RH (asuinrakennus = residential house).

Tuulivoimalan perustusten ja melulle altistuvan havaintopisteen sijaintipaikan korkeuseron ollessa yli 60 metriä tulee voimalakohtaiseen lähtömelutasoon lisätä +2 dB, mikäli voimala sijaitsee alle kolmen kilometrin etäisyydellä kohteesta. Nämä havaintopisteet on esitetty taulukossa 7.

5.3 Laskentaparametrit

Seuraavan sivun taulukossa 4 on esitetty melumallinnuksen tiedot ja laskentaparametreja ympäristöministeriön ohjeistuksen mukaisesti.

Taulukko 4. Junnunmäen tuulivoimahankkeen melumallinnuksen tiedot ja laskentaparametreja.

Melumallinnuksen tiedot		
Laatija	Päivämäärä	
Gesa Franz, wpd europe GmbH	3.9.2024	
Hanke	Hankevastaava	
Junnunmäen tuuli- ja aurinkovoimahanke	wpd Suomi Oy	
Mallinnusohjelma	Mallinnusmenetelmä	
SoundPLAN 8.2 (01/2022)	Nord2000	
Melun laskentamallin parametrit		
Melupäästö		
Valmistajan ilmoittama melupäästöarvo + varmuusarvo: 106,9 dB(A) + 2 dB(A) = 108,9 dB(A)		
Kapeakaistaisuus/Tonaalisuus	Impulssimaisuus	Merkityksellinen sykintä
Ei	Ei	Ei
Laskentaverkko		
Laskentakorkeus	Laskentaruudukon koko	
2 m (Nord2000)	5 m x 5 m	
Sääolosuhteet		
Suhteellinen kosteus	Lämpötila	
70 %	15°C	
Maastomallin lähde ja tarkkuus		
Korkeusmallin lähde	Vaakaresoluutio	Pystyresoluutio
Nord2000: Maanmittauslaitos, korkeusmalli 2 m	2 m	0,3 m
Voimalan äänen suuntaavuus ja vaimentuminen		
Vapaa avaruus		
Maaston kovuusarvot		
Maanmittauslaitoksen maastotietokanta		
Hankealueen korkeuserot		
Tuulivoimaloiden perustusten sijaitessa yli 60 m korkeammalla kuin melulle altistuva kohde, lisätään melupäästön takuuarvoon +2 dB (enintään 3 km etäisyydellä voimaloista).		
Tuulen suuntien osuus		
Tuuliatlaksen tuulitilastot 200 metrin korkeudella maanpinnasta pisteessä 7084371 N, 512694 E on esitetty kuvassa 3. Näitä tuulisuustietoja ei ole käytetty Nord2000-laskennan aineistona. Laskennoissa oletuksena on, että tuulen suunta on aina kohti havaintopistettä, jolloin voimaloiden melupäästö on suurimmillaan.		

5.4 Maaston kovuuden määrittely

Maastoon kovuus on mallinnettu Nord2000-laskennassa jokaiselle maaston aluetyypille erikseen Maanmittauslaitoksen maastotietokannan perusteella. Alla oleva taulukko 5 esittää mallinnuksessa kullekin aluetyypille määritetyn kovuusarvon. Taustakovuus on asetettu luokkaan B, joka vastaa metsän kovuusluokkaa.

Taulukko 5. Mallinnuksessa käytetyt maaston kovuusarvot.

Alueen tyyppi	Luokka	Alueen tyyppi	Luokka
Suo, helppokulkuinen metsää kasvava	B	Tulva-alue	G
Suo, vaikeakulkuinen metsää kasvava	B	Allasalue	G
Hietikko	E	Varastoalue	G
Puisto	E	Asuinrakennus, ? krs	G
Pelto	E	Asuinrakennus, 1–2 krs	G
Puutarha	E	Asuinrakennus, 3-n krs	G
Niitty	E	Liike- tai julkinen rakennus, ? krs	G
Suo, helppokulkuinen puuton	E	Liike- tai julkinen rakennus, 1–2 krs	G
Soistuma	E	Liike- tai julkinen rakennus, 3-n krs	G
Turvetuotantoalue	E	Lomarakennus, ? krs	G
Kaatopaikka	E	Lomarakennus, 1–2 krs	G
Täytemaa	E	Lomarakennus, 3-n krs	G
Urheilu- ja virkistysalue	E	Teollinen rakennus, krs	G
Avoin metsämaa	E	Teollinen rakennus, 1–2 krs	G
Varvikko	E	Teollinen rakennus, 3-n krs	G
Kallio - alue	F	Kirkollinen rakennus, ? krs	G
Harva louhikko	F	Kirkollinen rakennus, 1–2 krs	G
Kivikko	F	Kirkollinen rakennus, 3–n krs	G
Louhos	F	Muu rakennus, ? krs	G
Sorakuoppa	F	Muu rakennus, 1–2 krs	G
Taajaan rakennettu alue	F	Muu rakennus, 3–n krs	G
Suo, vaikeakulkuinen puuton	G	Järvivesi	G
Avoin vesijättöalue	G	Vesikivikko	G
Merivesi	G	Liikennealue	G
Maatuva vesialue	G		

5.5 Pienitaajuinen melu

Sosiaali- ja terveysministeriön asumisterveysasetuksessa on määritelty toimenpiderajat yöaikaiselle pienitaajuiselle sisämelutasolle 1/3-oktaaveittain taajuusvälillä 20–200 Hz (taulukko 6). Ympäristöministeriön ohjeiden mukainen pienitaajuisen melun laskenta perustuu Tanskan ympäristöhallinnon julkaisemaan DSO 1284 -määräykseen. Laskentamenetelmä on sovitettu Suomen olosuhteisiin määrittämällä rakennusten sisälle aiheutuva pienitaajuinen melutaso Turun ammattikorkeakoulussa tehdyssä ”The sound insulation of façades at frequencies 5–5000 Hz” -tutkimuksessa (Keränen et al. 2019) esitettyjen pientalojen julkisivun ilmaääneneristävyysarvojen avulla (taulukko 6).

Tulokset perustuvat suomalaisissa asuintaloissa tehtyihin mittauksiin, joiden perusteella on arvioitu talojen äänieristävyys eri taajuuksille. Taulukosta nähdään, että tutkimukseen perustuvat ääneneristävyysarvot ovat merkittävästi alhaisemmat kuin Tanskan ympäristöhallinnon ohjeiden mukaiset arvot. Tutkimuksen mukaan eristävyysarvot ylittyvät 84 % todennäköisyydellä suomalaisissa pientaloissa [8].

Taulukko 6. Pientalojen ääneneristävyyden arvot taajuudella 20–200 Hz Tanskan ympäristöministeriön ohjeistuksen sekä Suomessa tehdyn tutkimuksen mukaan [8].

Taajuus [Hz]	20	25	31,5	40	50	63	80	100	125	160	200
Ääneneristävyys [dB] (Tanskan ohjeistus)	6,6	8,4	10,8	11,4	13,0	16,6	19,7	21,2	20,2	21,2	-
Ääneneristävyys [dB] (Keränen et. al. 2019)	7,6	8,3	9,2	10,3	11,5	13,0	14,8	16,8	18,8	21,1	22,8

Pienitaajuisen melun mallintamisessa on käytetty nk. Future F200 -voimalaa, jonka nimellisteho on 9 MW, roottorin halkaisija 200 metriä, napakorkeus 200 metriä ja kokonaiskorkeus 300 metriä. Pienitaajuisen melun lähtöarvot pohjautuvat Nordex N175 6.8 -voimalan melupäästöarvoihin, joihin on lisätty +2 dB:n varmuusarvo. Mallintaminen on tehty windPRO 3.6 -ohjelman DECIBEL-moduulilla. Mallinnusten yksityiskohtaiset tiedot ja tulokset on esitetty liitteissä 2 (VE1) ja 3 (VE2).

5.6 Yhteisvaikutusten mallintaminen

Melun osalta Junnunmäen hankkeessa ei ole yhteisvaikutuksia muiden tuulivoimahankkeiden kanssa. Lähin suunniteltu tuulivoimahanke on Pielaveden kunnan ja Kuopion kaupungin alueella sijaitseva Vornankorven tuulivoimahanke, jossa alueelle rakennettaisiin enintään 18 uutta voimalaa. Vornankorven suunnitellut voimalapaikat ovat lähimmillään noin 9,5 kilometrin etäisyydellä Junnunmäen voimalapaikoista.

6 Tulokset ja yhteenveto

Melumallinnuksen tuloksia verrataan valtioneuvoston asetuksen mukaisiin melun ohjearvoihin (taulukko 1) ja pienitaajuisen melun aiheuttamia sisämelutasoja verrataan Sosiaali- ja terveysministeriön asumisterveysasetuksen mukaisiin ohjearvoihin (taulukko 2).

6.1 Toteutusvaihtoehtojen melupäästöt

Toteutusvaihtoehtojen VE1 ja VE2 mukaisten melumallinnusten tulokset on esitetty ohjearvoihin verrannollisina pitkän ajan keskiäänitasoina karttapohjalla kuvissa 2 ja 3. Karttoihin on merkitty A-painotettujen äänitasojen 35 dB(A), 40 dB(A) ja 45 dB(A) mukaiset vyöhykkeet sekä havaintopisteinä käytetyt loma- ja asuinrakennukset. Mallinnustuloksista voi havaita maan- ja vedenpinnan vaimennuksen ja heijastuksen vaikutukset.

Havaintopisteissä, jotka sijaitsevat yli 60 metriä alempana kuin yksi tai useampi kolmen kilometrin säteellä sijaitseva voimalapaikka, on melupäästöjen laskennassa lisätty kyseisten voimaloiden lähtömelutasoon +2 dB (taulukko 7). Korkeuserosta johtuva lisäys on laskettu havaintopisteille erikseen, minkä vuoksi lisäyksen vaikutusta ei ole esitetty melunleviämiskartoissa. Lisäys on kuitenkin huomioitu laskentatulostaulukossa (taulukko 8). Liitteen 1 taulukoissa on myös eritelty korkeuserolisäyksen vaikutus havaintopisteille mallinnettuihin meluarvoihin (L_{eq} korkeuserolisäyksellä [dB(A)]).

Taulukko 7. Havaintopisteet, jotka sijaitsevat yli 60 metriä alempana kuin yksi tai useampi kolmen kilometrin säteellä sijaitseva voimalapaikka, ja joiden meluarvojen laskennassa on kyseisten voimaloiden lähtömelutasoon lisätty +2 dB.

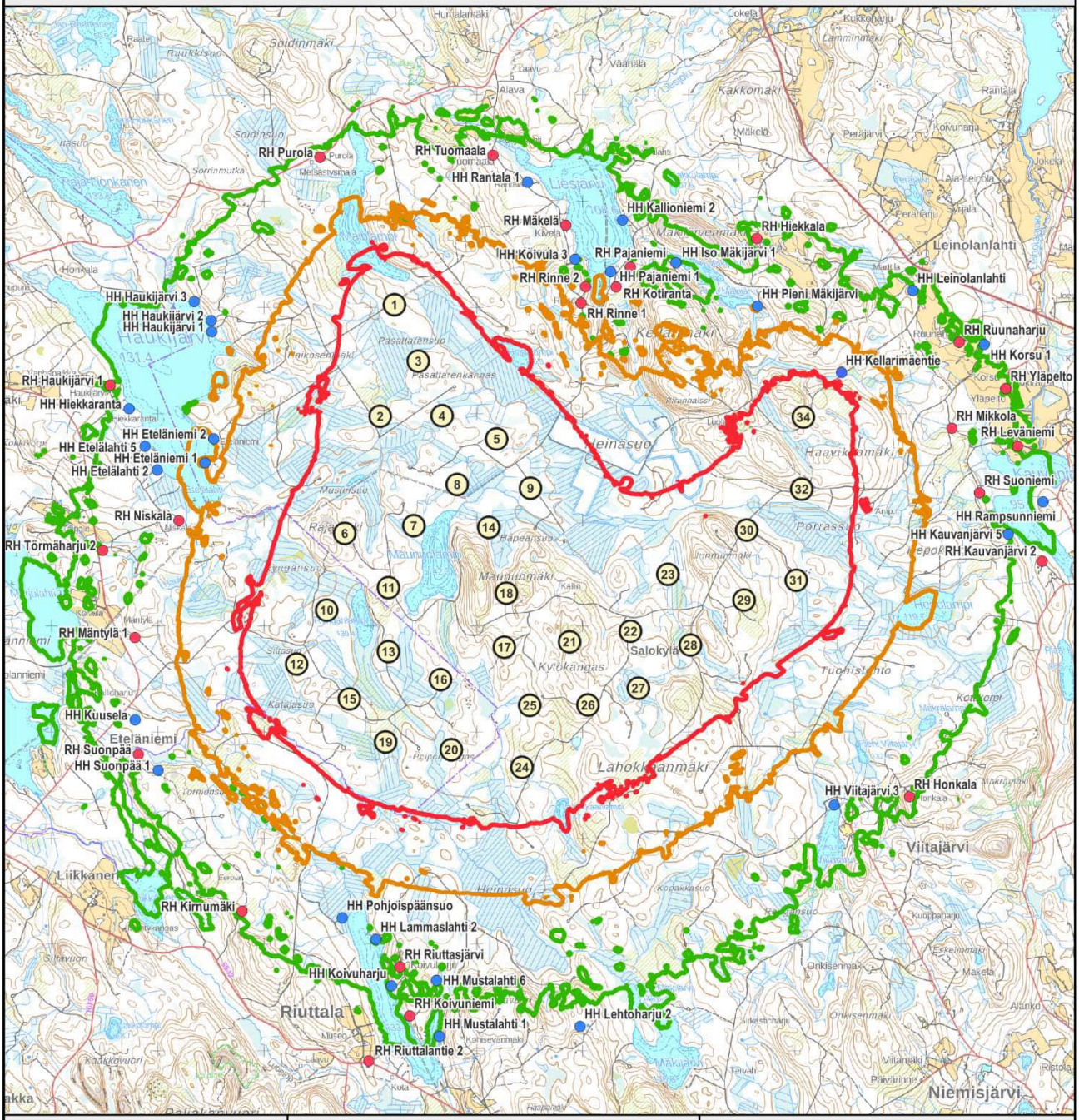
Havaintopiste	Voimalat, joiden melupäästöön lisätty +2 dB
HH Kauvanjärvi 5	VE1: 29, 33
HH Rampsunniemi	VE1: 29, 33
RH Kauvanjärvi 2	VE1: 29, 33
RH Leväniemi	VE1: 29, 33
RH Mikkola	VE1: 29, 33
RH Suoniemi	VE1: 29, 33
RH Yläpelto	VE1: 33

Havaintopiste	Voimalat, joiden melupäästöön lisätty +2 dB
HH Kauvanjärvi 5	VE2: 29
HH Rampsunniemi	VE2: 29
RH Kauvanjärvi 2	VE2: 29
RH Leväniemi	VE2: 29
RH Mikkola	VE2: 29
RH Suoniemi	VE2: 29

Mallinnusten mukaan yksi havaintopiste (HH Kellarimäentie) sijaitsee 40 dB:n melurajan sisäpuolella vaihtoehdossa VE1. Lisäksi kaksi havaintopistettä (RH Rinne 1 ja RH Rinne 2) ovat hyvin lähellä 40 dB:n raja-arvoa. 40 dB:n melurajan sisäpuolelle jäävä lomarakennus saa melumallinnuksessa meluarvon 43,1 dB(A). Arvo ylittää yöajan ohjearvon 40 dB(A) mutta alittaa päiväajan ohjearvon 45 dB(A).

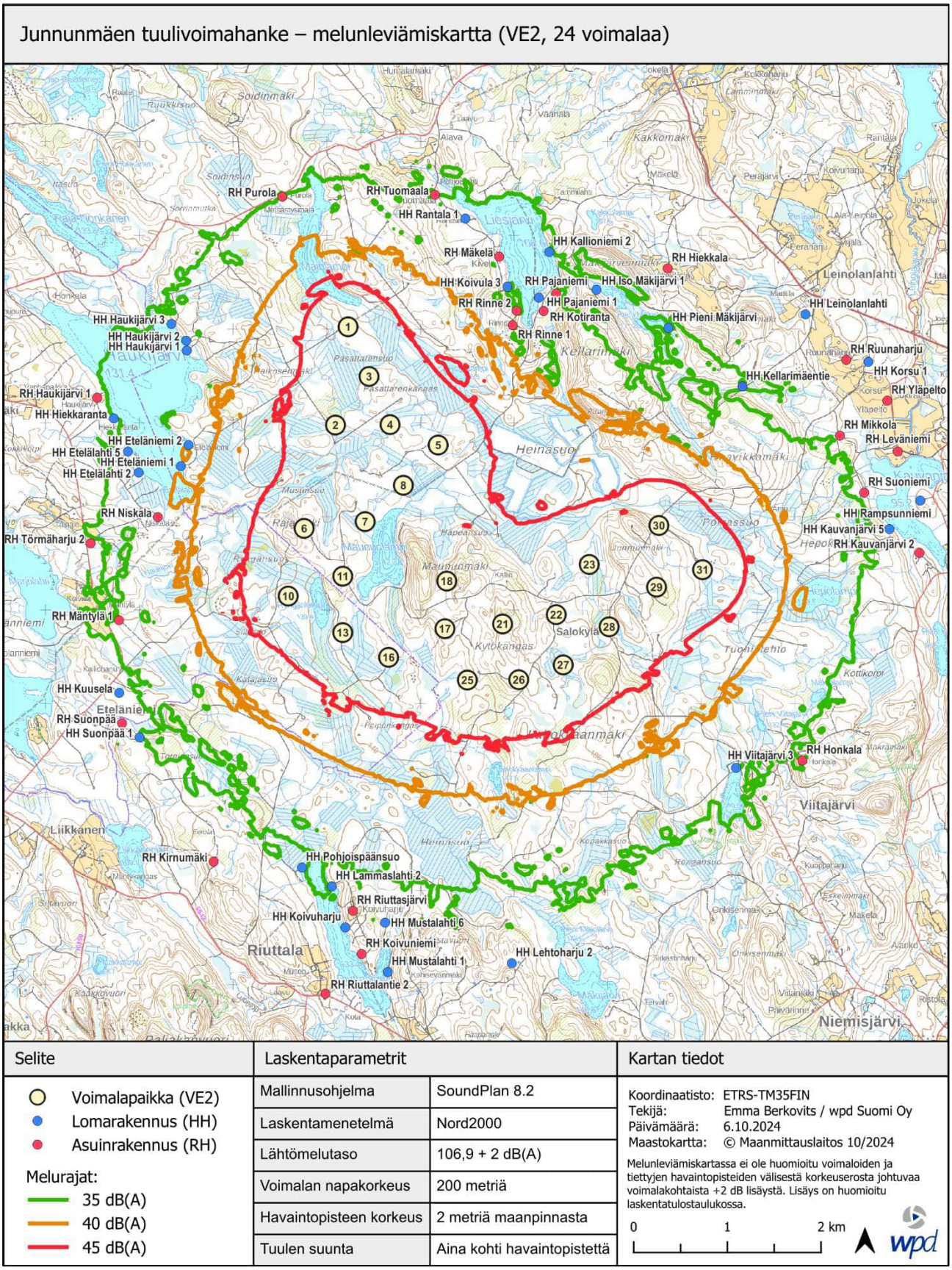
Muilta osin valtioneuvoston asetuksessa määriteltyihin kohteisiin ei kohdistu 40 dB:n raja-arvon ylittävää melua vaihtoehdossa VE1 tai VE2 (taulukko 8). Havaintopisteille laskettujen melupäästöjen arvot on esitetty taulukossa 9. Melumallinnuksen tarkemmat tulokset on esitetty liitteessä 1.

Junnunmäen tuulivoimahanke – melunleviämiskartta (VE1, 33 voimalaa)



Selite	Laskentaparametrit		Kartan tiedot
Voimalapaikka (VE1) Lomarakennus (HH) Asuinrakennus (RH) Melurajat: 35 dB(A) 40 dB(A) 45 dB(A)	Mallinnusohjelma	SoundPlan 8.2	Koordinaatisto: ETRS-TM35FIN Tekijä: Emma Berkovits / wpd Suomi Oy Päivämäärä: 6.10.2024 Maastokartta: © Maanmittauslaitos 10/2024 Melunleviämiskartassa ei ole huomioitu voimaloiden ja tiettyjen havaintopisteiden välisestä korkeuserosta johtuvaa voimalakohtaista +2 dB lisäystä. Lisäys on huomioitu laskentatulostaulukossa. 0 1 2 km
	Laskentamenetelmä	Nord2000	
	Lähtömelutaso	106,9 + 2 dB(A)	
	Voimalan napakorkeus	200 metriä	
	Havaintopisteen korkeus	2 metriä maanpinnasta	
	Tuulen suunta	Aina kohti havaintopistettä	

Kuva 2. Melunleviämiskartta, VE1.



Kuva 3. Melunleviämiskartta, VE2.

Taulukko 8. Suunnitteluohjearvot ylittävälle melulle altistuvien kohteiden lukumäärä.

Kohteen tyyppi	Lukumäärä
Pysyvä asutus	0
Vapaa-ajan asutus	1
Hoitolaitokset	0
Oppilaitokset	0
Virkistysalueet	0
Leirintäalueet	0
Kansallispuistot	0

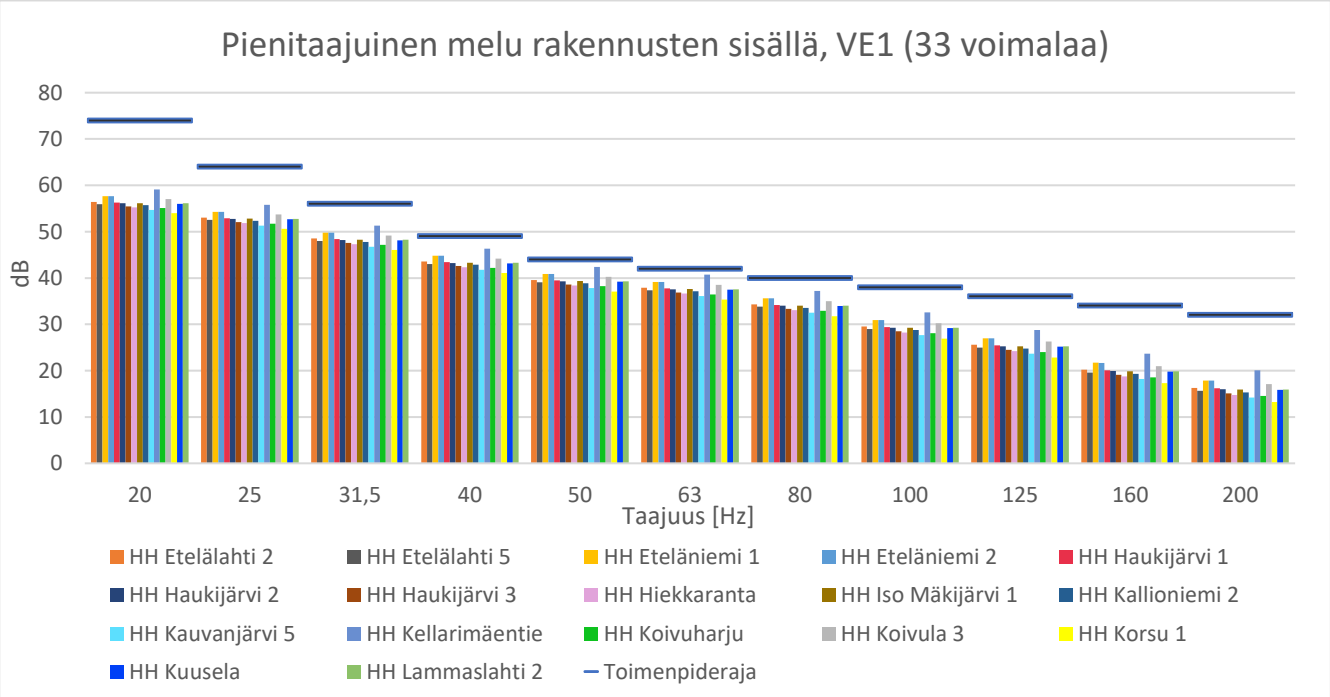
Taulukko 9. Melumallinnusten tulokset havaintopisteittäin.

Havaintopiste	VE1, dB(A)	VE2, dB(A)
HH Etelälahti 2	37,47	36,43
HH Etelälahti 5	36,71	35,71
HH Eteläniemi 1	39,39	38,56
HH Eteläniemi 2	39,34	38,57
HH Haukijärvi 1	37,42	36,84
HH Haukijärvi 2	37,23	36,59
HH Haukijärvi 3	36,31	35,68
HH Hiekkaranta	35,57	34,62
HH Iso Mäkijärvi 1	32,77	29,35
HH Kallioniemi 2	38,10	37,09
HH Kauvanjärvi 5	35,47	33,18
HH Kellarimäentie	43,14	35,71
HH Koivuharju	32,45	28,69
HH Koivula 3	37,87	37,03
HH Korsu 1	34,25	31,26
HH Kuusela	37,06	34,37
HH Lammaslahti 2	37,66	34,74
HH Lehtoharju 2	34,45	32,60
HH Leinolanlahti	35,48	32,40
HH Mustalahti 1	33,68	31,20
HH Mustalahti 6	35,90	33,19
HH Pajaniemi 1	38,11	37,00
HH Pieni Mäkijärvi	38,55	35,21
HH Pohjoispäänsuo	37,51	34,24
HH Rampsunniemi	34,33	32,00
HH Rantala 1	36,52	35,79
HH Suonpää 1	37,63	34,43
HH Viitajärvi 3	37,00	36,17
RH Haukijärvi 1	34,72	33,79
RH Hiekkala	35,53	33,20
RH Honkala	35,45	34,55
RH Kauvanjärvi 2	34,56	32,69
RH Kirnumäki	35,82	32,81
RH Koivuniemi	34,97	32,41
RH Kotiranta	38,63	37,41
RH Leväniemi	35,05	32,18
RH Mäkelä	37,35	36,45
RH Mäntylä	37,82	35,67
RH Mikkola	38,37	34,69
RH Niskala	39,14	37,98
RH Pajaniemi	37,33	36,19
RH Purola	35,58	35,08
RH Rinne 1	39,88	38,83
RH Rinne 2	39,55	38,10
RH Riuttalantie 2	32,85	30,21
RH Riuttasjärvi	36,07	33,18
RH Ruunaharju	35,10	31,85
RH Suoniemi	37,17	34,35
RH Suonpää	36,67	33,81
RH Törmäharju 2	36,28	34,74
RH Tuomaala	35,89	35,21
RH Yläpelto	34,92	31,43

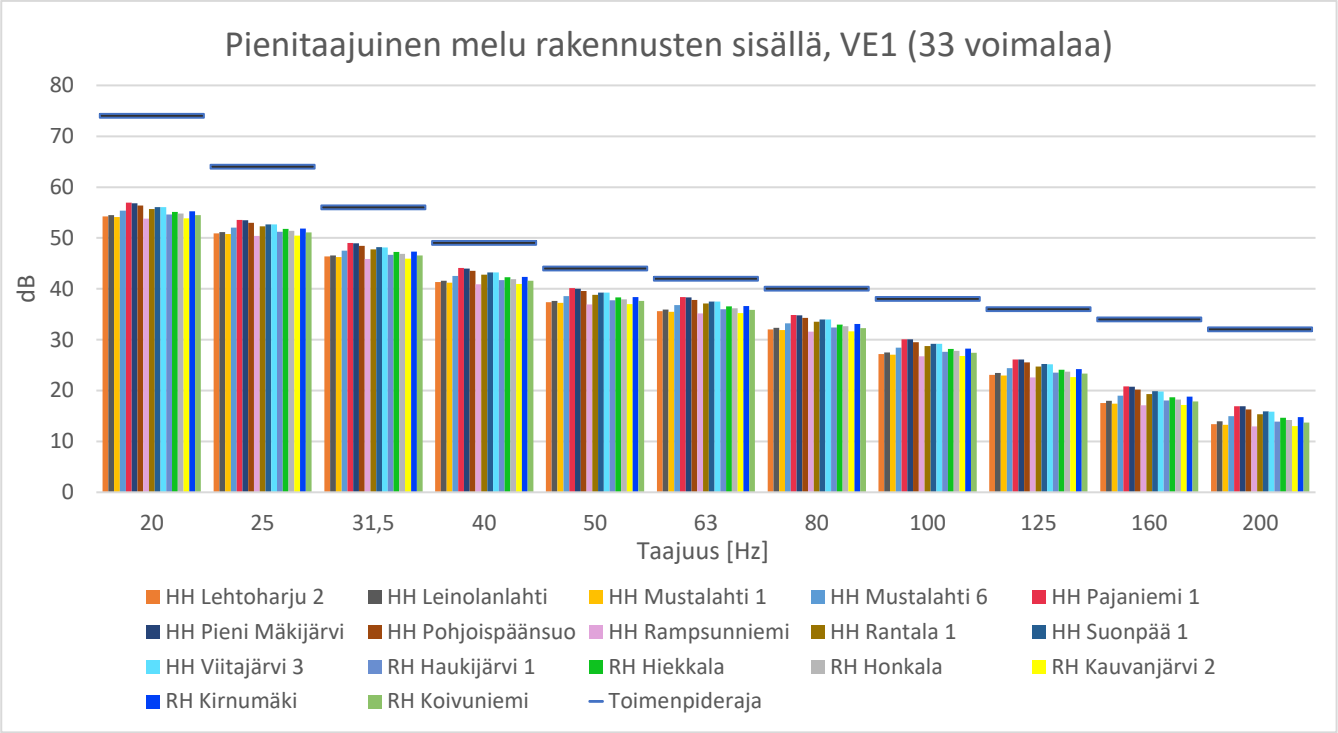
6.2 Pienitaajuinen melu

Pienitaajuisen melun osalta melutasot on laskettu ympäristöministeriön ohjeen mukaan käyttäen Tanskan ympäristöhallinnon DSO1284-määräyksessä esitettyä menetelmää. Menetelmä on sovitettu Suomen olosuhteisiin päivittämällä havaintopisteiden ääneneristävyyden vastaamaan suomalaisten pientalojen ääneneristävyyttä. Mallinnuksissa käytetyt ääneneristävyysarvot perustuvat Turun ammattikorkeakoulussa tehtyyn tutkimukseen suomalaisista pientaloista (Keränen et al. 2019).

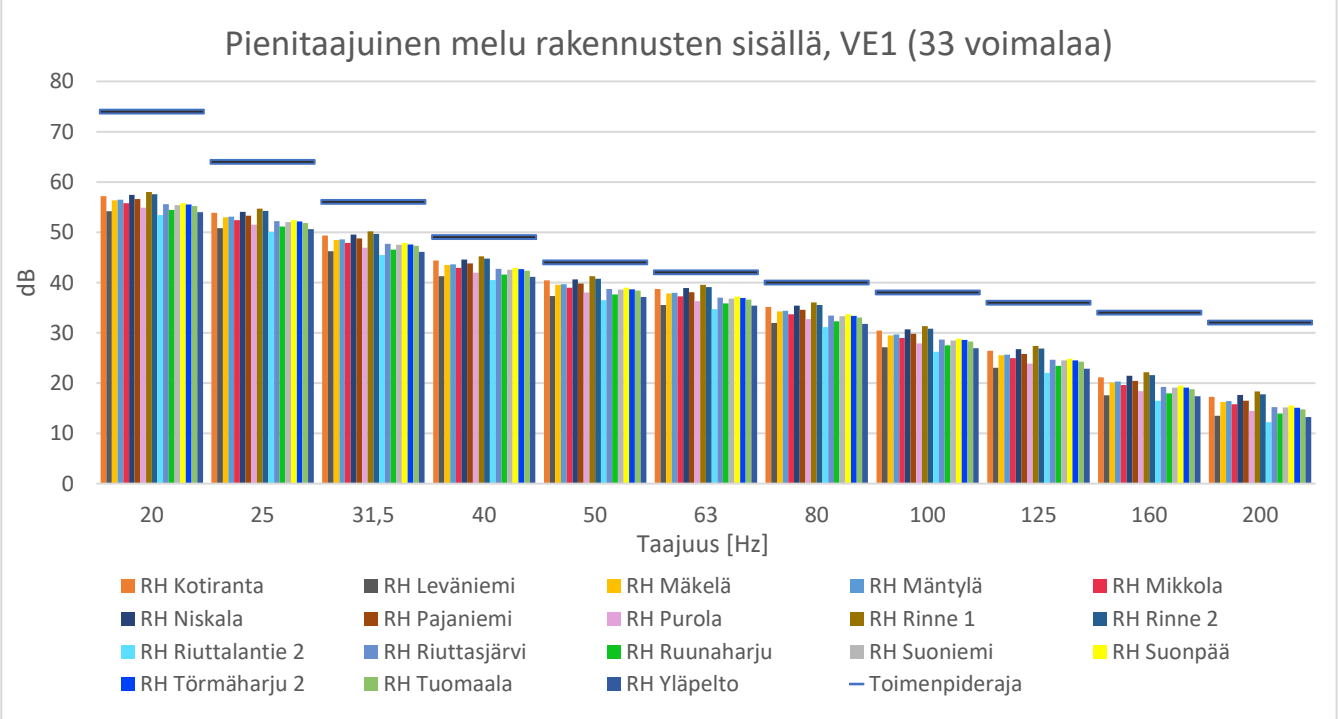
Pienitaajuisen melun laskennassa on käytetty samoja havaintopisteitä kuin edellä olleissa melumallinnuksissa. Mallinnustulosten mukaan asumisterveysasetuksen rajat eivät ylity yhdessäkään havaintopisteessä. Tulokset on esitetty pylväsdiagrammeina kuvissa 6–8 (VE1) sekä 9–11 (VE2). Pienitaajuisen melun mallinnuksen tarkemmat tulokset on esitetty liitteissä 2 (VE1) ja 3 (VE2).



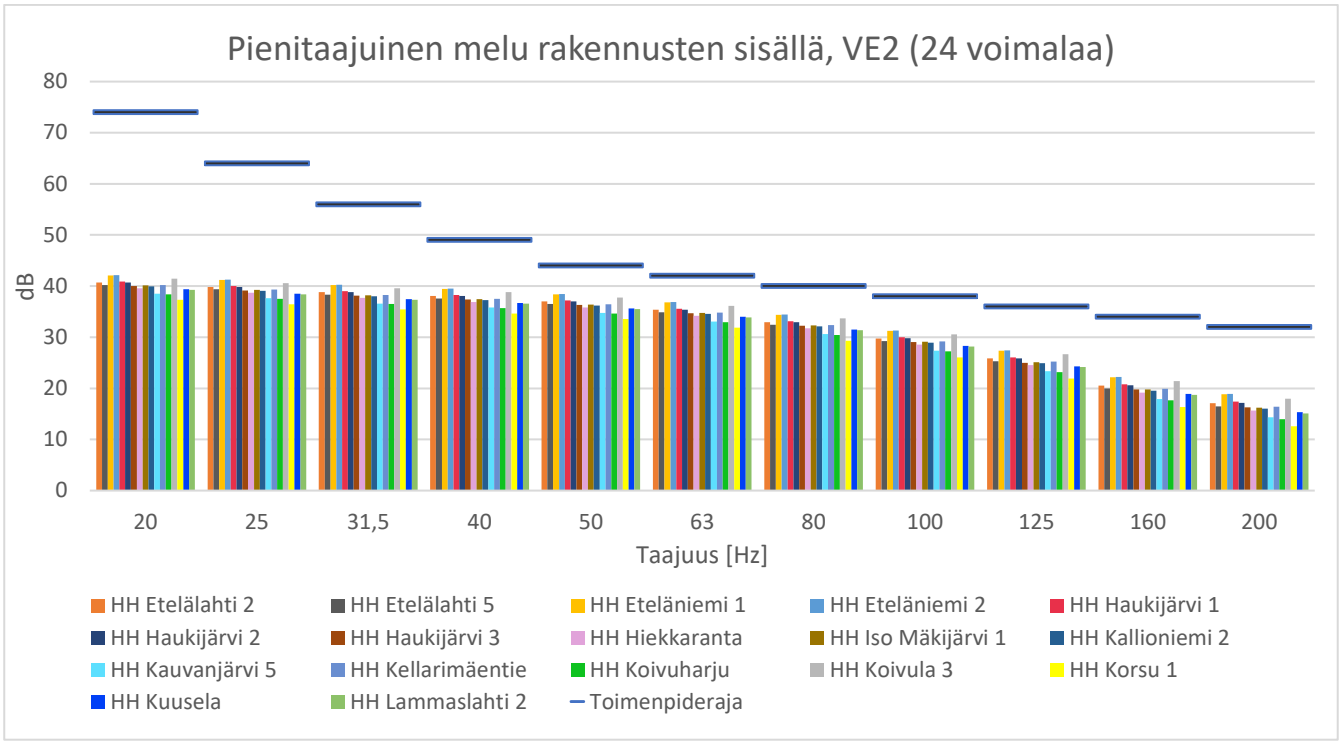
Kuva 1. Pienitaajuisen melun laskentatulokset sisätiloissa suhteutettuna STM:n asumisterveysasetuksen arvoihin. VE1, havaintopisteet 1–17.



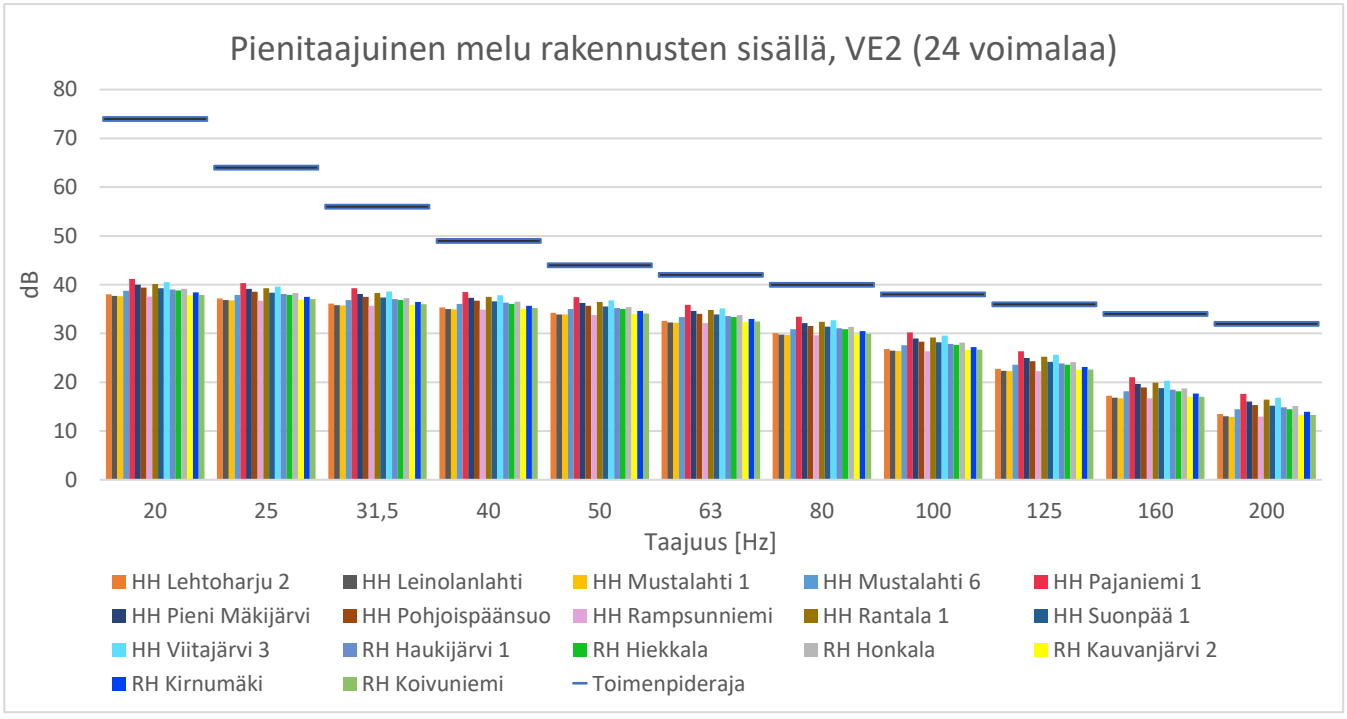
Kuva 2. Pienitaajuisen melun laskentatulokset sisätiloissa suhteutettuna STM:n asumisterveysasetuksen arvoihin. VE1, havaintopisteet 18–34.



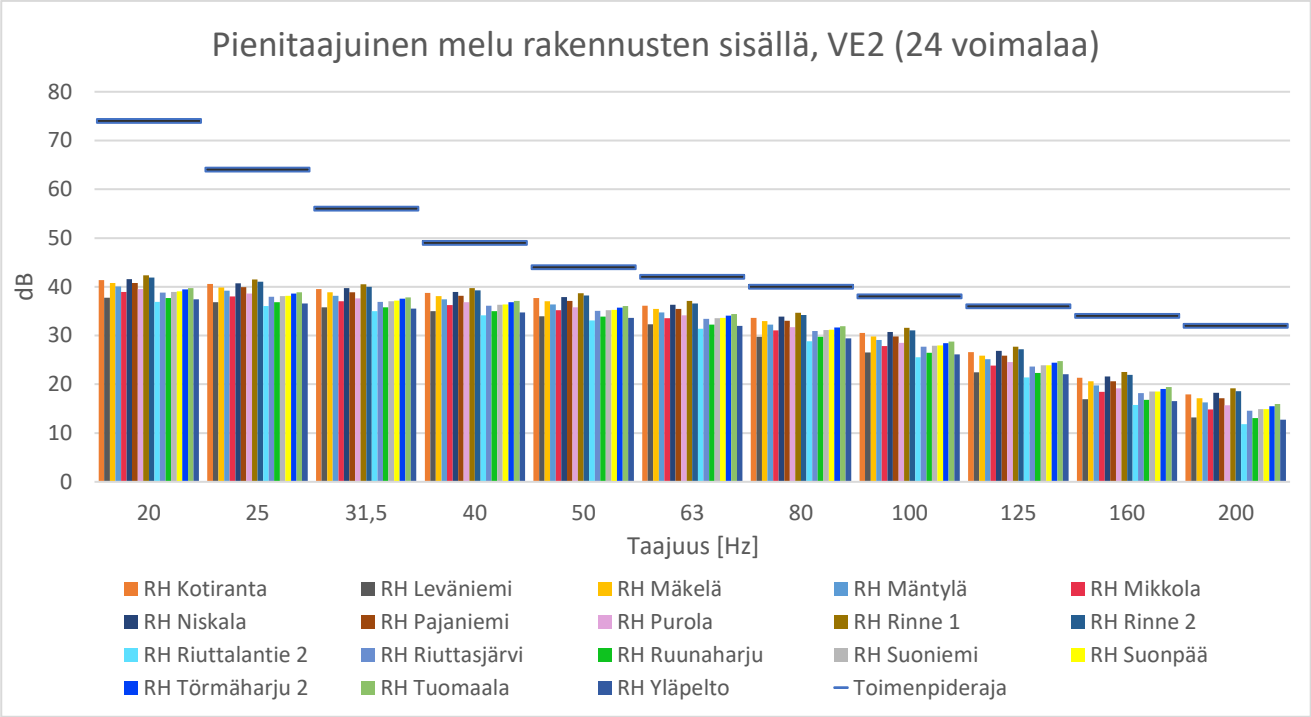
Kuva 3. Pienitaajuisen melun laskentatulokset sisätiloissa suhteutettuna STM:n asumisterveysasetuksen arvoihin. VE1, havaintopisteet 35–52.



Kuva 4. Pienitaajuisen melun laskentatulokset sisätiloissa suhteutettuna STM:n asumisterveysasetuksen arvoihin. VE2, havaintopisteet 1–17.



Kuva 10. Pienitaajuisen melun laskentatulokset sisätiloissa suhteutettuna STM:n asumisterveysasetuksen arvoihin. VE2, havaintopisteet 18–34.



Kuva 11. Pienitaajuisen melun laskentatulokset sisätiloissa suhteutettuna STM:n asumisterveysasetuksen arvoihin. VE2, havaintopisteet 34–52.

6.3 Tulosten yhteenveto

Valtioneuvoston asetuksen mukaiset meluarvot ylittyvät VE1-mallinnuksessa yhdessä havaintopisteessä (HH Kellarimäentie), jossa melupäästön laskennallinen arvo on 43,1 dB(A). Arvo ylittää valtioneuvoston yöajan ohjearvon 40 dB(A), mutta alittaa päiväajan ohjearvon 45 dB(A). Havaintopiste on lomarakennus, jonka käyttötarkoitus on mahdollisesti muuttumassa ennen kaavaehdotusvaihetta. Toimitilojen eli ns. melumoodien käytöllä melumallinnuksessa voidaan alittaa ohjearvo kyseisessä kohteessa, mutta toimitilojen käyttäminen ei ole suositeltavaa YVA-, kaava- tai rakennuslupavaiheiden mallinnuksissa. Toimitilojen vaikutuksen tarkastelu tullaan tekemään mahdollisessa ympäristölupavaiheessa, mikäli voimaloiden sijoittelusuunnitelma tai rakennuksen käyttötarkoitus eivät ennen sitä muutu sellaisiksi, että melupäästön ohjearvot alittuvat tai eivät enää päde kyseiselle rakennukselle.

Toteutusvaihtoehdossa VE2 melun ohjearvot eivät ylity yhdessäkään havaintopisteessä. Molemmissa toteutusvaihtoehdoissa pienitaajuinen melu havaintopisteinä toimivien rakennusten sisällä alittaa asumisterveysasetuksen mukaiset toimenpiderajat.

Junnunmäen hankkeessa ei ole melun osalta yhteisvaikutuksia muiden tuulivoimahankkeiden kanssa. Lähin naapurihanke on Vornankorven tuulivoimahanke, jonka voimalat sijaitsevat lähimmillään noin 9,5 kilometrin etäisyydellä Junnunmäen tuulivoimahankkeen voimaloista.

7 Viitteet

1. Ympäristöministeriö (2016). Ympäristöhallinnon ohjeita 5/2016 Tuulivoimarakentamisen suunnittelu. Päivitys 2016. https://julkaisut.valtioneuvosto.fi/handle/10024/79057
2. Ilmatieteen laitos (2009). Suomen tuuliatlas. http://tuuliatlas.fmi.fi/fi/
3. Valtioneuvosto (2015). Valtioneuvoston asetus tuulivoimaloiden ulkomelutason ohjearvoista. https://www.finlex.fi/fi/laki/alkup/2015/20151107
4. Sosiaali- ja terveysministeriö (2015). Sosiaali- ja terveysministeriön asetus asunnon ja muun oleskelutilan terveydellisistä olosuhteista sekä ulkopuolisten asiantuntijoiden pätevyysvaatimuksista. https://www.finlex.fi/fi/laki/alkup/2015/20150545
5. Ympäristöministeriö (2014). Ympäristöhallinnon ohjeita 2/2014 Tuulivoimaloiden melun mallintaminen. https://julkaisut.valtioneuvosto.fi/handle/10138/42937
6. Ympäristöministeriö (2016). Yhteenveto tuulivoimaloiden melupäästön takuuarvon käyttämisestä meluselvityksissä liittyvästä kyselystä.
7. Nordex Energy SE & Co. (2023). Doc.: 9003492. Third octave sound power levels. Nordex N175/6.X. F008_278_A17_EN. Revision 03.
8. J. Keränen, J. Hakala, V. Hongisto (2019). The sound insulation of façades at frequencies 5–5000Hz. Building and Environment 156, s. 12–20.

Liitteet

Liite 1 – Junnunmäen tuulivoimahankkeen melumallinnus – SoundPLAN-mallinnuksen tiedot ja tulokset

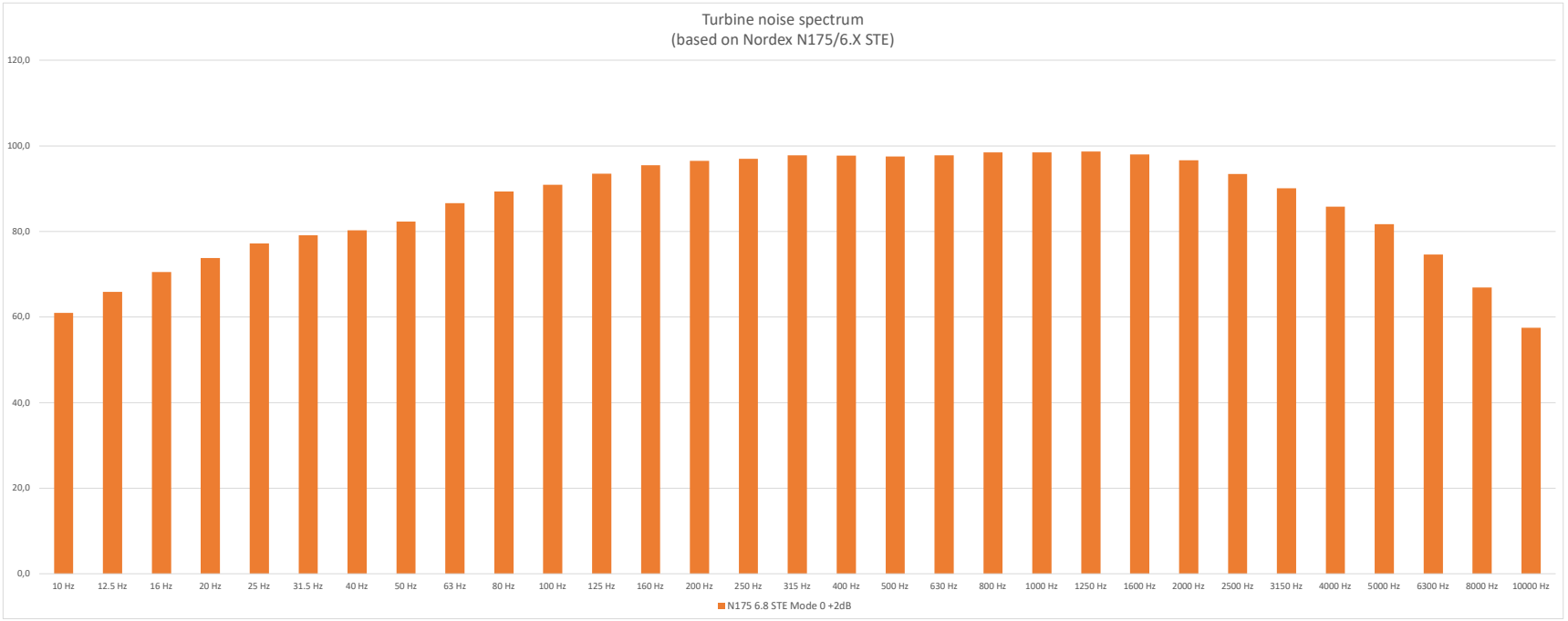
Liite 2 – Pienitaajuisen melun laskentatulokset, Junnunmäen tuulivoimahanke, VE1

Liite 3 – Pienitaajuisen melun laskentatulokset, Junnunmäen tuulivoimahanke, VE2

LIITE 1

Frequency	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1000 Hz	1250 Hz	1600 Hz	2000 Hz	2500 Hz	3150 Hz	4000 Hz	5000 Hz	6300 Hz	8000 Hz	10000 H	Total SP
N175 6.8 STE Mode (	59,0	63,9	68,5	71,8	75,2	77,1	78,3	80,3	84,6	87,3	88,9	91,5	93,5	94,5	95,0	95,8	95,7	95,5	95,8	96,5	96,5	96,7	96,0	94,6	91,4	88,1	83,8	79,7	72,6	64,9	55,5	106,9
N175 6.8 STE Mode (	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5	108,9

(Source: N175-6.8MW Third Octaves, F008_278_A17_EN, Rev. 03 (2023-10-13))



WTG	X m	Y m	Z + dH m	dH m	Lw dB(	10Hz dB	12.5Hz c	16Hz dB	20Hz dB	25Hz dB	31.5Hz c	40Hz dB	50Hz dB	63Hz dB	80Hz dB	100Hz dI	125Hz dI	160Hz dI	200Hz dI	250Hz dI	315Hz dI	400Hz dI	500Hz dI	630Hz dI	800Hz dI	1kHz dB	1.25kHz	1.6kHz d	2kHz dB	2.5kHz c	3.15kHz	4kHz dB	5kHz dB	6.3kHz d	8kHz dB	10kHz dI
1	506228,0	6991023,8	341,2	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
2	506093,4	6989974,9	344,7	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
3	506451,6	6990493,6	349,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
4	506676,0	6989979,6	349,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
5	507189,3	6989761,7	347,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
6	505759,1	6988871,6	349,9	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
7	506410,2	6988944,1	346,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
8	506818,0	6989331,7	347,9	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
9	507507,7	6989296,7	343,2	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
10	505589,6	6988149,4	346,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
11	506171,3	6988361,3	351,7	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
12	505306,7	6987641,8	344,3	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
13	506171,2	6987759,2	347,7	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
14	507115,0	6988928,1	347,9	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
15	505803,1	6987313,5	341,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
16	506660,3	6987495,3	344,9	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
17	507261,6	6987801,0	371,4	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
18	507280,9	6988309,1	370,2	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
19	506144,3	6986908,1	336,3	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
20	506762,7	6986835,1	345,0	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
21	507876,6	6987851,5	391,3	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
22	508449,5	6987951,0	360,0	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
23	508801,7	6988486,7	346,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
24	507428,0	6986670,1	357,3	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
25	507501,1	6987252,8	357,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
26	508049,5	6987256,4	383,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
27	508523,9	6987414,8	372,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
28	509013,5	6987821,1	357,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
29	509519,6	6988244,8	366,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
30	509544,5	6988902,6	341,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
31	510010,7	6988430,7	339,4	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
32	510061,9	6989288,0	343,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
34	510077,4	6989966,9	366,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,0	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5

Havaintopiste	X/m	Y/m	Z/m	GH/m	Leq [dB(A)]	Leq korkeuserolisäyksellä [dB(A)]	delta
HH Etelälahti 2	503993,58	6989467,47	134,80	132,80	37,4670		
HH Etelälahti 5	503878,71	6989692,29	135,03	133,03	36,7114		
HH Eteläniemi 1	504444,77	6989535,96	137,19	135,19	39,3938		
HH Eteläniemi 2	504526,03	6989761,95	135,52	133,52	39,3425		
HH Haukijärvi 1	504507,42	6990770,54	137,64	135,64	37,4214		
HH Haukijärvi 2	504502,05	6990874,92	139,16	137,16	37,2256		
HH Haukijärvi 3	504343,21	6991053,79	136,54	134,54	36,3066		
HH Hiekkaranta	503729,01	6990044,93	135,70	133,70	35,5708		
HH Iso Mäkijärvi 1	508877,63	6991418,65	129,51	127,51	32,7651		
HH Kallioniemi 2	508375,06	6991821,78	114,90	112,90	38,1026		
HH Kauvanärvi 5	512005,79	6988864,61	105,55	103,55	34,9624	35,4662	0,50
HH Kellarimäentie	510437,22	6990387,38	136,44	134,44	43,1438		
HH Koivuharju	506199,38	6984607,43	138,06	136,06	32,4501		
HH Koivula 3	507928,58	6991452,20	118,67	116,67	37,8674		
HH Korsu 1	511780,59	6990650,01	117,65	115,65	34,2494		
HH Kuusela	503785,45	6987115,54	123,83	121,83	37,0616		
HH Lammaslahti 2	506053,92	6985044,17	139,65	137,65	37,6634		
HH Lehtoharju 2	507974,88	6984227,21	179,53	177,53	34,4529		
HH Leinolanlahti	511108,82	6991156,33	119,94	117,94	35,4757		
HH Mustalahti 1	506651,53	6984133,79	139,02	137,02	33,6752		
HH Mustalahti 6	506623,22	6984659,29	146,19	144,19	35,8981		
HH Pajaniemi 1	508263,48	6991334,99	112,83	110,83	38,1102		
HH Pieni Mäkijärvi	509646,45	6991010,90	130,03	128,03	38,5461		
HH Pohjoispäänsuo	505736,46	6985244,77	137,14	135,14	37,5122		
HH Rampsunniemi	512334,10	6989168,51	105,75	103,75	33,8150	34,3271	0,51
HH Rantala 1	507480,03	6992179,00	113,83	111,83	36,5222		
HH Suonpää 1	504002,80	6986640,15	127,85	125,85	37,6261		
HH Viitajärvi 3	510367,41	6986315,15	155,01	153,01	37,0037		
RH Haukijärvi 1	503550,13	6990266,92	139,49	137,49	34,7217		
RH Hiekkala	509639,10	6991646,69	118,06	116,06	35,5258		
RH Honkala	511076,75	6986393,46	169,43	167,43	35,4514		
RH Kauvanjärvi 2	512324,84	6988609,11	106,27	104,27	34,1045	34,5584	0,45
RH Kirnumäki	504793,61	6985306,87	153,04	151,04	35,8179		
RH Koivuniemi	506372,30	6984325,15	140,56	138,56	34,9666		
RH Kotiranta	508314,82	6991191,83	119,92	117,92	38,6270		
RH Leväniemi	512094,46	6989692,57	102,87	100,87	34,4371	35,0480	0,61
RH Mäkelä	507840,85	6991772,96	112,56	110,56	37,3543		
RH Mäntylä	503783,81	6987891,41	120,36	118,36	37,8197		
RH Mikkola	511476,75	6989861,58	103,38	101,38	37,5738	38,3661	0,79
RH Niskala	504198,45	6988991,53	138,54	136,54	39,1396		
RH Pajaniemi	508448,42	6991378,42	121,49	119,49	37,3273		
RH Purola	505526,51	6992412,55	138,21	136,21	35,5806		
RH Rinne 1	507984,46	6991040,30	124,55	122,55	39,8779		
RH Rinne 2	508026,82	6991194,37	124,62	122,62	39,5485		
RH Riuttalantie 2	505985,68	6983903,40	146,93	144,93	32,8521		
RH Riuttasjärvi	506280,17	6984784,95	156,44	154,44	36,0733		
RH Ruunaharju	511545,54	6990670,93	120,20	118,20	35,0994		
RH Suoniemi	511735,85	6989253,90	104,87	102,87	36,5764	37,1712	0,59
RH Suonpää	503816,34	6986791,02	122,01	120,01	36,6678		
RH Törmäharju 2	503480,79	6988711,59	119,96	117,96	36,2798		
RH Tuomaala	507154,50	6992432,92	115,97	113,97	35,8939		
RH Yläpelto	511982,51	6990235,21	104,09	102,09	34,3729	34,9155	0,54

WTG	X m	Y m	Z + dH m	dH m	Lw dB(	10Hz dB	12.5Hz c	16Hz dB	20Hz dB	25Hz dB	31.5Hz c	40Hz dB	50Hz dB	63Hz dB	80Hz dB	100Hz dI	125Hz dI	160Hz dI	200Hz dI	250Hz dI	315Hz dI	400Hz dI	500Hz dI	630Hz dI	800Hz dI	1kHz dB	1.25kHz	1.6kHz d	2kHz dB	2.5kHz d	3.15kHz	4kHz dB	5kHz dB	6.3kHz d	8kHz dB	10kHz dI
1	506228,0	6991023,8	341,2	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
2	506093,4	6989975,0	344,7	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
3	506451,7	6990493,6	349,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
4	506676,0	6989979,7	349,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
5	507189,4	6989761,7	347,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
6	505759,1	6988871,7	349,9	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
7	506410,2	6988944,1	346,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
8	506818,0	6989331,7	348,0	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
10	505589,6	6988149,4	346,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
11	506171,3	6988361,3	351,7	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
13	506171,2	6987759,2	347,7	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
16	506660,3	6987495,3	344,9	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
17	507261,6	6987801,0	371,4	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
18	507280,9	6988309,1	370,2	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
21	507876,6	6987851,5	391,4	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
22	508449,5	6987951,0	360,0	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
23	508801,7	6988486,7	346,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
25	507501,1	6987252,9	357,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
26	508049,5	6987256,4	383,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
27	508523,9	6987414,8	372,1	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
28	509013,6	6987821,1	357,5	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
29	509519,6	6988244,8	366,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
30	509544,6	6988902,6	341,8	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5
31	510010,7	6988430,7	339,4	200,0	108,9	61,0	65,9	70,5	73,8	77,2	79,1	80,3	82,3	86,6	89,3	90,9	93,5	95,5	96,5	97,0	97,8	97,7	97,5	97,8	98,5	98,5	98,7	98,0	96,6	93,4	90,1	85,8	81,7	74,6	66,9	57,5

Havaintopiste	X/m	Y/m	Z/m	GH/m	Leq [dB(A)]	Leq korkeuserolisäyksellä [dB(A)]	delta
HH Etelälahti 2	503993,58	6989467,47	134,80	132,80	36,4260		
HH Etelälahti 5	503878,71	6989692,29	135,03	133,03	35,707		
HH Eteläniemi 1	504444,77	6989535,96	137,19	135,19	38,563		
HH Eteläniemi 2	504526,03	6989761,95	135,52	133,52	38,568		
HH Haukijärvi 1	504507,42	6990770,54	137,64	135,64	36,835		
HH Haukijärvi 2	504502,05	6990874,92	139,16	137,16	36,585		
HH Haukijärvi 3	504343,21	6991053,79	136,54	134,54	35,679		
HH Hiekkaranta	503729,01	6990044,93	135,70	133,7	34,621		
HH Iso Mäkijärvi 1	508877,63	6991418,65	129,51	127,51	29,353		
HH Kallioniemi 2	508375,06	6991821,78	114,90	112,9	37,094		
HH Kauvanjärvi 5	512005,79	6988864,61	105,55	103,55	32,881	33,1840	0,30
HH Kellarimäentie	510437,22	6990387,38	136,44	134,44	35,706		
HH Koivuharju	506199,38	6984607,43	138,06	136,06	28,694		
HH Koivula 3	507928,58	6991452,20	118,67	116,67	37,034		
HH Korsu 1	511780,59	6990650,01	117,65	115,65	31,257		
HH Kuusela	503785,45	6987115,54	123,83	121,83	34,366		
HH Lammaslahti 2	506053,92	6985044,17	139,65	137,65	34,735		
HH Lehtoharju 2	507974,88	6984227,21	179,53	177,53	32,601		
HH Leinolanlahti	511108,82	6991156,33	119,94	117,94	32,399		
HH Mustalahti 1	506651,53	6984133,79	139,02	137,02	31,203		
HH Mustalahti 6	506623,22	6984659,29	146,19	144,19	33,19		
HH Pajaniemi 1	508263,48	6991334,99	112,83	110,83	36,998		
HH Pieni Mäkijärvi	509646,45	6991010,90	130,03	128,03	35,207		
HH Pohjoispäänsuo	505736,46	6985244,77	137,14	135,14	34,239		
HH Rampsunniemi	512334,1	6989168,51	105,75	103,75	31,701	31,9981	0,30
HH Rantala 1	507480,03	6992179,00	113,83	111,83	35,786		
HH Suonpää 1	504002,8	6986640,15	127,85	125,85	34,434		
HH Viitajärvi 3	510367,41	6986315,15	155,01	153,01	36,167		
RH Haukijärvi 1	503550,13	6990266,92	139,49	137,49	33,794		
RH Hiekkala	509639,1	6991646,69	118,06	116,06	33,203		
RH Honkala	511076,75	6986393,46	169,43	167,43	34,546		
RH Kauvanjärvi 2	512324,84	6988609,11	106,27	104,27	32,401	32,6922	0,29
RH Kirnumäki	504793,61	6985306,87	153,04	151,04	32,814		
RH Koivuniemi	506372,3	6984325,15	140,56	138,56	32,406		
RH Kotiranta	508314,82	6991191,83	119,92	117,92	37,4120		
RH Leväniemi	512094,46	6989692,57	102,87	100,87	31,895	32,1805	0,29
RH Mäkelä	507840,85	6991772,96	112,56	110,56	36,445		
RH Mäntylä	503783,81	6987891,41	120,36	118,36	35,673		
RH Mikkola	511476,75	6989861,58	103,38	101,38	34,358	34,6900	0,33
RH Niskala	504198,45	6988991,53	138,54	136,54	37,977		
RH Pajaniemi	508448,42	6991378,42	121,49	119,49	36,193		
RH Purola	505526,51	6992412,55	138,21	136,21	35,078		
RH Rinne 1	507984,46	6991040,30	124,55	122,55	38,834		
RH Rinne 2	508026,82	6991194,37	124,62	122,62	38,102		
RH Riuttalantie 2	505985,68	6983903,40	146,93	144,93	30,205		
RH Riuttasjärvi	506280,17	6984784,95	156,44	154,44	33,179		
RH Ruunaharju	511545,54	6990670,93	120,20	118,2	31,852		
RH Suoniemi	511735,85	6989253,90	104,87	102,87	34,056	34,3459	0,29
RH Suonpää	503816,34	6986791,02	122,01	120,01	33,81		
RH Törmäharju 2	503480,79	6988711,59	119,96	117,96	34,735		
RH Tuomaala	507154,5	6992432,92	115,97	113,97	35,209		
RH Yläpelto	511982,51	6990235,21	104,09	102,09	31,425		

Kernel version:	SoundPLAN 8.2 (10.01.2022) - 32 bit
[PARAMETERS]	
Reflection order:	3
Maximum reflection distance to receiver	200 m
Maximum reflection distance to source	50 m
Search radius	50000 m
Weighting:	dB(A)
Allowed tolerance (per individual source):	0,100 dB
Create ground effect areas from road surfaces:	Yes
Standards:	
Wind turbine:	Nord2000
Air absorption:	ISO 9613-1
Environment:	
Air pressure	1013,3 mbar
rel. humidity	70,0 %
Temperature	15,0 °C
Meteo param	

Nord2000 - downwind
p=100,0[%] z0=0,05[m] zU=10,0[m] u=8,0+/-0,80[m/s] Dir=downwind (src->rec) dT/dz=0,00+/-0,00[K/m] Cw2=0,00[m^4/3/s^2] Ct2=0,000[K/s^2]

Dissection parameters:	
Distance to diameter factor	8
Minimal distance	1 m
Max. difference ground effect + diffraction	1,0 dB
Max. number of iterations	4
Assessment:	FIN 40 dB(A)

Reflection of "own" facade is suppressed

Grid Noise Map:	
Grid space:	5,00 m
Height above ground:	2,000 m
Grid interpolation:	
Field size =	9x9
Min/Max =	10,0 dB
Difference =	0,1 dB
Limit level=	40,0 dB

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise calculation model:
Finland Low frequency
Wind speed (in 10 m height):
Highest noise value at receptor
Spectral distribution:
From 20.0 Hz to 200.0 Hz
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure tone penalty is subtracted from demand
Model: 5.0 dB(A)
Height above ground level, when no value in NSA object:
4.0 m; Don't allow override of model height with height from NSA object
Uncertainty margin:
0.0 dB; Uncertainty margin in NSA has priority
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)
Low frequency calculation
dLsigma

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
7.6	8.3	9.2	10.3	11.5	13.0	14.8	16.8	18.8	21.1	22.8

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89

WTG: FUTURE F200 9.0 MW 9000 200.0 !-!
Noise: N175 Third octave SPL w STE Mode 0 + 2 dB

Source	Source/Date	Creator	Edited
Based on F008_278_A17_EN revision 03, 2023-20-13	02-Sep-24	USER	03-Sep-24 12:10

Based on F008_278_A17_EN revision 03, 2023-20-13, third octave sound power levels, 2 dB added, 179m hub height

Status	Hub height	Wind speed	LwA,ref	20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
	[m]	[m/s]	[dB(A)]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From Windcat	200.0	8.0	101.21	73.8	77.2	79.1	80.3	82.3	86.6	89.3	90.9	93.5	95.5	96.5

Noise sensitive area: HH Etelälahti 2 Noise sensitive point: Finnish normal frequency - User defined (305)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Etelälahti 5 Noise sensitive point: Finnish normal frequency - User defined (303)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise sensitive area: HH Eteläniemi 1 Noise sensitive point: Finnish normal frequency - User defined (304)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Eteläniemi 2 Noise sensitive point: Finnish normal frequency - User defined (284)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (295)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Haukijärvi 2 Noise sensitive point: Finnish normal frequency - User defined (296)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Haukijärvi 3 Noise sensitive point: Finnish normal frequency - User defined (294)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Hiekkaranta Noise sensitive point: Finnish normal frequency - User defined (300)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Iso Mäkijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (292)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kallioniemi 2 Noise sensitive point: Finnish normal frequency - User defined (290)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kauvanjärvi 5 Noise sensitive point: Finnish normal frequency - User defined (301)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kellarimäentie Noise sensitive point: Finnish normal frequency - User defined (331)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Koivuharju Noise sensitive point: Finnish normal frequency - User defined (281)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Koivula 3 Noise sensitive point: Finnish normal frequency - User defined (291)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Korsu 1 Noise sensitive point: Finnish normal frequency - User defined (299)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kuusela Noise sensitive point: Finnish normal frequency - User defined (298)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Lammaslahti 2 Noise sensitive point: Finnish normal frequency - User defined (283)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Lehtoharju 2 Noise sensitive point: Finnish normal frequency - User defined (293)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Leinolanlahti Noise sensitive point: Finnish normal frequency - User defined (297)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise sensitive area: HH Mustalahti 1 Noise sensitive point: Finnish normal frequency - User defined (280)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Mustalahti 6 Noise sensitive point: Finnish normal frequency - User defined (282)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Pajaniemi 1 Noise sensitive point: Finnish normal frequency - User defined (289)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Pieni Mäkijärvi Noise sensitive point: Finnish normal frequency - User defined (287)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Pohjoispäänsuo Noise sensitive point: Finnish normal frequency - User defined (285)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Rampsunniemi Noise sensitive point: Finnish normal frequency - User defined (302)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Rantala 1 Noise sensitive point: Finnish normal frequency - User defined (288)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Suonpää 1 Noise sensitive point: Finnish normal frequency - User defined (286)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Viitajärvi 3 Noise sensitive point: Finnish normal frequency - User defined (306)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (322)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Hiekkala Noise sensitive point: Finnish normal frequency - User defined (311)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Honkala Noise sensitive point: Finnish normal frequency - User defined (329)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Kauvanjärvi 2 Noise sensitive point: Finnish normal frequency - User defined (324)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Kirnumäki Noise sensitive point: Finnish normal frequency - User defined (307)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Koivuniemi Noise sensitive point: Finnish normal frequency - User defined (330)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Kotiranta Noise sensitive point: Finnish normal frequency - User defined (312)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Leväniemi Noise sensitive point: Finnish normal frequency - User defined (325)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise sensitive area: RH Mäkelä Noise sensitive point: Finnish normal frequency - User defined (315)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Mäntylä Noise sensitive point: Finnish normal frequency - User defined (317)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Mikkola Noise sensitive point: Finnish normal frequency - User defined (328)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Niskala Noise sensitive point: Finnish normal frequency - User defined (326)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Pajaniemi Noise sensitive point: Finnish normal frequency - User defined (316)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Purola Noise sensitive point: Finnish normal frequency - User defined (319)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Rinne 1 Noise sensitive point: Finnish normal frequency - User defined (314)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Rinne 2 Noise sensitive point: Finnish normal frequency - User defined (313)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Riuttalantie 2 Noise sensitive point: Finnish normal frequency - User defined (323)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Riuttasjärvi Noise sensitive point: Finnish normal frequency - User defined (308)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Ruunaharju Noise sensitive point: Finnish normal frequency - User defined (321)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Suoniemi Noise sensitive point: Finnish normal frequency - User defined (327)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Suonpää Noise sensitive point: Finnish normal frequency - User defined (309)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Törmäharju 2 Noise sensitive point: Finnish normal frequency - User defined (318)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Tuomaala Noise sensitive point: Finnish normal frequency - User defined (310)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Yläpelto Noise sensitive point: Finnish normal frequency - User defined (320)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Project:
Junnunmäen tuulivoimahanke

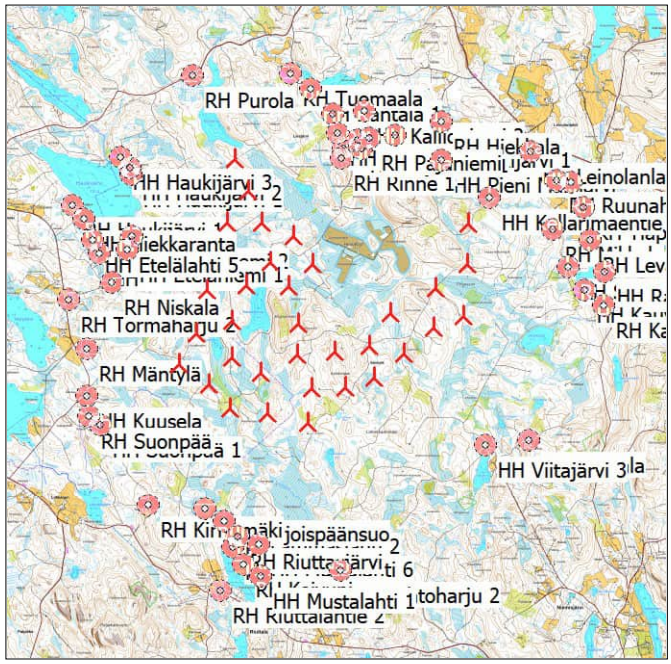
Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Main Result

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise calculation model:
Finland Low frequency
Wind speed (in 10 m height):
Highest noise value at receptor
Spectral distribution:
From 20.0 Hz to 200.0 Hz
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure tone penalty is subtracted from demand
Model: 5.0 dB(A)
Height above ground level, when no value in NSA object:
4.0 m; Don't allow override of model height with height from NSA object
Uncertainty margin:
0.0 dB; Uncertainty margin in NSA has priority
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89



Scale 1:125,000

New WTG
Noise sensitive area

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89

WTGs

	East	North	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Noise data Creator	Name	First wind speed	LwaRef	Last wind speed	LwaRef
			[m]					[kW]	[m]	[m]			[m/s]	[dB(A)]	[m/s]	[dB(A)]
1	506,228	6,991,024	141.2	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
2	506,093	6,989,975	144.7	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
3	506,452	6,990,494	149.6	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
4	506,676	6,989,980	149.2	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
5	507,189	6,989,762	147.1	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
6	505,759	6,988,872	149.8	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
7	506,410	6,988,944	145.8	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
8	506,818	6,989,332	147.7	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
9	507,508	6,989,297	143.2	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
10	505,590	6,988,149	146.7	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
11	506,171	6,988,361	151.8	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
12	505,307	6,987,642	144.2	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
13	506,171	6,987,759	147.7	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
14	507,115	6,988,928	147.6	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
15	505,803	6,987,313	141.6	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
16	506,660	6,987,495	144.8	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
17	507,262	6,987,801	171.6	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
18	507,281	6,988,309	170.5	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
19	506,144	6,986,908	136.4	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
20	506,763	6,986,835	144.8	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
21	507,877	6,987,851	191.5	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
22	508,449	6,987,951	160.0	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
23	508,802	6,988,487	146.6	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
24	507,428	6,986,670	157.3	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
25	507,501	6,987,253	157.7	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
26	508,050	6,987,256	183.5	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
27	508,524	6,987,415	172.0	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
28	509,014	6,987,821	157.5	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
29	509,520	6,988,245	167.0	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
30	509,545	6,988,903	141.8	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
31	510,011	6,988,431	139.4	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
32	510,062	6,989,288	143.3	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2
33	510,077	6,989,967	166.9	FUTURE F200 9.0 MW 9000 20...	Yes	FUTURE	F200 9.0 MW-9,000	9,000	200.0	200.0	USER	N175 Third octave SPL w STE Mode 0 + 2 dB	8.0	101.2	8.0	101.2

Calculation Results

Sound level

Noise sensitive area No.	Name	East	North	Z	Immission height	Most critical demand Frequency	Noise	Predicted sound level WTG noise	Demands fulfilled ? Noise
				[m]	[m]	[Hz]	[dB]	[dB]	
HH Etelälahti 2	Noise sensitive point: Finnish normal frequency - User defined (305)	503,994	6,989,467	133.0	4.0	63.0	42.00	37.87	Yes
HH Etelälahti 5	Noise sensitive point: Finnish normal frequency - User defined (303)	503,879	6,989,692	132.9	4.0	63.0	42.00	37.35	Yes
HH Eteläniemi 1	Noise sensitive point: Finnish normal frequency - User defined (304)	504,445	6,989,536	135.3	4.0	63.0	42.00	39.16	Yes
HH Eteläniemi 2	Noise sensitive point: Finnish normal frequency - User defined (284)	504,526	6,989,762	133.6	4.0	63.0	42.00	39.15	Yes
HH Haukijärvi 1	Noise sensitive point: Finnish normal frequency - User defined (295)	504,507	6,990,771	135.5	4.0	63.0	42.00	37.74	Yes

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Main Result

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

...continued from previous page

Noise sensitive area						Most critical demand		Predicted sound level	Demands fulfilled ?
No.	Name	East	North	Z	Immission height	Frequency	Noise	WTG noise	Noise
				[m]	[m]	[Hz]	[dB]	[dB]	
HH Haukijärvi 2	Noise sensitive point: Finnish normal frequency - User defined (296)	504,502	6,990,875	137.3	4.0	63.0	42.00	37.57	Yes
HH Haukijärvi 3	Noise sensitive point: Finnish normal frequency - User defined (294)	504,343	6,991,054	134.4	4.0	63.0	42.00	36.89	Yes
HH Hiekkaranta	Noise sensitive point: Finnish normal frequency - User defined (300)	503,729	6,990,045	133.7	4.0	63.0	42.00	36.64	Yes
HH Iso Mäkijärvi 1	Noise sensitive point: Finnish normal frequency - User defined (292)	508,878	6,991,419	127.5	4.0	63.0	42.00	37.62	Yes
HH Kallioniemi 2	Noise sensitive point: Finnish normal frequency - User defined (290)	508,375	6,991,822	113.0	4.0	63.0	42.00	37.14	Yes
HH Kauvanjärvi 5	Noise sensitive point: Finnish normal frequency - User defined (301)	512,006	6,988,865	103.6	4.0	63.0	42.00	36.09	Yes
HH Kellarimäentie	Noise sensitive point: Finnish normal frequency - User defined (331)	510,437	6,990,387	134.4	4.0	63.0	42.00	40.73	Yes
HH Koivuharju	Noise sensitive point: Finnish normal frequency - User defined (281)	506,199	6,984,607	136.1	4.0	63.0	42.00	36.48	Yes
HH Koivula 3	Noise sensitive point: Finnish normal frequency - User defined (291)	507,929	6,991,452	116.7	4.0	63.0	42.00	38.54	Yes
HH Korsu 1	Noise sensitive point: Finnish normal frequency - User defined (299)	511,781	6,990,650	115.5	4.0	63.0	42.00	35.34	Yes
HH Kuusela	Noise sensitive point: Finnish normal frequency - User defined (298)	503,785	6,987,116	121.7	4.0	63.0	42.00	37.49	Yes
HH Lammaslahti 2	Noise sensitive point: Finnish normal frequency - User defined (283)	506,054	6,985,044	137.6	4.0	63.0	42.00	37.58	Yes
HH Lehtoharju 2	Noise sensitive point: Finnish normal frequency - User defined (293)	507,975	6,984,227	177.6	4.0	63.0	42.00	35.64	Yes
HH Leinolanlahti	Noise sensitive point: Finnish normal frequency - User defined (297)	511,109	6,991,156	118.0	4.0	63.0	42.00	35.90	Yes
HH Mustalahti 1	Noise sensitive point: Finnish normal frequency - User defined (280)	506,652	6,984,134	136.9	4.0	63.0	42.00	35.51	Yes
HH Mustalahti 6	Noise sensitive point: Finnish normal frequency - User defined (282)	506,623	6,984,659	144.1	4.0	63.0	42.00	36.82	Yes
HH Pajaniemi 1	Noise sensitive point: Finnish normal frequency - User defined (289)	508,263	6,991,335	111.0	4.0	63.0	42.00	38.40	Yes
HH Pieni Mäkijärvi	Noise sensitive point: Finnish normal frequency - User defined (287)	509,646	6,991,011	128.0	4.0	63.0	42.00	38.33	Yes
HH Pohjoispäänsuo	Noise sensitive point: Finnish normal frequency - User defined (285)	505,736	6,985,245	135.1	4.0	63.0	42.00	37.84	Yes
HH Rampsunniemi	Noise sensitive point: Finnish normal frequency - User defined (302)	512,334	6,989,169	103.7	4.0	63.0	42.00	35.16	Yes
HH Rantala 1	Noise sensitive point: Finnish normal frequency - User defined (288)	507,480	6,992,179	111.7	4.0	63.0	42.00	37.10	Yes
HH Suonpää 1	Noise sensitive point: Finnish normal frequency - User defined (286)	504,003	6,986,640	125.8	4.0	63.0	42.00	37.53	Yes
HH Viitajärvi 3	Noise sensitive point: Finnish normal frequency - User defined (306)	510,367	6,986,315	153.1	4.0	63.0	42.00	37.51	Yes
RH Haukijärvi 1	Noise sensitive point: Finnish normal frequency - User defined (322)	503,550	6,990,267	137.8	4.0	63.0	42.00	36.01	Yes
RH Hiekkala	Noise sensitive point: Finnish normal frequency - User defined (311)	509,639	6,991,647	116.1	4.0	63.0	42.00	36.55	Yes
RH Honkala	Noise sensitive point: Finnish normal frequency - User defined (329)	511,077	6,986,393	167.2	4.0	63.0	42.00	36.21	Yes
RH Kauvanjärvi 2	Noise sensitive point: Finnish normal frequency - User defined (324)	512,325	6,988,609	104.5	4.0	63.0	42.00	35.22	Yes
RH Kirnumäki	Noise sensitive point: Finnish normal frequency - User defined (307)	504,794	6,985,307	151.2	4.0	63.0	42.00	36.64	Yes
RH Koivuniemi	Noise sensitive point: Finnish normal frequency - User defined (330)	506,372	6,984,325	138.7	4.0	63.0	42.00	35.86	Yes
RH Kotiranta	Noise sensitive point: Finnish normal frequency - User defined (312)	508,315	6,991,192	117.9	4.0	63.0	42.00	38.69	Yes
RH Leväniemi	Noise sensitive point: Finnish normal frequency - User defined (325)	512,094	6,989,693	101.1	4.0	63.0	42.00	35.55	Yes
RH Mikkola	Noise sensitive point: Finnish normal frequency - User defined (328)	511,477	6,989,862	101.5	4.0	63.0	42.00	37.26	Yes
RH Mäkelä	Noise sensitive point: Finnish normal frequency - User defined (315)	507,841	6,991,773	110.5	4.0	63.0	42.00	37.81	Yes
RH Mäntylä	Noise sensitive point: Finnish normal frequency - User defined (317)	503,784	6,987,891	118.4	4.0	63.0	42.00	37.95	Yes
RH Niskala	Noise sensitive point: Finnish normal frequency - User defined (326)	504,198	6,988,992	136.4	4.0	63.0	42.00	38.92	Yes
RH Pajaniemi	Noise sensitive point: Finnish normal frequency - User defined (316)	508,448	6,991,378	119.3	4.0	63.0	42.00	38.10	Yes
RH Purola	Noise sensitive point: Finnish normal frequency - User defined (319)	505,527	6,992,413	136.4	4.0	63.0	42.00	36.27	Yes
RH Rinne 1	Noise sensitive point: Finnish normal frequency - User defined (314)	507,984	6,991,040	122.5	4.0	63.0	42.00	39.55	Yes
RH Rinne 2	Noise sensitive point: Finnish normal frequency - User defined (313)	508,027	6,991,194	122.5	4.0	63.0	42.00	39.08	Yes
RH Riuttalantie 2	Noise sensitive point: Finnish normal frequency - User defined (323)	505,986	6,983,903	144.9	4.0	63.0	42.00	34.73	Yes
RH Riuttasjärvi	Noise sensitive point: Finnish normal frequency - User defined (308)	506,280	6,984,785	154.5	4.0	63.0	42.00	37.01	Yes
RH Ruunaharju	Noise sensitive point: Finnish normal frequency - User defined (321)	511,546	6,990,671	118.2	4.0	63.0	42.00	35.87	Yes
RH Suoniemi	Noise sensitive point: Finnish normal frequency - User defined (327)	511,736	6,989,254	102.9	4.0	63.0	42.00	36.83	Yes
RH Suonpää	Noise sensitive point: Finnish normal frequency - User defined (309)	503,816	6,986,791	120.3	4.0	63.0	42.00	37.21	Yes
RH Tuomaala	Noise sensitive point: Finnish normal frequency - User defined (310)	507,154	6,992,433	113.8	4.0	63.0	42.00	36.64	Yes
RH Törmäharju 2	Noise sensitive point: Finnish normal frequency - User defined (318)	503,481	6,988,712	118.1	4.0	63.0	42.00	36.92	Yes
RH Yläpelto	Noise sensitive point: Finnish normal frequency - User defined (320)	511,983	6,990,235	102.2	4.0	63.0	42.00	35.37	Yes

*)Spectral distribution, please see details in report "Detailed results"

Distances (m)

	WTG																					
NSA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
HH Etelälahti 2	2723	2160	2664	2731	3209	1863	2473	2828	3518	2070	2443	2249	2768	3168	2813	3317	3668	3485	3343	3821	4206	4707
HH Etelälahti 5	2700	2233	2695	2812	3311	2052	2640	2961	3650	2304	2651	2499	2999	3325	3060	3545	3876	3673	3590	4060	4401	4891
HH Eteläniemi 1	2322	1706	2224	2275	2754	1473	2053	2382	3072	1798	2088	2081	2477	2739	2605	3012	3308	3090	3130	3559	3823	4307
HH Eteläniemi 2	2119	1582	2060	2161	2663	1521	2054	2332	3018	1932	2161	2259	2592	2720	2761	3113	3366	3115	3281	3684	3857	4321
HH Haukijärvi 1	1739	1774	1964	2308	2865	2274	2638	2722	3343	2836	2928	3229	3440	3193	3692	3919	4050	3708	4195	4536	4458	4847
HH Haukijärvi 2	1732	1828	1987	2351	2909	2365	2715	2783	3395	2934	3017	3332	3535	3258	3792	4010	4131	3782	4293	4629	4531	4912
HH Haukijärvi 3	1885	2056	2182	2568	3126	2601	2954	3015	3620	3161	3254	3545	3768	3493	4015	4246	4370	4020	4520	4863	4769	5147
HH Hiekkaranta	2684	2365	2759	2948	3472	2345	2898	3170	3852	2656	2966	2875	3345	3565	3430	3885	4185	3953	3959	4417	4692	5164
HH Iso Mäkijärvi 1	2679	3136	2596	2630	2366	4026	3495	2932	2526	4637	4083	5198	4552	3051	5129	4507	3962	3496	5274	5048	3705	3494
HH Kallioniemi 2	2291	2935	2337	2506	2377	3943	3485	2937	2670	4609	4103	5185	4622	3156	5190	4654	4172	3679	5396	5241	4001	3871
HH Kauvanjärvi 5	6168	6016	5788	5445	4899	6247	5596	5209	4519	6456	5856	6810	5938	4891	6394	5518	4862	4757	6179	5622	4252	3672
HH Kellarimäentie	4257	4363	3987	3783	3308	4918	4278	3770	3126	5339	4723	5819	5011	3629	5561	4757	4096	3779	5526	5111	3604	3144
HH Koivuharju	6416	5369	5892	5393	5248	4287	4342	4765	4868	3594	3754	3163	3152	4417	2735	2924	3366	3856	2301	2298	3652	4030
HH Koivula 3	1754	2356	1761	1933	1845	3371	2932	2394	2196	4047	3556	4625	4090	2652	4653	4155	3712	3209	4882	4762	3601	3540
HH Korsu 1	5565	5727	5331	5148	4676	6279	5635	5135	4482	6677	6058	7139	6310	4973	6846	6014	5342	5072	6765	6303	4803	4287
HH Kuusela	4609	3675	4303	4069	4311	2642	3199	3756	4314	2079	2692	1610	2471	3791	2027	2900	3543	3694	2368	2990	4157	4738
HH Lammaslahti 2	5982	4931	5464	4975	4852	3839	3916	4355	4494	3140	3319	2703	2718	4026	2283	2525	3010	3488	1866	1926	3347	3767
HH Lehtoharju 2	7018	6048	6449	5897	5590	5146	4970	5234	5091	4591	4510	4333	3966	4779	3774	3523	3644	4140	3246	2876	3626	3754
HH Leinolanlahti	4883	5153	4704	4586	4160	5817	5193	4663	4053	6285	5674	6784	5993	4573	6551	5761	5105	4771	6534	6129	4623	4165
HH Mustalahti 1	6903	5868	6363	5846	5654	4821	4816	5201	5233	4154	4255	3757	3657	4817	3291	3362	3718	4222	2820	2704	3914	4219
HH Mustalahti 6	6377	5342	5837	5321	5134	4300	4290	4677	4721	3640	3729	3260	3133	4297	2778	2836	3206	3709	2299	2180	3429	3764
HH Pajaniemi 1	2059	2561	1998	2087	1905	3513	3025	2470	2174	4159	3636	4731	4143	2667	4714	4161	3673	3181	4908	4744	3505	3389
HH Pieni Mäkijärvi	3419	3701	3236	3144	2756	4437	3840	3289	2741	4964	4370	5494	4759	3278	5333	4613	3999	3591	5394	5075	3621	3286
HH Pohjoispäänsuo	5800	4744	5297	4827	4745	3627	3760	4228	4422	2908	3147	2435	2552	3933	2070	2433	2977	3432	1713	1893	3373	3832
HH Rampsunniemi	6382	6293	6030	5716	5179	6582	5928	5519	4828	6821	6215	7191	6322	5225	6789	5915	5254	5126	6590	6040	4648	4071
HH Rantala 1	1704	2604	1974	2342	2435	3728	3407	2923	2882	4451	4036	5031	4610	3271	5146	4755	4383	3875	5438	5392	4346	4338

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Main Result

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

...continued from previous page

	WTG																					
NSA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
HH Suonpää 1	4916	3936	4566	4278	4461	2840	3332	3895	4398	2190	2769	1644	2440	3863	1922	2792	3459	3678	2158	2767	4059	4636
HH Viitajärvi 3	6269	5627	5726	5201	4688	5270	4751	4658	4131	5118	4668	5232	4438	4172	4672	3890	3443	3675	4265	3642	2927	2521
RH Haukijärvi 1	2783	2560	2910	3139	3674	2613	3151	3399	4075	2940	3241	3159	3628	3808	3715	4166	4456	4213	4244	4701	4955	5419
RH Hiekkala	3468	3920	3390	3400	3091	4770	4211	3649	3173	5351	4777	5900	5210	3710	5787	5110	4521	4087	5888	5606	4184	3882
RH Honkala	6705	6137	6181	5677	5144	5867	5318	5174	4601	5761	5285	5904	5092	4703	5353	4552	4066	4252	4959	4337	3517	3054
RH Kauvanjärvi 2	6558	6379	6168	5813	5263	6571	5924	5554	4866	6751	6159	7084	6212	5220	6649	5773	5127	5053	6410	5838	4512	3931
RH Kirnumäki	5894	4846	5445	5038	5058	3693	3980	4505	4825	2952	3351	2391	2813	4301	2246	2876	3509	3899	2095	2493	3997	4512
RH Koivuniemi	6700	5657	6169	5663	5498	4588	4619	5026	5100	3904	4041	3484	3440	4662	3042	3183	3588	4086	2593	2540	3834	4179
RH Kotiranta	2094	2533	1990	2038	1820	3452	2946	2388	2060	4085	3551	4653	4047	2562	4621	4050	3551	3063	4802	4625	3369	3244
RH Leväniemi	6016	6008	5699	5426	4906	6388	5733	5289	4604	6685	6071	7091	6231	5038	6726	5862	5190	5008	6569	6049	4602	4040
RH Mikkola	5376	5385	5065	4802	4289	5803	5149	4689	4009	6131	5513	6557	5707	4461	6220	5366	4692	4474	6096	5602	4123	3580
RH Mäkelä	1778	2507	1889	2138	2114	3571	3170	2647	2499	4266	3798	4846	4347	2936	4903	4438	4014	3509	5152	5054	3922	3870
RH Mäntylä	3973	3111	3727	3567	3885	2205	2830	3359	3980	1824	2433	1543	2391	3489	2100	2904	3479	3522	2557	3161	4093	4666
RH Niskala	2872	2135	2708	2667	3088	1565	2212	2642	3323	1626	2071	1746	2326	2917	2322	2881	3286	3157	2851	3350	3851	4377
RH Pajaniemi	2249	2742	2184	2258	2049	3676	3175	2617	2284	4313	3780	4882	4276	2790	4850	4275	3769	3284	5029	4846	3573	3427
RH Purola	1556	2503	2130	2691	3129	3549	3579	3341	3692	4264	4102	4776	4698	3829	5107	5046	4927	4463	5539	5713	5131	5334
RH Rinne 1	1757	2171	1627	1684	1506	3107	2622	2069	1808	3754	3235	4327	3749	2284	4318	3784	3319	2820	4523	4379	3191	3124
RH Rinne 2	1807	2286	1724	1817	1660	3246	2771	2221	1967	3900	3387	4474	3904	2443	4473	3943	3479	2980	4681	4539	3346	3271
RH Riuttalantie 2	7125	6073	6607	6115	5981	4973	5059	5492	5604	4264	4462	3800	3860	5150	3415	3655	4101	4592	3009	3033	4378	4739
RH Riuttasjärvi	6239	5193	5711	5210	5059	4120	4161	4578	4676	3435	3578	3018	2976	4226	2573	2737	3172	3663	2127	2106	3457	3838
RH Ruunaharju	5329	5496	5097	4918	4450	6060	5418	4914	4265	6468	5850	6935	6112	4761	6652	5827	5156	4875	6583	6131	4627	4121
RH Suoniemi	5785	5688	5428	5112	4575	5989	5335	4919	4228	6245	5636	6628	5762	4632	6242	5372	4704	4554	6064	5530	4106	3535
RH Suonpää	4872	3914	4545	4283	4495	2847	3371	3933	4461	2234	2830	1716	2546	3930	2054	2930	3590	3783	2331	2947	4196	4776
RH Tuomaala	1686	2677	2063	2500	2671	3825	3567	3119	3156	4560	4189	5135	4776	3505	5295	4962	4633	4126	5616	5611	4638	4665
RH Törmäharju 2	3591	2902	3464	3438	3854	2284	2939	3394	4069	2182	2713	2116	2854	3641	2711	3404	3889	3821	3217	3780	4479	5027
RH Yläpelto	5808	5895	5537	5313	4816	6371	5720	5243	4572	6725	6106	7162	6317	5040	6835	5986	5312	5081	6720	6230	4748	4207

	WTG										
NSA	23	24	25	26	27	28	29	30	31	32	33
HH Etelälahti 2	4907	4429	4148	4619	4974	5283	5660	5580	6106	6071	6104
HH Etelälahti 5	5068	4662	4367	4830	5173	5465	5824	5721	6260	6196	6205
HH Eteläniemi 1	4482	4137	3815	4265	4598	4880	5237	5139	5675	5623	5649
HH Eteläniemi 2	4462	4240	3892	4324	4636	4889	5219	5092	5644	5556	5555
HH Haukijärvi 1	4864	5034	4619	4990	5234	5386	5613	5372	5980	5749	5628
HH Haukijärvi 2	4918	5123	4702	5067	5305	5448	5665	5414	6027	5782	5649
HH Haukijärvi 3	5145	5360	4942	5306	5543	5680	5889	5629	6245	5985	5836
HH Hiekkaranta	5307	5007	4693	5142	5469	5733	6064	5927	6486	6378	6349
HH Iso Mäkijärvi 1	2933	4965	4387	4244	4019	3600	3238	2603	3196	2438	1883
HH Kallioniemi 2	3362	5238	4652	4577	4409	4051	3756	3145	3765	3044	2518
HH Kauvanjärvi 5	3226	5077	4784	4271	3772	3169	2562	2462	2042	1989	2221
HH Kellarimäentie	2507	4783	4295	3938	3535	2935	2331	1732	2003	1162	553
HH Koivuharju	4671	2401	2948	3231	3645	4272	4925	5444	5399	6068	6615
HH Koivula 3	3091	4808	4221	4198	4081	3790	3580	3019	3669	3039	2612
HH Korsu 1	3682	5898	5464	5044	4591	3957	3301	2838	2839	2193	1835
HH Kuusela	5200	3670	3718	4266	4748	5276	5844	6030	6363	6642	6908
HH Lammaslahti 2	4405	2129	2641	2979	3424	4058	4718	5203	5208	5837	6358
HH Lehtoharju 2	4339	2503	3063	3030	3235	3741	4304	4932	4671	5474	6113
HH Leinolanlahti	3528	5803	5315	4957	4548	3939	3317	2743	2938	2142	1574
HH Mustalahti 1	4855	2652	3233	3421	3778	4379	5013	5578	5454	6180	6765
HH Mustalahti 6	4404	2166	2738	2963	3347	3964	4609	5152	5069	5766	6333
HH Pajaniemi 1	2899	4739	4153	4084	3929	3593	3336	2749	3389	2725	2272
HH Pieni Mäkijärvi	2662	4875	4327	4080	3767	3252	2769	2111	2606	1772	1129
HH Pohjoispäänsuo	4462	2212	2673	3065	3533	4169	4828	5280	5331	5921	6414
HH Rampsunniemi	3598	5506	5199	4692	4194	3583	2962	2802	2438	2275	2394
HH Rantala 1	3922	5509	4926	4955	4877	4620	4432	3873	4523	3876	3412
HH Suonpää 1	5142	3425	3552	4093	4587	5148	5745	5986	6269	6612	6926
HH Viitajärvi 3	2677	2961	3016	2502	2147	2025	2108	2715	2145	2989	3663
RH Haukijärvi 1	5545	5289	4969	5414	5733	5986	6303	6148	6716	6585	6534
RH Hiekkala	3269	5446	4886	4669	4376	3876	3404	2746	3237	2396	1736
RH Honkala	3092	3659	3678	3148	2750	2509	2419	2940	2299	3067	3711
RH Kauvanjärvi 2	3525	5267	5011	4484	3984	3404	2829	2796	2321	2363	2626
RH Kirnumäki	5116	2966	3334	3795	4285	4912	5565	5958	6081	6603	7045
RH Koivuniemi	4819	2572	3138	3377	3765	4382	5027	5569	5486	6184	6750
RH Kotiranta	2749	4608	4022	3944	3783	3442	3184	2599	3240	2584	2146
RH Leväniemi	3507	5560	5201	4722	4235	3605	2954	2669	2436	2072	2036
RH Mikkola	3008	5155	4755	4305	3835	3199	2539	2157	2049	1527	1403
RH Mäkelä	3424	5120	4533	4521	4411	4122	3907	3338	3985	3333	2875
RH Mäntylä	5053	3843	3772	4313	4764	5230	5747	5849	6250	6432	6627

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Main Result

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

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	WTG										
NSA	23	24	25	26	27	28	29	30	31	32	33
RH Niskala	4631	3977	3732	4224	4604	4955	5373	5347	5839	5871	5959
RH Pajaniemi	2913	4818	4233	4141	3964	3602	3312	2708	3336	2641	2155
RH Purola	5113	6049	5525	5740	5828	5765	5772	5335	5997	5507	5166
RH Rinne 1	2681	4406	3818	3784	3665	3380	3189	2646	3304	2718	2352
RH Rinne 2	2816	4564	3976	3938	3812	3515	3306	2749	3402	2788	2390
RH Riuttalantie 2	5379	3120	3676	3937	4333	4951	5598	6137	6058	6753	7315
RH Riuttasjärvi	4479	2207	2753	3039	3457	4085	4740	5255	5216	5880	6424
RH Ruunaharju	3507	5741	5295	4887	4442	3812	3161	2670	2716	2028	1628
RH Suoniemi	3033	5023	4684	4193	3701	3076	2435	2219	1911	1674	1805
RH Suonpää	5266	3614	3714	4259	4749	5298	5886	6105	6408	6726	7021
RH Tuomaala	4276	5769	5192	5253	5202	4972	4810	4263	4917	4283	3824
RH Törmäharju 2	5326	4444	4277	4795	5207	5604	6057	6067	6536	6606	6715
RH Yläpelto	3630	5784	5383	4934	4463	3827	3167	2778	2673	2142	1924

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Assumptions

Cmet: Meteorological correction

Calculation Results

Noise sensitive area: HH Etelälahti 2 Noise sensitive point: Finnish normal frequency - User defined (305)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,723	2,731						
1			20	42.57	73.8	0.00	5.60	7.60
1			25	39.22	77.2	0.05	5.40	8.30
1			32	34.69	79.1	0.08	5.20	9.20
1			40	29.74	80.3	0.14	5.00	10.30
1			50	25.78	82.3	0.19	4.70	11.50
1			63	24.07	86.6	0.30	4.30	13.00
1			80	20.54	89.3	0.44	3.70	14.80
1			100	15.79	90.9	0.68	3.00	16.80
1			125	11.84	93.5	1.04	1.80	18.80
1			160	6.52	95.5	1.56	0.00	21.10
1			200	2.64	96.5	2.24	0.00	22.80
10	2,070	2,081						
10			20	44.94	73.8	0.00	5.60	7.60
10			25	41.59	77.2	0.04	5.40	8.30
10			32	37.07	79.1	0.06	5.20	9.20
10			40	32.13	80.3	0.10	5.00	10.30
10			50	28.19	82.3	0.15	4.70	11.50
10			63	26.51	86.6	0.23	4.30	13.00
10			80	23.00	89.3	0.33	3.70	14.80
10			100	18.32	90.9	0.52	3.00	16.80
10			125	14.45	93.5	0.79	1.80	18.80
10			160	9.25	95.5	1.19	0.00	21.10
10			200	5.53	96.5	1.71	0.00	22.80
11	2,443	2,452						
11			20	43.51	73.8	0.00	5.60	7.60
11			25	40.16	77.2	0.05	5.40	8.30
11			32	35.64	79.1	0.07	5.20	9.20
11			40	30.69	80.3	0.12	5.00	10.30
11			50	26.74	82.3	0.17	4.70	11.50
11			63	25.04	86.6	0.27	4.30	13.00
11			80	21.52	89.3	0.39	3.70	14.80
11			100	16.80	90.9	0.61	3.00	16.80
11			125	12.88	93.5	0.93	1.80	18.80
11			160	7.61	95.5	1.40	0.00	21.10
11			200	3.80	96.5	2.01	0.00	22.80
12	2,249	2,258						
12			20	44.22	73.8	0.00	5.60	7.60
12			25	40.88	77.2	0.05	5.40	8.30
12			32	36.36	79.1	0.07	5.20	9.20
12			40	31.41	80.3	0.11	5.00	10.30
12			50	27.47	82.3	0.16	4.70	11.50
12			63	25.78	86.6	0.25	4.30	13.00
12			80	22.26	89.3	0.36	3.70	14.80
12			100	17.56	90.9	0.56	3.00	16.80
12			125	13.67	93.5	0.86	1.80	18.80
12			160	8.44	95.5	1.29	0.00	21.10
12			200	4.67	96.5	1.85	0.00	22.80
13	2,768	2,776						
13			20	42.43	73.8	0.00	5.60	7.60
13			25	39.08	77.2	0.06	5.40	8.30
13			32	34.55	79.1	0.08	5.20	9.20
13			40	29.59	80.3	0.14	5.00	10.30
13			50	25.64	82.3	0.19	4.70	11.50
13			63	23.93	86.6	0.31	4.30	13.00
13			80	20.39	89.3	0.44	3.70	14.80
13			100	15.64	90.9	0.69	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			125	11.68	93.5	1.05	1.80	18.80
13			160	6.35	95.5	1.58	0.00	21.10
13			200	2.46	96.5	2.28	0.00	22.80
14	3,168	3,175						
14			20	41.27	73.8	0.00	5.60	7.60
14			25	37.90	77.2	0.06	5.40	8.30
14			32	33.37	79.1	0.10	5.20	9.20
14			40	28.41	80.3	0.16	5.00	10.30
14			50	24.44	82.3	0.22	4.70	11.50
14			63	22.72	86.6	0.35	4.30	13.00
14			80	19.16	89.3	0.51	3.70	14.80
14			100	14.37	90.9	0.79	3.00	16.80
14			125	10.36	93.5	1.21	1.80	18.80
14			160	4.96	95.5	1.81	0.00	21.10
14			200	0.96	96.5	2.60	0.00	22.80
15	2,813	2,821						
15			20	42.29	73.8	0.00	5.60	7.60
15			25	38.94	77.2	0.06	5.40	8.30
15			32	34.41	79.1	0.08	5.20	9.20
15			40	29.45	80.3	0.14	5.00	10.30
15			50	25.50	82.3	0.20	4.70	11.50
15			63	23.78	86.6	0.31	4.30	13.00
15			80	20.24	89.3	0.45	3.70	14.80
15			100	15.49	90.9	0.71	3.00	16.80
15			125	11.52	93.5	1.07	1.80	18.80
15			160	6.19	95.5	1.61	0.00	21.10
15			200	2.28	96.5	2.31	0.00	22.80
16	3,317	3,323						
16			20	40.87	73.8	0.00	5.60	7.60
16			25	37.50	77.2	0.07	5.40	8.30
16			32	32.97	79.1	0.10	5.20	9.20
16			40	28.00	80.3	0.17	5.00	10.30
16			50	24.04	82.3	0.23	4.70	11.50
16			63	22.30	86.6	0.37	4.30	13.00
16			80	18.74	89.3	0.53	3.70	14.80
16			100	13.94	90.9	0.83	3.00	16.80
16			125	9.91	93.5	1.26	1.80	18.80
16			160	4.47	95.5	1.89	0.00	21.10
16			200	0.44	96.5	2.73	0.00	22.80
17	3,668	3,676						
17			20	39.99	73.8	0.00	5.60	7.60
17			25	36.62	77.2	0.07	5.40	8.30
17			32	32.08	79.1	0.11	5.20	9.20
17			40	27.11	80.3	0.18	5.00	10.30
17			50	23.14	82.3	0.26	4.70	11.50
17			63	21.39	86.6	0.40	4.30	13.00
17			80	17.80	89.3	0.59	3.70	14.80
17			100	12.97	90.9	0.92	3.00	16.80
17			125	8.90	93.5	1.40	1.80	18.80
17			160	3.40	95.5	2.10	0.00	21.10
17			200	-0.72	96.5	3.01	0.00	22.80
18	3,485	3,493						
18			20	40.44	73.8	0.00	5.60	7.60
18			25	37.07	77.2	0.07	5.40	8.30
18			32	32.53	79.1	0.10	5.20	9.20
18			40	27.56	80.3	0.17	5.00	10.30
18			50	23.59	82.3	0.24	4.70	11.50
18			63	21.85	86.6	0.38	4.30	13.00
18			80	18.28	89.3	0.56	3.70	14.80
18			100	13.46	90.9	0.87	3.00	16.80
18			125	9.41	93.5	1.33	1.80	18.80
18			160	3.94	95.5	1.99	0.00	21.10
18			200	-0.13	96.5	2.86	0.00	22.80
19	3,343	3,349						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			20	40.80	73.8	0.00	5.60	7.60
19			25	37.43	77.2	0.07	5.40	8.30
19			32	32.90	79.1	0.10	5.20	9.20
19			40	27.93	80.3	0.17	5.00	10.30
19			50	23.97	82.3	0.23	4.70	11.50
19			63	22.23	86.6	0.37	4.30	13.00
19			80	18.67	89.3	0.54	3.70	14.80
19			100	13.86	90.9	0.84	3.00	16.80
19			125	9.83	93.5	1.27	1.80	18.80
19			160	4.39	95.5	1.91	0.00	21.10
19			200	0.36	96.5	2.75	0.00	22.80
2	2,160	2,170						
2			20	44.57	73.8	0.00	5.60	7.60
2			25	41.23	77.2	0.04	5.40	8.30
2			32	36.70	79.1	0.07	5.20	9.20
2			40	31.76	80.3	0.11	5.00	10.30
2			50	27.82	82.3	0.15	4.70	11.50
2			63	26.13	86.6	0.24	4.30	13.00
2			80	22.62	89.3	0.35	3.70	14.80
2			100	17.93	90.9	0.54	3.00	16.80
2			125	14.05	93.5	0.82	1.80	18.80
2			160	8.83	95.5	1.24	0.00	21.10
2			200	5.09	96.5	1.78	0.00	22.80
20	3,821	3,826						
20			20	39.64	73.8	0.00	5.60	7.60
20			25	36.27	77.2	0.08	5.40	8.30
20			32	31.73	79.1	0.11	5.20	9.20
20			40	26.75	80.3	0.19	5.00	10.30
20			50	22.78	82.3	0.27	4.70	11.50
20			63	21.02	86.6	0.42	4.30	13.00
20			80	17.43	89.3	0.61	3.70	14.80
20			100	12.59	90.9	0.96	3.00	16.80
20			125	8.49	93.5	1.45	1.80	18.80
20			160	2.96	95.5	2.18	0.00	21.10
20			200	-1.19	96.5	3.14	0.00	22.80
21	4,206	4,214						
21			20	38.81	73.8	0.00	5.60	7.60
21			25	35.42	77.2	0.08	5.40	8.30
21			32	30.88	79.1	0.13	5.20	9.20
21			40	25.90	80.3	0.21	5.00	10.30
21			50	21.91	82.3	0.29	4.70	11.50
21			63	20.14	86.6	0.46	4.30	13.00
21			80	16.53	89.3	0.67	3.70	14.80
21			100	11.65	90.9	1.05	3.00	16.80
21			125	7.51	93.5	1.60	1.80	18.80
21			160	1.91	95.5	2.40	0.00	21.10
21			200	-2.35	96.5	3.46	0.00	22.80
22	4,707	4,712						
22			20	37.84	73.8	0.00	5.60	7.60
22			25	34.44	77.2	0.09	5.40	8.30
22			32	29.89	79.1	0.14	5.20	9.20
22			40	24.90	80.3	0.24	5.00	10.30
22			50	20.91	82.3	0.33	4.70	11.50
22			63	19.12	86.6	0.52	4.30	13.00
22			80	15.48	89.3	0.75	3.70	14.80
22			100	10.56	90.9	1.18	3.00	16.80
22			125	6.35	93.5	1.79	1.80	18.80
22			160	0.65	95.5	2.69	0.00	21.10
22			200	-3.73	96.5	3.86	0.00	22.80
23	4,907	4,912						
23			20	37.48	73.8	0.00	5.60	7.60
23			25	34.08	77.2	0.10	5.40	8.30
23			32	29.53	79.1	0.15	5.20	9.20
23			40	24.53	80.3	0.25	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			50	20.53	82.3	0.34	4.70	11.50
23			63	18.74	86.6	0.54	4.30	13.00
23			80	15.09	89.3	0.79	3.70	14.80
23			100	10.15	90.9	1.23	3.00	16.80
23			125	5.91	93.5	1.87	1.80	18.80
23			160	0.18	95.5	2.80	0.00	21.10
23			200	-4.25	96.5	4.03	0.00	22.80
24	4,429	4,435						
24			20	38.36	73.8	0.00	5.60	7.60
24			25	34.97	77.2	0.09	5.40	8.30
24			32	30.43	79.1	0.13	5.20	9.20
24			40	25.44	80.3	0.22	5.00	10.30
24			50	21.45	82.3	0.31	4.70	11.50
24			63	19.67	86.6	0.49	4.30	13.00
24			80	16.05	89.3	0.71	3.70	14.80
24			100	11.15	90.9	1.11	3.00	16.80
24			125	6.98	93.5	1.69	1.80	18.80
24			160	1.33	95.5	2.53	0.00	21.10
24			200	-2.97	96.5	3.64	0.00	22.80
25	4,148	4,154						
25			20	38.93	73.8	0.00	5.60	7.60
25			25	35.55	77.2	0.08	5.40	8.30
25			32	31.01	79.1	0.12	5.20	9.20
25			40	26.02	80.3	0.21	5.00	10.30
25			50	22.04	82.3	0.29	4.70	11.50
25			63	20.27	86.6	0.46	4.30	13.00
25			80	16.67	89.3	0.66	3.70	14.80
25			100	11.79	90.9	1.04	3.00	16.80
25			125	7.65	93.5	1.58	1.80	18.80
25			160	2.06	95.5	2.37	0.00	21.10
25			200	-2.18	96.5	3.41	0.00	22.80
26	4,619	4,626						
26			20	38.00	73.8	0.00	5.60	7.60
26			25	34.60	77.2	0.09	5.40	8.30
26			32	30.06	79.1	0.14	5.20	9.20
26			40	25.06	80.3	0.23	5.00	10.30
26			50	21.07	82.3	0.32	4.70	11.50
26			63	19.29	86.6	0.51	4.30	13.00
26			80	15.66	89.3	0.74	3.70	14.80
26			100	10.74	90.9	1.16	3.00	16.80
26			125	6.54	93.5	1.76	1.80	18.80
26			160	0.86	95.5	2.64	0.00	21.10
26			200	-3.50	96.5	3.79	0.00	22.80
27	4,974	4,979						
27			20	37.36	73.8	0.00	5.60	7.60
27			25	33.96	77.2	0.10	5.40	8.30
27			32	29.41	79.1	0.15	5.20	9.20
27			40	24.41	80.3	0.25	5.00	10.30
27			50	20.41	82.3	0.35	4.70	11.50
27			63	18.61	86.6	0.55	4.30	13.00
27			80	14.96	89.3	0.80	3.70	14.80
27			100	10.01	90.9	1.24	3.00	16.80
27			125	5.76	93.5	1.89	1.80	18.80
27			160	0.02	95.5	2.84	0.00	21.10
27			200	-4.43	96.5	4.08	0.00	22.80
28	5,283	5,288						
28			20	36.83	73.8	0.00	5.60	7.60
28			25	33.43	77.2	0.11	5.40	8.30
28			32	28.88	79.1	0.16	5.20	9.20
28			40	23.87	80.3	0.26	5.00	10.30
28			50	19.86	82.3	0.37	4.70	11.50
28			63	18.05	86.6	0.58	4.30	13.00
28			80	14.39	89.3	0.85	3.70	14.80
28			100	9.41	90.9	1.32	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			125	5.13	93.5	2.01	1.80	18.80
28			160	-0.68	95.5	3.01	0.00	21.10
28			200	-5.20	96.5	4.34	0.00	22.80
29	5,660	5,664						
29			20	36.24	73.8	0.00	5.60	7.60
29			25	32.82	77.2	0.11	5.40	8.30
29			32	28.27	79.1	0.17	5.20	9.20
29			40	23.25	80.3	0.28	5.00	10.30
29			50	19.24	82.3	0.40	4.70	11.50
29			63	17.41	86.6	0.62	4.30	13.00
29			80	13.73	89.3	0.91	3.70	14.80
29			100	8.72	90.9	1.42	3.00	16.80
29			125	4.38	93.5	2.15	1.80	18.80
29			160	-1.49	95.5	3.23	0.00	21.10
29			200	-6.11	96.5	4.64	0.00	22.80
3	2,664	2,672						
3			20	42.76	73.8	0.00	5.60	7.60
3			25	39.41	77.2	0.05	5.40	8.30
3			32	34.88	79.1	0.08	5.20	9.20
3			40	29.93	80.3	0.13	5.00	10.30
3			50	25.98	82.3	0.19	4.70	11.50
3			63	24.27	86.6	0.29	4.30	13.00
3			80	20.74	89.3	0.43	3.70	14.80
3			100	15.99	90.9	0.67	3.00	16.80
3			125	12.05	93.5	1.02	1.80	18.80
3			160	6.74	95.5	1.52	0.00	21.10
3			200	2.87	96.5	2.19	0.00	22.80
30	5,580	5,583						
30			20	36.36	73.8	0.00	5.60	7.60
30			25	32.95	77.2	0.11	5.40	8.30
30			32	28.39	79.1	0.17	5.20	9.20
30			40	23.38	80.3	0.28	5.00	10.30
30			50	19.37	82.3	0.39	4.70	11.50
30			63	17.55	86.6	0.61	4.30	13.00
30			80	13.87	89.3	0.89	3.70	14.80
30			100	8.87	90.9	1.40	3.00	16.80
30			125	4.54	93.5	2.12	1.80	18.80
30			160	-1.32	95.5	3.18	0.00	21.10
30			200	-5.92	96.5	4.58	0.00	22.80
31	6,106	6,109						
31			20	35.58	73.8	0.00	5.60	7.60
31			25	32.16	77.2	0.12	5.40	8.30
31			32	27.60	79.1	0.18	5.20	9.20
31			40	22.57	80.3	0.31	5.00	10.30
31			50	18.55	82.3	0.43	4.70	11.50
31			63	16.71	86.6	0.67	4.30	13.00
31			80	13.00	89.3	0.98	3.70	14.80
31			100	7.95	90.9	1.53	3.00	16.80
31			125	3.56	93.5	2.32	1.80	18.80
31			160	-2.40	95.5	3.48	0.00	21.10
31			200	-7.13	96.5	5.01	0.00	22.80
32	6,071	6,074						
32			20	35.63	73.8	0.00	5.60	7.60
32			25	32.21	77.2	0.12	5.40	8.30
32			32	27.65	79.1	0.18	5.20	9.20
32			40	22.63	80.3	0.30	5.00	10.30
32			50	18.60	82.3	0.43	4.70	11.50
32			63	16.76	86.6	0.67	4.30	13.00
32			80	13.06	89.3	0.97	3.70	14.80
32			100	8.01	90.9	1.52	3.00	16.80
32			125	3.62	93.5	2.31	1.80	18.80
32			160	-2.33	95.5	3.46	0.00	21.10
32			200	-7.05	96.5	4.98	0.00	22.80
33	6,104	6,109						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			20	35.58	73.8	0.00	5.60	7.60
33			25	32.16	77.2	0.12	5.40	8.30
33			32	27.60	79.1	0.18	5.20	9.20
33			40	22.58	80.3	0.31	5.00	10.30
33			50	18.55	82.3	0.43	4.70	11.50
33			63	16.71	86.6	0.67	4.30	13.00
33			80	13.00	89.3	0.98	3.70	14.80
33			100	7.95	90.9	1.53	3.00	16.80
33			125	3.56	93.5	2.32	1.80	18.80
33			160	-2.40	95.5	3.48	0.00	21.10
33			200	-7.13	96.5	5.01	0.00	22.80
4	2,731	2,739						
4			20	42.55	73.8	0.00	5.60	7.60
4			25	39.19	77.2	0.05	5.40	8.30
4			32	34.67	79.1	0.08	5.20	9.20
4			40	29.71	80.3	0.14	5.00	10.30
4			50	25.76	82.3	0.19	4.70	11.50
4			63	24.05	86.6	0.30	4.30	13.00
4			80	20.51	89.3	0.44	3.70	14.80
4			100	15.76	90.9	0.68	3.00	16.80
4			125	11.81	93.5	1.04	1.80	18.80
4			160	6.49	95.5	1.56	0.00	21.10
4			200	2.60	96.5	2.25	0.00	22.80
5	3,209	3,216						
5			20	41.15	73.8	0.00	5.60	7.60
5			25	37.79	77.2	0.06	5.40	8.30
5			32	33.26	79.1	0.10	5.20	9.20
5			40	28.29	80.3	0.16	5.00	10.30
5			50	24.33	82.3	0.23	4.70	11.50
5			63	22.60	86.6	0.35	4.30	13.00
5			80	19.04	89.3	0.51	3.70	14.80
5			100	14.25	90.9	0.80	3.00	16.80
5			125	10.23	93.5	1.22	1.80	18.80
5			160	4.82	95.5	1.83	0.00	21.10
5			200	0.82	96.5	2.64	0.00	22.80
6	1,863	1,875						
6			20	45.84	73.8	0.00	5.60	7.60
6			25	42.50	77.2	0.04	5.40	8.30
6			32	37.98	79.1	0.06	5.20	9.20
6			40	33.04	80.3	0.09	5.00	10.30
6			50	29.11	82.3	0.13	4.70	11.50
6			63	27.43	86.6	0.21	4.30	13.00
6			80	23.94	89.3	0.30	3.70	14.80
6			100	19.27	90.9	0.47	3.00	16.80
6			125	15.43	93.5	0.71	1.80	18.80
6			160	10.27	95.5	1.07	0.00	21.10
6			200	6.60	96.5	1.54	0.00	22.80
7	2,473	2,481						
7			20	43.41	73.8	0.00	5.60	7.60
7			25	40.06	77.2	0.05	5.40	8.30
7			32	35.53	79.1	0.07	5.20	9.20
7			40	30.58	80.3	0.12	5.00	10.30
7			50	26.63	82.3	0.17	4.70	11.50
7			63	24.93	86.6	0.27	4.30	13.00
7			80	21.41	89.3	0.40	3.70	14.80
7			100	16.69	90.9	0.62	3.00	16.80
7			125	12.76	93.5	0.94	1.80	18.80
7			160	7.49	95.5	1.41	0.00	21.10
7			200	3.67	96.5	2.03	0.00	22.80
8	2,828	2,835						
8			20	42.25	73.8	0.00	5.60	7.60
8			25	38.89	77.2	0.06	5.40	8.30
8			32	34.36	79.1	0.09	5.20	9.20
8			40	29.41	80.3	0.14	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	25.45	82.3	0.20	4.70	11.50
8			63	23.74	86.6	0.31	4.30	13.00
8			80	20.19	89.3	0.45	3.70	14.80
8			100	15.44	90.9	0.71	3.00	16.80
8			125	11.47	93.5	1.08	1.80	18.80
8			160	6.13	95.5	1.62	0.00	21.10
8			200	2.22	96.5	2.33	0.00	22.80
9	3,518	3,524						
9			20	40.36	73.8	0.00	5.60	7.60
9			25	36.99	77.2	0.07	5.40	8.30
9			32	32.45	79.1	0.11	5.20	9.20
9			40	27.48	80.3	0.18	5.00	10.30
9			50	23.51	82.3	0.25	4.70	11.50
9			63	21.77	86.6	0.39	4.30	13.00
9			80	18.19	89.3	0.56	3.70	14.80
9			100	13.38	90.9	0.88	3.00	16.80
9			125	9.32	93.5	1.34	1.80	18.80
9			160	3.85	95.5	2.01	0.00	21.10
9			200	-0.23	96.5	2.89	0.00	22.80
Sum								
Sum			20	56.40				
Sum			25	53.04				
Sum			32	48.51				
Sum			40	43.55				
Sum			50	39.59				
Sum			63	37.87				
Sum			80	34.32				
Sum			100	29.55				
Sum			125	25.57				
Sum			160	20.21				
Sum			200	16.29				

Noise sensitive area: HH Etelälahti 5 Noise sensitive point: Finnish normal frequency - User defined (303)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,700	2,708						
1			20	42.65	73.8	0.00	5.60	7.60
1			25	39.29	77.2	0.05	5.40	8.30
1			32	34.77	79.1	0.08	5.20	9.20
1			40	29.81	80.3	0.14	5.00	10.30
1			50	25.86	82.3	0.19	4.70	11.50
1			63	24.15	86.6	0.30	4.30	13.00
1			80	20.61	89.3	0.43	3.70	14.80
1			100	15.87	90.9	0.68	3.00	16.80
1			125	11.92	93.5	1.03	1.80	18.80
1			160	6.60	95.5	1.54	0.00	21.10
1			200	2.73	96.5	2.22	0.00	22.80
10	2,304	2,313						
10			20	44.02	73.8	0.00	5.60	7.60
10			25	40.67	77.2	0.05	5.40	8.30
10			32	36.15	79.1	0.07	5.20	9.20
10			40	31.20	80.3	0.12	5.00	10.30
10			50	27.25	82.3	0.16	4.70	11.50
10			63	25.56	86.6	0.25	4.30	13.00
10			80	22.04	89.3	0.37	3.70	14.80
10			100	17.34	90.9	0.58	3.00	16.80
10			125	13.44	93.5	0.88	1.80	18.80
10			160	8.20	95.5	1.32	0.00	21.10
10			200	4.42	96.5	1.90	0.00	22.80
11	2,651	2,660						
11			20	42.80	73.8	0.00	5.60	7.60
11			25	39.45	77.2	0.05	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			32	34.92	79.1	0.08	5.20	9.20
11			40	29.97	80.3	0.13	5.00	10.30
11			50	26.02	82.3	0.19	4.70	11.50
11			63	24.31	86.6	0.29	4.30	13.00
11			80	20.78	89.3	0.43	3.70	14.80
11			100	16.04	90.9	0.66	3.00	16.80
11			125	12.09	93.5	1.01	1.80	18.80
11			160	6.79	95.5	1.52	0.00	21.10
11			200	2.92	96.5	2.18	0.00	22.80
12	2,499	2,507						
12			20	43.32	73.8	0.00	5.60	7.60
12			25	39.97	77.2	0.05	5.40	8.30
12			32	35.44	79.1	0.08	5.20	9.20
12			40	30.49	80.3	0.13	5.00	10.30
12			50	26.54	82.3	0.18	4.70	11.50
12			63	24.84	86.6	0.28	4.30	13.00
12			80	21.31	89.3	0.40	3.70	14.80
12			100	16.59	90.9	0.63	3.00	16.80
12			125	12.66	93.5	0.95	1.80	18.80
12			160	7.39	95.5	1.43	0.00	21.10
12			200	3.56	96.5	2.06	0.00	22.80
13	2,999	3,006						
13			20	41.74	73.8	0.00	5.60	7.60
13			25	38.38	77.2	0.06	5.40	8.30
13			32	33.85	79.1	0.09	5.20	9.20
13			40	28.89	80.3	0.15	5.00	10.30
13			50	24.93	82.3	0.21	4.70	11.50
13			63	23.21	86.6	0.33	4.30	13.00
13			80	19.66	89.3	0.48	3.70	14.80
13			100	14.89	90.9	0.75	3.00	16.80
13			125	10.90	93.5	1.14	1.80	18.80
13			160	5.53	95.5	1.71	0.00	21.10
13			200	1.57	96.5	2.47	0.00	22.80
14	3,325	3,332						
14			20	40.85	73.8	0.00	5.60	7.60
14			25	37.48	77.2	0.07	5.40	8.30
14			32	32.95	79.1	0.10	5.20	9.20
14			40	27.98	80.3	0.17	5.00	10.30
14			50	24.01	82.3	0.23	4.70	11.50
14			63	22.28	86.6	0.37	4.30	13.00
14			80	18.71	89.3	0.53	3.70	14.80
14			100	13.91	90.9	0.83	3.00	16.80
14			125	9.88	93.5	1.27	1.80	18.80
14			160	4.45	95.5	1.90	0.00	21.10
14			200	0.41	96.5	2.73	0.00	22.80
15	3,060	3,067						
15			20	41.57	73.8	0.00	5.60	7.60
15			25	38.21	77.2	0.06	5.40	8.30
15			32	33.67	79.1	0.09	5.20	9.20
15			40	28.71	80.3	0.15	5.00	10.30
15			50	24.75	82.3	0.21	4.70	11.50
15			63	23.03	86.6	0.34	4.30	13.00
15			80	19.48	89.3	0.49	3.70	14.80
15			100	14.70	90.9	0.77	3.00	16.80
15			125	10.70	93.5	1.17	1.80	18.80
15			160	5.32	95.5	1.75	0.00	21.10
15			200	1.35	96.5	2.51	0.00	22.80
16	3,545	3,551						
16			20	40.29	73.8	0.00	5.60	7.60
16			25	36.92	77.2	0.07	5.40	8.30
16			32	32.39	79.1	0.11	5.20	9.20
16			40	27.42	80.3	0.18	5.00	10.30
16			50	23.45	82.3	0.25	4.70	11.50
16			63	21.70	86.6	0.39	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			80	18.13	89.3	0.57	3.70	14.80
16			100	13.31	90.9	0.89	3.00	16.80
16			125	9.24	93.5	1.35	1.80	18.80
16			160	3.77	95.5	2.02	0.00	21.10
16			200	-0.32	96.5	2.91	0.00	22.80
17	3,876	3,883						
17			20	39.52	73.8	0.00	5.60	7.60
17			25	36.14	77.2	0.08	5.40	8.30
17			32	31.60	79.1	0.12	5.20	9.20
17			40	26.62	80.3	0.19	5.00	10.30
17			50	22.65	82.3	0.27	4.70	11.50
17			63	20.89	86.6	0.43	4.30	13.00
17			80	17.30	89.3	0.62	3.70	14.80
17			100	12.45	90.9	0.97	3.00	16.80
17			125	8.34	93.5	1.48	1.80	18.80
17			160	2.80	95.5	2.21	0.00	21.10
17			200	-1.37	96.5	3.18	0.00	22.80
18	3,673	3,680						
18			20	39.98	73.8	0.00	5.60	7.60
18			25	36.61	77.2	0.07	5.40	8.30
18			32	32.07	79.1	0.11	5.20	9.20
18			40	27.10	80.3	0.18	5.00	10.30
18			50	23.13	82.3	0.26	4.70	11.50
18			63	21.38	86.6	0.40	4.30	13.00
18			80	17.79	89.3	0.59	3.70	14.80
18			100	12.96	90.9	0.92	3.00	16.80
18			125	8.88	93.5	1.40	1.80	18.80
18			160	3.39	95.5	2.10	0.00	21.10
18			200	-0.73	96.5	3.02	0.00	22.80
19	3,590	3,595						
19			20	40.19	73.8	0.00	5.60	7.60
19			25	36.81	77.2	0.07	5.40	8.30
19			32	32.28	79.1	0.11	5.20	9.20
19			40	27.31	80.3	0.18	5.00	10.30
19			50	23.33	82.3	0.25	4.70	11.50
19			63	21.59	86.6	0.40	4.30	13.00
19			80	18.01	89.3	0.58	3.70	14.80
19			100	13.19	90.9	0.90	3.00	16.80
19			125	9.12	93.5	1.37	1.80	18.80
19			160	3.64	95.5	2.05	0.00	21.10
19			200	-0.46	96.5	2.95	0.00	22.80
2	2,233	2,242						
2			20	44.29	73.8	0.00	5.60	7.60
2			25	40.94	77.2	0.04	5.40	8.30
2			32	36.42	79.1	0.07	5.20	9.20
2			40	31.47	80.3	0.11	5.00	10.30
2			50	27.53	82.3	0.16	4.70	11.50
2			63	25.84	86.6	0.25	4.30	13.00
2			80	22.33	89.3	0.36	3.70	14.80
2			100	17.63	90.9	0.56	3.00	16.80
2			125	13.73	93.5	0.85	1.80	18.80
2			160	8.51	95.5	1.28	0.00	21.10
2			200	4.75	96.5	1.84	0.00	22.80
20	4,060	4,065						
20			20	39.12	73.8	0.00	5.60	7.60
20			25	35.74	77.2	0.08	5.40	8.30
20			32	31.20	79.1	0.12	5.20	9.20
20			40	26.22	80.3	0.20	5.00	10.30
20			50	22.23	82.3	0.28	4.70	11.50
20			63	20.47	86.6	0.45	4.30	13.00
20			80	16.87	89.3	0.65	3.70	14.80
20			100	12.00	90.9	1.02	3.00	16.80
20			125	7.87	93.5	1.54	1.80	18.80
20			160	2.30	95.5	2.32	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			200	-1.91	96.5	3.33	0.00	22.80
21	4,401	4,409						
21			20	38.41	73.8	0.00	5.60	7.60
21			25	35.03	77.2	0.09	5.40	8.30
21			32	30.48	79.1	0.13	5.20	9.20
21			40	25.49	80.3	0.22	5.00	10.30
21			50	21.51	82.3	0.31	4.70	11.50
21			63	19.73	86.6	0.48	4.30	13.00
21			80	16.11	89.3	0.71	3.70	14.80
21			100	11.21	90.9	1.10	3.00	16.80
21			125	7.04	93.5	1.68	1.80	18.80
21			160	1.40	95.5	2.51	0.00	21.10
21			200	-2.90	96.5	3.62	0.00	22.80
22	4,891	4,896						
22			20	37.50	73.8	0.00	5.60	7.60
22			25	34.10	77.2	0.10	5.40	8.30
22			32	29.56	79.1	0.15	5.20	9.20
22			40	24.56	80.3	0.24	5.00	10.30
22			50	20.56	82.3	0.34	4.70	11.50
22			63	18.76	86.6	0.54	4.30	13.00
22			80	15.12	89.3	0.78	3.70	14.80
22			100	10.18	90.9	1.22	3.00	16.80
22			125	5.94	93.5	1.86	1.80	18.80
22			160	0.21	95.5	2.79	0.00	21.10
22			200	-4.21	96.5	4.01	0.00	22.80
23	5,068	5,073						
23			20	37.20	73.8	0.00	5.60	7.60
23			25	33.79	77.2	0.10	5.40	8.30
23			32	29.24	79.1	0.15	5.20	9.20
23			40	24.24	80.3	0.25	5.00	10.30
23			50	20.24	82.3	0.36	4.70	11.50
23			63	18.44	86.6	0.56	4.30	13.00
23			80	14.78	89.3	0.81	3.70	14.80
23			100	9.83	90.9	1.27	3.00	16.80
23			125	5.57	93.5	1.93	1.80	18.80
23			160	-0.20	95.5	2.89	0.00	21.10
23			200	-4.66	96.5	4.16	0.00	22.80
24	4,662	4,667						
24			20	37.92	73.8	0.00	5.60	7.60
24			25	34.53	77.2	0.09	5.40	8.30
24			32	29.98	79.1	0.14	5.20	9.20
24			40	24.99	80.3	0.23	5.00	10.30
24			50	20.99	82.3	0.33	4.70	11.50
24			63	19.21	86.6	0.51	4.30	13.00
24			80	15.57	89.3	0.75	3.70	14.80
24			100	10.65	90.9	1.17	3.00	16.80
24			125	6.45	93.5	1.77	1.80	18.80
24			160	0.76	95.5	2.66	0.00	21.10
24			200	-3.61	96.5	3.83	0.00	22.80
25	4,367	4,373						
25			20	38.48	73.8	0.00	5.60	7.60
25			25	35.10	77.2	0.09	5.40	8.30
25			32	30.55	79.1	0.13	5.20	9.20
25			40	25.57	80.3	0.22	5.00	10.30
25			50	21.58	82.3	0.31	4.70	11.50
25			63	19.80	86.6	0.48	4.30	13.00
25			80	16.19	89.3	0.70	3.70	14.80
25			100	11.29	90.9	1.09	3.00	16.80
25			125	7.12	93.5	1.66	1.80	18.80
25			160	1.49	95.5	2.49	0.00	21.10
25			200	-2.80	96.5	3.59	0.00	22.80
26	4,830	4,836						
26			20	37.61	73.8	0.00	5.60	7.60
26			25	34.21	77.2	0.10	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
26			32	29.66	79.1	0.15	5.20	9.20
26			40	24.67	80.3	0.24	5.00	10.30
26			50	20.67	82.3	0.34	4.70	11.50
26			63	18.88	86.6	0.53	4.30	13.00
26			80	15.24	89.3	0.77	3.70	14.80
26			100	10.30	90.9	1.21	3.00	16.80
26			125	6.07	93.5	1.84	1.80	18.80
26			160	0.35	95.5	2.76	0.00	21.10
26			200	-4.06	96.5	3.97	0.00	22.80
27	5,173	5,179						
27			20	37.02	73.8	0.00	5.60	7.60
27			25	33.61	77.2	0.10	5.40	8.30
27			32	29.06	79.1	0.16	5.20	9.20
27			40	24.06	80.3	0.26	5.00	10.30
27			50	20.05	82.3	0.36	4.70	11.50
27			63	18.25	86.6	0.57	4.30	13.00
27			80	14.59	89.3	0.83	3.70	14.80
27			100	9.62	90.9	1.29	3.00	16.80
27			125	5.35	93.5	1.97	1.80	18.80
27			160	-0.44	95.5	2.95	0.00	21.10
27			200	-4.93	96.5	4.25	0.00	22.80
28	5,465	5,470						
28			20	36.54	73.8	0.00	5.60	7.60
28			25	33.13	77.2	0.11	5.40	8.30
28			32	28.58	79.1	0.16	5.20	9.20
28			40	23.57	80.3	0.27	5.00	10.30
28			50	19.56	82.3	0.38	4.70	11.50
28			63	17.74	86.6	0.60	4.30	13.00
28			80	14.07	89.3	0.88	3.70	14.80
28			100	9.07	90.9	1.37	3.00	16.80
28			125	4.76	93.5	2.08	1.80	18.80
28			160	-1.08	95.5	3.12	0.00	21.10
28			200	-5.64	96.5	4.49	0.00	22.80
29	5,824	5,828						
29			20	35.99	73.8	0.00	5.60	7.60
29			25	32.57	77.2	0.12	5.40	8.30
29			32	28.01	79.1	0.17	5.20	9.20
29			40	23.00	80.3	0.29	5.00	10.30
29			50	18.98	82.3	0.41	4.70	11.50
29			63	17.15	86.6	0.64	4.30	13.00
29			80	13.46	89.3	0.93	3.70	14.80
29			100	8.43	90.9	1.46	3.00	16.80
29			125	4.07	93.5	2.21	1.80	18.80
29			160	-1.83	95.5	3.32	0.00	21.10
29			200	-6.49	96.5	4.78	0.00	22.80
3	2,695	2,703						
3			20	42.66	73.8	0.00	5.60	7.60
3			25	39.31	77.2	0.05	5.40	8.30
3			32	34.78	79.1	0.08	5.20	9.20
3			40	29.83	80.3	0.14	5.00	10.30
3			50	25.87	82.3	0.19	4.70	11.50
3			63	24.17	86.6	0.30	4.30	13.00
3			80	20.63	89.3	0.43	3.70	14.80
3			100	15.89	90.9	0.68	3.00	16.80
3			125	11.94	93.5	1.03	1.80	18.80
3			160	6.62	95.5	1.54	0.00	21.10
3			200	2.75	96.5	2.22	0.00	22.80
30	5,721	5,724						
30			20	36.15	73.8	0.00	5.60	7.60
30			25	32.73	77.2	0.11	5.40	8.30
30			32	28.17	79.1	0.17	5.20	9.20
30			40	23.16	80.3	0.29	5.00	10.30
30			50	19.14	82.3	0.40	4.70	11.50
30			63	17.32	86.6	0.63	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
30			80	13.63	89.3	0.92	3.70	14.80
30			100	8.61	90.9	1.43	3.00	16.80
30			125	4.27	93.5	2.18	1.80	18.80
30			160	-1.62	95.5	3.26	0.00	21.10
30			200	-6.25	96.5	4.69	0.00	22.80
31	6,260	6,264						
31			20	35.36	73.8	0.00	5.60	7.60
31			25	31.94	77.2	0.13	5.40	8.30
31			32	27.38	79.1	0.19	5.20	9.20
31			40	22.35	80.3	0.31	5.00	10.30
31			50	18.32	82.3	0.44	4.70	11.50
31			63	16.47	86.6	0.69	4.30	13.00
31			80	12.76	89.3	1.00	3.70	14.80
31			100	7.70	90.9	1.57	3.00	16.80
31			125	3.28	93.5	2.38	1.80	18.80
31			160	-2.71	95.5	3.57	0.00	21.10
31			200	-7.47	96.5	5.14	0.00	22.80
32	6,196	6,200						
32			20	35.45	73.8	0.00	5.60	7.60
32			25	32.03	77.2	0.12	5.40	8.30
32			32	27.47	79.1	0.19	5.20	9.20
32			40	22.44	80.3	0.31	5.00	10.30
32			50	18.42	82.3	0.43	4.70	11.50
32			63	16.57	86.6	0.68	4.30	13.00
32			80	12.86	89.3	0.99	3.70	14.80
32			100	7.80	90.9	1.55	3.00	16.80
32			125	3.40	93.5	2.36	1.80	18.80
32			160	-2.58	95.5	3.53	0.00	21.10
32			200	-7.33	96.5	5.08	0.00	22.80
33	6,205	6,209						
33			20	35.44	73.8	0.00	5.60	7.60
33			25	32.02	77.2	0.12	5.40	8.30
33			32	27.45	79.1	0.19	5.20	9.20
33			40	22.43	80.3	0.31	5.00	10.30
33			50	18.40	82.3	0.43	4.70	11.50
33			63	16.56	86.6	0.68	4.30	13.00
33			80	12.85	89.3	0.99	3.70	14.80
33			100	7.79	90.9	1.55	3.00	16.80
33			125	3.38	93.5	2.36	1.80	18.80
33			160	-2.60	95.5	3.54	0.00	21.10
33			200	-7.35	96.5	5.09	0.00	22.80
4	2,812	2,820						
4			20	42.30	73.8	0.00	5.60	7.60
4			25	38.94	77.2	0.06	5.40	8.30
4			32	34.41	79.1	0.08	5.20	9.20
4			40	29.45	80.3	0.14	5.00	10.30
4			50	25.50	82.3	0.20	4.70	11.50
4			63	23.78	86.6	0.31	4.30	13.00
4			80	20.24	89.3	0.45	3.70	14.80
4			100	15.49	90.9	0.70	3.00	16.80
4			125	11.52	93.5	1.07	1.80	18.80
4			160	6.19	95.5	1.61	0.00	21.10
4			200	2.28	96.5	2.31	0.00	22.80
5	3,311	3,318						
5			20	40.88	73.8	0.00	5.60	7.60
5			25	37.52	77.2	0.07	5.40	8.30
5			32	32.98	79.1	0.10	5.20	9.20
5			40	28.02	80.3	0.17	5.00	10.30
5			50	24.05	82.3	0.23	4.70	11.50
5			63	22.32	86.6	0.36	4.30	13.00
5			80	18.75	89.3	0.53	3.70	14.80
5			100	13.95	90.9	0.83	3.00	16.80
5			125	9.92	93.5	1.26	1.80	18.80
5			160	4.49	95.5	1.89	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			200	0.46	96.5	2.72	0.00	22.80
6	2,052	2,063						
6			20	45.01	73.8	0.00	5.60	7.60
6			25	41.67	77.2	0.04	5.40	8.30
6			32	37.15	79.1	0.06	5.20	9.20
6			40	32.21	80.3	0.10	5.00	10.30
6			50	28.27	82.3	0.14	4.70	11.50
6			63	26.58	86.6	0.23	4.30	13.00
6			80	23.08	89.3	0.33	3.70	14.80
6			100	18.40	90.9	0.52	3.00	16.80
6			125	14.53	93.5	0.78	1.80	18.80
6			160	9.34	95.5	1.18	0.00	21.10
6			200	5.62	96.5	1.69	0.00	22.80
7	2,640	2,648						
7			20	42.84	73.8	0.00	5.60	7.60
7			25	39.49	77.2	0.05	5.40	8.30
7			32	34.96	79.1	0.08	5.20	9.20
7			40	30.01	80.3	0.13	5.00	10.30
7			50	26.06	82.3	0.19	4.70	11.50
7			63	24.35	86.6	0.29	4.30	13.00
7			80	20.82	89.3	0.42	3.70	14.80
7			100	16.08	90.9	0.66	3.00	16.80
7			125	12.14	93.5	1.01	1.80	18.80
7			160	6.83	95.5	1.51	0.00	21.10
7			200	2.97	96.5	2.17	0.00	22.80
8	2,961	2,969						
8			20	41.85	73.8	0.00	5.60	7.60
8			25	38.49	77.2	0.06	5.40	8.30
8			32	33.96	79.1	0.09	5.20	9.20
8			40	29.00	80.3	0.15	5.00	10.30
8			50	25.04	82.3	0.21	4.70	11.50
8			63	23.32	86.6	0.33	4.30	13.00
8			80	19.77	89.3	0.48	3.70	14.80
8			100	15.01	90.9	0.74	3.00	16.80
8			125	11.02	93.5	1.13	1.80	18.80
8			160	5.66	95.5	1.69	0.00	21.10
8			200	1.71	96.5	2.43	0.00	22.80
9	3,650	3,656						
9			20	40.04	73.8	0.00	5.60	7.60
9			25	36.67	77.2	0.07	5.40	8.30
9			32	32.13	79.1	0.11	5.20	9.20
9			40	27.16	80.3	0.18	5.00	10.30
9			50	23.18	82.3	0.26	4.70	11.50
9			63	21.44	86.6	0.40	4.30	13.00
9			80	17.85	89.3	0.59	3.70	14.80
9			100	13.03	90.9	0.91	3.00	16.80
9			125	8.95	93.5	1.39	1.80	18.80
9			160	3.46	95.5	2.08	0.00	21.10
9			200	-0.66	96.5	3.00	0.00	22.80
Sum								
Sum			20	55.91				
Sum			25	52.54				
Sum			32	48.01				
Sum			40	43.04				
Sum			50	39.08				
Sum			63	37.35				
Sum			80	33.79				
Sum			100	29.01				
Sum			125	25.00				
Sum			160	19.61				
Sum			200	15.64				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: HH Eteläniemi 1 Noise sensitive point: Finnish normal frequency - User defined (304)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,322	2,331						
1			20	43.95	73.8	0.00	5.60	7.60
1			25	40.60	77.2	0.05	5.40	8.30
1			32	36.08	79.1	0.07	5.20	9.20
1			40	31.13	80.3	0.12	5.00	10.30
1			50	27.19	82.3	0.16	4.70	11.50
1			63	25.49	86.6	0.26	4.30	13.00
1			80	21.98	89.3	0.37	3.70	14.80
1			100	17.27	90.9	0.58	3.00	16.80
1			125	13.36	93.5	0.89	1.80	18.80
1			160	8.12	95.5	1.33	0.00	21.10
1			200	4.34	96.5	1.91	0.00	22.80
10	1,798	1,810						
10			20	46.15	73.8	0.00	5.60	7.60
10			25	42.81	77.2	0.04	5.40	8.30
10			32	38.29	79.1	0.05	5.20	9.20
10			40	33.36	80.3	0.09	5.00	10.30
10			50	29.42	82.3	0.13	4.70	11.50
10			63	27.75	86.6	0.20	4.30	13.00
10			80	24.26	89.3	0.29	3.70	14.80
10			100	19.59	90.9	0.45	3.00	16.80
10			125	15.76	93.5	0.69	1.80	18.80
10			160	10.61	95.5	1.03	0.00	21.10
10			200	6.96	96.5	1.48	0.00	22.80
11	2,088	2,099						
11			20	44.86	73.8	0.00	5.60	7.60
11			25	41.52	77.2	0.04	5.40	8.30
11			32	37.00	79.1	0.06	5.20	9.20
11			40	32.05	80.3	0.10	5.00	10.30
11			50	28.11	82.3	0.15	4.70	11.50
11			63	26.43	86.6	0.23	4.30	13.00
11			80	22.92	89.3	0.34	3.70	14.80
11			100	18.23	90.9	0.52	3.00	16.80
11			125	14.36	93.5	0.80	1.80	18.80
11			160	9.16	95.5	1.20	0.00	21.10
11			200	5.44	96.5	1.72	0.00	22.80
12	2,081	2,091						
12			20	44.89	73.8	0.00	5.60	7.60
12			25	41.55	77.2	0.04	5.40	8.30
12			32	37.03	79.1	0.06	5.20	9.20
12			40	32.09	80.3	0.10	5.00	10.30
12			50	28.15	82.3	0.15	4.70	11.50
12			63	26.46	86.6	0.23	4.30	13.00
12			80	22.96	89.3	0.33	3.70	14.80
12			100	18.27	90.9	0.52	3.00	16.80
12			125	14.40	93.5	0.79	1.80	18.80
12			160	9.20	95.5	1.19	0.00	21.10
12			200	5.48	96.5	1.71	0.00	22.80
13	2,477	2,486						
13			20	43.39	73.8	0.00	5.60	7.60
13			25	40.04	77.2	0.05	5.40	8.30
13			32	35.51	79.1	0.07	5.20	9.20
13			40	30.57	80.3	0.12	5.00	10.30
13			50	26.62	82.3	0.17	4.70	11.50
13			63	24.92	86.6	0.27	4.30	13.00
13			80	21.39	89.3	0.40	3.70	14.80
13			100	16.67	90.9	0.62	3.00	16.80
13			125	12.74	93.5	0.94	1.80	18.80
13			160	7.47	95.5	1.42	0.00	21.10
13			200	3.65	96.5	2.04	0.00	22.80
14	2,739	2,746						
14			20	42.52	73.8	0.00	5.60	7.60
14			25	39.17	77.2	0.05	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	34.64	79.1	0.08	5.20	9.20
14			40	29.69	80.3	0.14	5.00	10.30
14			50	25.73	82.3	0.19	4.70	11.50
14			63	24.02	86.6	0.30	4.30	13.00
14			80	20.49	89.3	0.44	3.70	14.80
14			100	15.74	90.9	0.69	3.00	16.80
14			125	11.78	93.5	1.04	1.80	18.80
14			160	6.46	95.5	1.57	0.00	21.10
14			200	2.57	96.5	2.25	0.00	22.80
15	2,605	2,613						
15			20	42.96	73.8	0.00	5.60	7.60
15			25	39.61	77.2	0.05	5.40	8.30
15			32	35.08	79.1	0.08	5.20	9.20
15			40	30.13	80.3	0.13	5.00	10.30
15			50	26.18	82.3	0.18	4.70	11.50
15			63	24.47	86.6	0.29	4.30	13.00
15			80	20.94	89.3	0.42	3.70	14.80
15			100	16.21	90.9	0.65	3.00	16.80
15			125	12.27	93.5	0.99	1.80	18.80
15			160	6.97	95.5	1.49	0.00	21.10
15			200	3.12	96.5	2.14	0.00	22.80
16	3,012	3,019						
16			20	41.70	73.8	0.00	5.60	7.60
16			25	38.34	77.2	0.06	5.40	8.30
16			32	33.81	79.1	0.09	5.20	9.20
16			40	28.85	80.3	0.15	5.00	10.30
16			50	24.89	82.3	0.21	4.70	11.50
16			63	23.17	86.6	0.33	4.30	13.00
16			80	19.62	89.3	0.48	3.70	14.80
16			100	14.85	90.9	0.75	3.00	16.80
16			125	10.86	93.5	1.15	1.80	18.80
16			160	5.48	95.5	1.72	0.00	21.10
16			200	1.53	96.5	2.48	0.00	22.80
17	3,308	3,316						
17			20	40.89	73.8	0.00	5.60	7.60
17			25	37.52	77.2	0.07	5.40	8.30
17			32	32.99	79.1	0.10	5.20	9.20
17			40	28.02	80.3	0.17	5.00	10.30
17			50	24.05	82.3	0.23	4.70	11.50
17			63	22.32	86.6	0.36	4.30	13.00
17			80	18.76	89.3	0.53	3.70	14.80
17			100	13.96	90.9	0.83	3.00	16.80
17			125	9.93	93.5	1.26	1.80	18.80
17			160	4.50	95.5	1.89	0.00	21.10
17			200	0.47	96.5	2.72	0.00	22.80
18	3,090	3,099						
18			20	41.48	73.8	0.00	5.60	7.60
18			25	38.11	77.2	0.06	5.40	8.30
18			32	33.58	79.1	0.09	5.20	9.20
18			40	28.62	80.3	0.15	5.00	10.30
18			50	24.66	82.3	0.22	4.70	11.50
18			63	22.94	86.6	0.34	4.30	13.00
18			80	19.38	89.3	0.50	3.70	14.80
18			100	14.60	90.9	0.77	3.00	16.80
18			125	10.60	93.5	1.18	1.80	18.80
18			160	5.21	95.5	1.77	0.00	21.10
18			200	1.24	96.5	2.54	0.00	22.80
19	3,130	3,136						
19			20	41.37	73.8	0.00	5.60	7.60
19			25	38.01	77.2	0.06	5.40	8.30
19			32	33.48	79.1	0.09	5.20	9.20
19			40	28.52	80.3	0.16	5.00	10.30
19			50	24.55	82.3	0.22	4.70	11.50
19			63	22.83	86.6	0.34	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	19.27	89.3	0.50	3.70	14.80
19			100	14.49	90.9	0.78	3.00	16.80
19			125	10.48	93.5	1.19	1.80	18.80
19			160	5.09	95.5	1.79	0.00	21.10
19			200	1.10	96.5	2.57	0.00	22.80
2	1,706	1,718						
2			20	46.60	73.8	0.00	5.60	7.60
2			25	43.26	77.2	0.03	5.40	8.30
2			32	38.75	79.1	0.05	5.20	9.20
2			40	33.81	80.3	0.09	5.00	10.30
2			50	29.88	82.3	0.12	4.70	11.50
2			63	28.21	86.6	0.19	4.30	13.00
2			80	24.72	89.3	0.27	3.70	14.80
2			100	20.07	90.9	0.43	3.00	16.80
2			125	16.24	93.5	0.65	1.80	18.80
2			160	11.12	95.5	0.98	0.00	21.10
2			200	7.49	96.5	1.41	0.00	22.80
20	3,559	3,565						
20			20	40.26	73.8	0.00	5.60	7.60
20			25	36.89	77.2	0.07	5.40	8.30
20			32	32.35	79.1	0.11	5.20	9.20
20			40	27.38	80.3	0.18	5.00	10.30
20			50	23.41	82.3	0.25	4.70	11.50
20			63	21.67	86.6	0.39	4.30	13.00
20			80	18.09	89.3	0.57	3.70	14.80
20			100	13.27	90.9	0.89	3.00	16.80
20			125	9.20	93.5	1.35	1.80	18.80
20			160	3.73	95.5	2.03	0.00	21.10
20			200	-0.36	96.5	2.92	0.00	22.80
21	3,823	3,831						
21			20	39.63	73.8	0.00	5.60	7.60
21			25	36.26	77.2	0.08	5.40	8.30
21			32	31.72	79.1	0.11	5.20	9.20
21			40	26.74	80.3	0.19	5.00	10.30
21			50	22.77	82.3	0.27	4.70	11.50
21			63	21.01	86.6	0.42	4.30	13.00
21			80	17.42	89.3	0.61	3.70	14.80
21			100	12.58	90.9	0.96	3.00	16.80
21			125	8.48	93.5	1.46	1.80	18.80
21			160	2.95	95.5	2.18	0.00	21.10
21			200	-1.21	96.5	3.14	0.00	22.80
22	4,307	4,313						
22			20	38.61	73.8	0.00	5.60	7.60
22			25	35.22	77.2	0.09	5.40	8.30
22			32	30.68	79.1	0.13	5.20	9.20
22			40	25.69	80.3	0.22	5.00	10.30
22			50	21.70	82.3	0.30	4.70	11.50
22			63	19.93	86.6	0.47	4.30	13.00
22			80	16.32	89.3	0.69	3.70	14.80
22			100	11.43	90.9	1.08	3.00	16.80
22			125	7.27	93.5	1.64	1.80	18.80
22			160	1.65	95.5	2.46	0.00	21.10
22			200	-2.63	96.5	3.54	0.00	22.80
23	4,482	4,486						
23			20	38.26	73.8	0.00	5.60	7.60
23			25	34.87	77.2	0.09	5.40	8.30
23			32	30.33	79.1	0.13	5.20	9.20
23			40	25.34	80.3	0.22	5.00	10.30
23			50	21.35	82.3	0.31	4.70	11.50
23			63	19.57	86.6	0.49	4.30	13.00
23			80	15.94	89.3	0.72	3.70	14.80
23			100	11.04	90.9	1.12	3.00	16.80
23			125	6.86	93.5	1.70	1.80	18.80
23			160	1.21	95.5	2.56	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-3.12	96.5	3.68	0.00	22.80
24	4,137	4,142						
24			20	38.95	73.8	0.00	5.60	7.60
24			25	35.57	77.2	0.08	5.40	8.30
24			32	31.03	79.1	0.12	5.20	9.20
24			40	26.05	80.3	0.21	5.00	10.30
24			50	22.06	82.3	0.29	4.70	11.50
24			63	20.30	86.6	0.46	4.30	13.00
24			80	16.69	89.3	0.66	3.70	14.80
24			100	11.82	90.9	1.04	3.00	16.80
24			125	7.68	93.5	1.57	1.80	18.80
24			160	2.09	95.5	2.36	0.00	21.10
24			200	-2.14	96.5	3.40	0.00	22.80
25	3,815	3,821						
25			20	39.66	73.8	0.00	5.60	7.60
25			25	36.28	77.2	0.08	5.40	8.30
25			32	31.74	79.1	0.11	5.20	9.20
25			40	26.77	80.3	0.19	5.00	10.30
25			50	22.79	82.3	0.27	4.70	11.50
25			63	21.04	86.6	0.42	4.30	13.00
25			80	17.44	89.3	0.61	3.70	14.80
25			100	12.60	90.9	0.96	3.00	16.80
25			125	8.50	93.5	1.45	1.80	18.80
25			160	2.98	95.5	2.18	0.00	21.10
25			200	-1.18	96.5	3.13	0.00	22.80
26	4,265	4,272						
26			20	38.69	73.8	0.00	5.60	7.60
26			25	35.30	77.2	0.09	5.40	8.30
26			32	30.76	79.1	0.13	5.20	9.20
26			40	25.77	80.3	0.21	5.00	10.30
26			50	21.79	82.3	0.30	4.70	11.50
26			63	20.02	86.6	0.47	4.30	13.00
26			80	16.40	89.3	0.68	3.70	14.80
26			100	11.52	90.9	1.07	3.00	16.80
26			125	7.36	93.5	1.62	1.80	18.80
26			160	1.75	95.5	2.44	0.00	21.10
26			200	-2.52	96.5	3.50	0.00	22.80
27	4,598	4,604						
27			20	38.04	73.8	0.00	5.60	7.60
27			25	34.65	77.2	0.09	5.40	8.30
27			32	30.10	79.1	0.14	5.20	9.20
27			40	25.11	80.3	0.23	5.00	10.30
27			50	21.12	82.3	0.32	4.70	11.50
27			63	19.33	86.6	0.51	4.30	13.00
27			80	15.70	89.3	0.74	3.70	14.80
27			100	10.79	90.9	1.15	3.00	16.80
27			125	6.59	93.5	1.75	1.80	18.80
27			160	0.91	95.5	2.62	0.00	21.10
27			200	-3.44	96.5	3.77	0.00	22.80
28	4,880	4,885						
28			20	37.52	73.8	0.00	5.60	7.60
28			25	34.13	77.2	0.10	5.40	8.30
28			32	29.58	79.1	0.15	5.20	9.20
28			40	24.58	80.3	0.24	5.00	10.30
28			50	20.58	82.3	0.34	4.70	11.50
28			63	18.79	86.6	0.54	4.30	13.00
28			80	15.14	89.3	0.78	3.70	14.80
28			100	10.20	90.9	1.22	3.00	16.80
28			125	5.97	93.5	1.86	1.80	18.80
28			160	0.24	95.5	2.78	0.00	21.10
28			200	-4.18	96.5	4.01	0.00	22.80
29	5,237	5,241						
29			20	36.91	73.8	0.00	5.60	7.60
29			25	33.51	77.2	0.10	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			32	28.95	79.1	0.16	5.20	9.20
29			40	23.95	80.3	0.26	5.00	10.30
29			50	19.94	82.3	0.37	4.70	11.50
29			63	18.13	86.6	0.58	4.30	13.00
29			80	14.47	89.3	0.84	3.70	14.80
29			100	9.50	90.9	1.31	3.00	16.80
29			125	5.22	93.5	1.99	1.80	18.80
29			160	-0.58	95.5	2.99	0.00	21.10
29			200	-5.09	96.5	4.30	0.00	22.80
3	2,224	2,234						
3			20	44.32	73.8	0.00	5.60	7.60
3			25	40.98	77.2	0.04	5.40	8.30
3			32	36.45	79.1	0.07	5.20	9.20
3			40	31.51	80.3	0.11	5.00	10.30
3			50	27.56	82.3	0.16	4.70	11.50
3			63	25.87	86.6	0.25	4.30	13.00
3			80	22.36	89.3	0.36	3.70	14.80
3			100	17.66	90.9	0.56	3.00	16.80
3			125	13.77	93.5	0.85	1.80	18.80
3			160	8.55	95.5	1.27	0.00	21.10
3			200	4.79	96.5	1.83	0.00	22.80
30	5,139	5,143						
30			20	37.08	73.8	0.00	5.60	7.60
30			25	33.67	77.2	0.10	5.40	8.30
30			32	29.12	79.1	0.15	5.20	9.20
30			40	24.12	80.3	0.26	5.00	10.30
30			50	20.12	82.3	0.36	4.70	11.50
30			63	18.31	86.6	0.57	4.30	13.00
30			80	14.65	89.3	0.82	3.70	14.80
30			100	9.69	90.9	1.29	3.00	16.80
30			125	5.42	93.5	1.95	1.80	18.80
30			160	-0.36	95.5	2.93	0.00	21.10
30			200	-4.84	96.5	4.22	0.00	22.80
31	5,675	5,678						
31			20	36.22	73.8	0.00	5.60	7.60
31			25	32.80	77.2	0.11	5.40	8.30
31			32	28.25	79.1	0.17	5.20	9.20
31			40	23.23	80.3	0.28	5.00	10.30
31			50	19.22	82.3	0.40	4.70	11.50
31			63	17.39	86.6	0.62	4.30	13.00
31			80	13.71	89.3	0.91	3.70	14.80
31			100	8.70	90.9	1.42	3.00	16.80
31			125	4.36	93.5	2.16	1.80	18.80
31			160	-1.52	95.5	3.24	0.00	21.10
31			200	-6.14	96.5	4.66	0.00	22.80
32	5,623	5,626						
32			20	36.30	73.8	0.00	5.60	7.60
32			25	32.88	77.2	0.11	5.40	8.30
32			32	28.33	79.1	0.17	5.20	9.20
32			40	23.31	80.3	0.28	5.00	10.30
32			50	19.30	82.3	0.39	4.70	11.50
32			63	17.48	86.6	0.62	4.30	13.00
32			80	13.80	89.3	0.90	3.70	14.80
32			100	8.79	90.9	1.41	3.00	16.80
32			125	4.46	93.5	2.14	1.80	18.80
32			160	-1.41	95.5	3.21	0.00	21.10
32			200	-6.02	96.5	4.61	0.00	22.80
33	5,649	5,654						
33			20	36.25	73.8	0.00	5.60	7.60
33			25	32.84	77.2	0.11	5.40	8.30
33			32	28.28	79.1	0.17	5.20	9.20
33			40	23.27	80.3	0.28	5.00	10.30
33			50	19.26	82.3	0.40	4.70	11.50
33			63	17.43	86.6	0.62	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			80	13.75	89.3	0.90	3.70	14.80
33			100	8.74	90.9	1.41	3.00	16.80
33			125	4.40	93.5	2.15	1.80	18.80
33			160	-1.47	95.5	3.22	0.00	21.10
33			200	-6.08	96.5	4.64	0.00	22.80
4	2,275	2,285						
4			20	44.12	73.8	0.00	5.60	7.60
4			25	40.78	77.2	0.05	5.40	8.30
4			32	36.26	79.1	0.07	5.20	9.20
4			40	31.31	80.3	0.11	5.00	10.30
4			50	27.36	82.3	0.16	4.70	11.50
4			63	25.67	86.6	0.25	4.30	13.00
4			80	22.16	89.3	0.37	3.70	14.80
4			100	17.45	90.9	0.57	3.00	16.80
4			125	13.56	93.5	0.87	1.80	18.80
4			160	8.32	95.5	1.30	0.00	21.10
4			200	4.55	96.5	1.87	0.00	22.80
5	2,754	2,762						
5			20	42.48	73.8	0.00	5.60	7.60
5			25	39.12	77.2	0.06	5.40	8.30
5			32	34.59	79.1	0.08	5.20	9.20
5			40	29.64	80.3	0.14	5.00	10.30
5			50	25.68	82.3	0.19	4.70	11.50
5			63	23.97	86.6	0.30	4.30	13.00
5			80	20.43	89.3	0.44	3.70	14.80
5			100	15.69	90.9	0.69	3.00	16.80
5			125	11.73	93.5	1.05	1.80	18.80
5			160	6.40	95.5	1.57	0.00	21.10
5			200	2.51	96.5	2.26	0.00	22.80
6	1,473	1,488						
6			20	47.85	73.8	0.00	5.60	7.60
6			25	44.52	77.2	0.03	5.40	8.30
6			32	40.01	79.1	0.04	5.20	9.20
6			40	35.08	80.3	0.07	5.00	10.30
6			50	31.15	82.3	0.10	4.70	11.50
6			63	29.49	86.6	0.16	4.30	13.00
6			80	26.01	89.3	0.24	3.70	14.80
6			100	21.38	90.9	0.37	3.00	16.80
6			125	17.58	93.5	0.57	1.80	18.80
6			160	12.50	95.5	0.85	0.00	21.10
6			200	8.93	96.5	1.22	0.00	22.80
7	2,053	2,063						
7			20	45.01	73.8	0.00	5.60	7.60
7			25	41.67	77.2	0.04	5.40	8.30
7			32	37.15	79.1	0.06	5.20	9.20
7			40	32.21	80.3	0.10	5.00	10.30
7			50	28.27	82.3	0.14	4.70	11.50
7			63	26.58	86.6	0.23	4.30	13.00
7			80	23.08	89.3	0.33	3.70	14.80
7			100	18.39	90.9	0.52	3.00	16.80
7			125	14.53	93.5	0.78	1.80	18.80
7			160	9.33	95.5	1.18	0.00	21.10
7			200	5.62	96.5	1.69	0.00	22.80
8	2,382	2,391						
8			20	43.73	73.8	0.00	5.60	7.60
8			25	40.38	77.2	0.05	5.40	8.30
8			32	35.86	79.1	0.07	5.20	9.20
8			40	30.91	80.3	0.12	5.00	10.30
8			50	26.96	82.3	0.17	4.70	11.50
8			63	25.27	86.6	0.26	4.30	13.00
8			80	21.75	89.3	0.38	3.70	14.80
8			100	17.03	90.9	0.60	3.00	16.80
8			125	13.12	93.5	0.91	1.80	18.80
8			160	7.87	95.5	1.36	0.00	21.10

To be continued on next page...

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	4.07	96.5	1.96	0.00	22.80
9	3,072	3,079						
9			20	41.53	73.8	0.00	5.60	7.60
9			25	38.17	77.2	0.06	5.40	8.30
9			32	33.64	79.1	0.09	5.20	9.20
9			40	28.68	80.3	0.15	5.00	10.30
9			50	24.72	82.3	0.22	4.70	11.50
9			63	22.99	86.6	0.34	4.30	13.00
9			80	19.44	89.3	0.49	3.70	14.80
9			100	14.66	90.9	0.77	3.00	16.80
9			125	10.66	93.5	1.17	1.80	18.80
9			160	5.28	95.5	1.76	0.00	21.10
9			200	1.31	96.5	2.52	0.00	22.80
Sum								
Sum			20	57.65				
Sum			25	54.29				
Sum			32	49.77				
Sum			40	44.82				
Sum			50	40.86				
Sum			63	39.16				
Sum			80	35.63				
Sum			100	30.90				
Sum			125	26.98				
Sum			160	21.70				
Sum			200	17.89				

Noise sensitive area: HH Eteläniemi 2 Noise sensitive point: Finnish normal frequency - User defined (284)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,119	2,128						
1			20	44.74	73.8	0.00	5.60	7.60
1			25	41.40	77.2	0.04	5.40	8.30
1			32	36.87	79.1	0.06	5.20	9.20
1			40	31.93	80.3	0.11	5.00	10.30
1			50	27.99	82.3	0.15	4.70	11.50
1			63	26.30	86.6	0.23	4.30	13.00
1			80	22.80	89.3	0.34	3.70	14.80
1			100	18.11	90.9	0.53	3.00	16.80
1			125	14.23	93.5	0.81	1.80	18.80
1			160	9.03	95.5	1.21	0.00	21.10
1			200	5.29	96.5	1.75	0.00	22.80
10	1,932	1,943						
10			20	45.53	73.8	0.00	5.60	7.60
10			25	42.19	77.2	0.04	5.40	8.30
10			32	37.67	79.1	0.06	5.20	9.20
10			40	32.73	80.3	0.10	5.00	10.30
10			50	28.79	82.3	0.14	4.70	11.50
10			63	27.12	86.6	0.21	4.30	13.00
10			80	23.62	89.3	0.31	3.70	14.80
10			100	18.94	90.9	0.49	3.00	16.80
10			125	15.09	93.5	0.74	1.80	18.80
10			160	9.92	95.5	1.11	0.00	21.10
10			200	6.24	96.5	1.59	0.00	22.80
11	2,161	2,171						
11			20	44.57	73.8	0.00	5.60	7.60
11			25	41.22	77.2	0.04	5.40	8.30
11			32	36.70	79.1	0.07	5.20	9.20
11			40	31.76	80.3	0.11	5.00	10.30
11			50	27.81	82.3	0.15	4.70	11.50
11			63	26.13	86.6	0.24	4.30	13.00
11			80	22.62	89.3	0.35	3.70	14.80
11			100	17.92	90.9	0.54	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	14.04	93.5	0.83	1.80	18.80
11			160	8.83	95.5	1.24	0.00	21.10
11			200	5.08	96.5	1.78	0.00	22.80
12	2,259	2,269						
12			20	44.18	73.8	0.00	5.60	7.60
12			25	40.84	77.2	0.05	5.40	8.30
12			32	36.32	79.1	0.07	5.20	9.20
12			40	31.37	80.3	0.11	5.00	10.30
12			50	27.43	82.3	0.16	4.70	11.50
12			63	25.73	86.6	0.25	4.30	13.00
12			80	22.22	89.3	0.36	3.70	14.80
12			100	17.52	90.9	0.57	3.00	16.80
12			125	13.62	93.5	0.86	1.80	18.80
12			160	8.39	95.5	1.29	0.00	21.10
12			200	4.62	96.5	1.86	0.00	22.80
13	2,592	2,600						
13			20	43.00	73.8	0.00	5.60	7.60
13			25	39.65	77.2	0.05	5.40	8.30
13			32	35.12	79.1	0.08	5.20	9.20
13			40	30.17	80.3	0.13	5.00	10.30
13			50	26.22	82.3	0.18	4.70	11.50
13			63	24.51	86.6	0.29	4.30	13.00
13			80	20.98	89.3	0.42	3.70	14.80
13			100	16.25	90.9	0.65	3.00	16.80
13			125	12.31	93.5	0.99	1.80	18.80
13			160	7.02	95.5	1.48	0.00	21.10
13			200	3.17	96.5	2.13	0.00	22.80
14	2,720	2,728						
14			20	42.58	73.8	0.00	5.60	7.60
14			25	39.23	77.2	0.05	5.40	8.30
14			32	34.70	79.1	0.08	5.20	9.20
14			40	29.75	80.3	0.14	5.00	10.30
14			50	25.79	82.3	0.19	4.70	11.50
14			63	24.08	86.6	0.30	4.30	13.00
14			80	20.55	89.3	0.44	3.70	14.80
14			100	15.80	90.9	0.68	3.00	16.80
14			125	11.85	93.5	1.04	1.80	18.80
14			160	6.53	95.5	1.55	0.00	21.10
14			200	2.65	96.5	2.24	0.00	22.80
15	2,761	2,769						
15			20	42.45	73.8	0.00	5.60	7.60
15			25	39.10	77.2	0.06	5.40	8.30
15			32	34.57	79.1	0.08	5.20	9.20
15			40	29.62	80.3	0.14	5.00	10.30
15			50	25.66	82.3	0.19	4.70	11.50
15			63	23.95	86.6	0.30	4.30	13.00
15			80	20.41	89.3	0.44	3.70	14.80
15			100	15.66	90.9	0.69	3.00	16.80
15			125	11.70	93.5	1.05	1.80	18.80
15			160	6.38	95.5	1.58	0.00	21.10
15			200	2.48	96.5	2.27	0.00	22.80
16	3,113	3,120						
16			20	41.42	73.8	0.00	5.60	7.60
16			25	38.05	77.2	0.06	5.40	8.30
16			32	33.52	79.1	0.09	5.20	9.20
16			40	28.56	80.3	0.16	5.00	10.30
16			50	24.60	82.3	0.22	4.70	11.50
16			63	22.87	86.6	0.34	4.30	13.00
16			80	19.32	89.3	0.50	3.70	14.80
16			100	14.54	90.9	0.78	3.00	16.80
16			125	10.53	93.5	1.19	1.80	18.80
16			160	5.14	95.5	1.78	0.00	21.10
16			200	1.16	96.5	2.56	0.00	22.80
17	3,366	3,374						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	40.74	73.8	0.00	5.60	7.60
17			25	37.37	77.2	0.07	5.40	8.30
17			32	32.84	79.1	0.10	5.20	9.20
17			40	27.87	80.3	0.17	5.00	10.30
17			50	23.90	82.3	0.24	4.70	11.50
17			63	22.17	86.6	0.37	4.30	13.00
17			80	18.60	89.3	0.54	3.70	14.80
17			100	13.79	90.9	0.84	3.00	16.80
17			125	9.76	93.5	1.28	1.80	18.80
17			160	4.31	95.5	1.92	0.00	21.10
17			200	0.27	96.5	2.77	0.00	22.80
18	3,115	3,123						
18			20	41.41	73.8	0.00	5.60	7.60
18			25	38.05	77.2	0.06	5.40	8.30
18			32	33.51	79.1	0.09	5.20	9.20
18			40	28.55	80.3	0.16	5.00	10.30
18			50	24.59	82.3	0.22	4.70	11.50
18			63	22.86	86.6	0.34	4.30	13.00
18			80	19.31	89.3	0.50	3.70	14.80
18			100	14.53	90.9	0.78	3.00	16.80
18			125	10.52	93.5	1.19	1.80	18.80
18			160	5.13	95.5	1.78	0.00	21.10
18			200	1.15	96.5	2.56	0.00	22.80
19	3,281	3,287						
19			20	40.96	73.8	0.00	5.60	7.60
19			25	37.60	77.2	0.07	5.40	8.30
19			32	33.07	79.1	0.10	5.20	9.20
19			40	28.10	80.3	0.16	5.00	10.30
19			50	24.13	82.3	0.23	4.70	11.50
19			63	22.40	86.6	0.36	4.30	13.00
19			80	18.84	89.3	0.53	3.70	14.80
19			100	14.04	90.9	0.82	3.00	16.80
19			125	10.02	93.5	1.25	1.80	18.80
19			160	4.59	95.5	1.87	0.00	21.10
19			200	0.57	96.5	2.70	0.00	22.80
2	1,582	1,595						
2			20	47.24	73.8	0.00	5.60	7.60
2			25	43.91	77.2	0.03	5.40	8.30
2			32	39.40	79.1	0.05	5.20	9.20
2			40	34.46	80.3	0.08	5.00	10.30
2			50	30.53	82.3	0.11	4.70	11.50
2			63	28.87	86.6	0.18	4.30	13.00
2			80	25.39	89.3	0.26	3.70	14.80
2			100	20.74	90.9	0.40	3.00	16.80
2			125	16.94	93.5	0.61	1.80	18.80
2			160	11.83	95.5	0.91	0.00	21.10
2			200	8.24	96.5	1.31	0.00	22.80
20	3,684	3,689						
20			20	39.96	73.8	0.00	5.60	7.60
20			25	36.59	77.2	0.07	5.40	8.30
20			32	32.05	79.1	0.11	5.20	9.20
20			40	27.08	80.3	0.18	5.00	10.30
20			50	23.10	82.3	0.26	4.70	11.50
20			63	21.36	86.6	0.41	4.30	13.00
20			80	17.77	89.3	0.59	3.70	14.80
20			100	12.94	90.9	0.92	3.00	16.80
20			125	8.86	93.5	1.40	1.80	18.80
20			160	3.36	95.5	2.10	0.00	21.10
20			200	-0.76	96.5	3.03	0.00	22.80
21	3,857	3,865						
21			20	39.56	73.8	0.00	5.60	7.60
21			25	36.18	77.2	0.08	5.40	8.30
21			32	31.64	79.1	0.12	5.20	9.20
21			40	26.66	80.3	0.19	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	22.69	82.3	0.27	4.70	11.50
21			63	20.93	86.6	0.43	4.30	13.00
21			80	17.34	89.3	0.62	3.70	14.80
21			100	12.49	90.9	0.97	3.00	16.80
21			125	8.39	93.5	1.47	1.80	18.80
21			160	2.85	95.5	2.20	0.00	21.10
21			200	-1.31	96.5	3.17	0.00	22.80
22	4,321	4,327						
22			20	38.58	73.8	0.00	5.60	7.60
22			25	35.19	77.2	0.09	5.40	8.30
22			32	30.65	79.1	0.13	5.20	9.20
22			40	25.66	80.3	0.22	5.00	10.30
22			50	21.67	82.3	0.30	4.70	11.50
22			63	19.90	86.6	0.48	4.30	13.00
22			80	16.28	89.3	0.69	3.70	14.80
22			100	11.39	90.9	1.08	3.00	16.80
22			125	7.23	93.5	1.64	1.80	18.80
22			160	1.61	95.5	2.47	0.00	21.10
22			200	-2.67	96.5	3.55	0.00	22.80
23	4,462	4,467						
23			20	38.30	73.8	0.00	5.60	7.60
23			25	34.91	77.2	0.09	5.40	8.30
23			32	30.37	79.1	0.13	5.20	9.20
23			40	25.38	80.3	0.22	5.00	10.30
23			50	21.39	82.3	0.31	4.70	11.50
23			63	19.61	86.6	0.49	4.30	13.00
23			80	15.99	89.3	0.71	3.70	14.80
23			100	11.08	90.9	1.12	3.00	16.80
23			125	6.90	93.5	1.70	1.80	18.80
23			160	1.25	95.5	2.55	0.00	21.10
23			200	-3.06	96.5	3.66	0.00	22.80
24	4,240	4,246						
24			20	38.74	73.8	0.00	5.60	7.60
24			25	35.36	77.2	0.08	5.40	8.30
24			32	30.81	79.1	0.13	5.20	9.20
24			40	25.83	80.3	0.21	5.00	10.30
24			50	21.84	82.3	0.30	4.70	11.50
24			63	20.07	86.6	0.47	4.30	13.00
24			80	16.46	89.3	0.68	3.70	14.80
24			100	11.58	90.9	1.06	3.00	16.80
24			125	7.43	93.5	1.61	1.80	18.80
24			160	1.82	95.5	2.42	0.00	21.10
24			200	-2.44	96.5	3.48	0.00	22.80
25	3,892	3,898						
25			20	39.48	73.8	0.00	5.60	7.60
25			25	36.11	77.2	0.08	5.40	8.30
25			32	31.57	79.1	0.12	5.20	9.20
25			40	26.59	80.3	0.19	5.00	10.30
25			50	22.61	82.3	0.27	4.70	11.50
25			63	20.85	86.6	0.43	4.30	13.00
25			80	17.26	89.3	0.62	3.70	14.80
25			100	12.41	90.9	0.97	3.00	16.80
25			125	8.30	93.5	1.48	1.80	18.80
25			160	2.76	95.5	2.22	0.00	21.10
25			200	-1.41	96.5	3.20	0.00	22.80
26	4,324	4,330						
26			20	38.57	73.8	0.00	5.60	7.60
26			25	35.18	77.2	0.09	5.40	8.30
26			32	30.64	79.1	0.13	5.20	9.20
26			40	25.65	80.3	0.22	5.00	10.30
26			50	21.67	82.3	0.30	4.70	11.50
26			63	19.89	86.6	0.48	4.30	13.00
26			80	16.28	89.3	0.69	3.70	14.80
26			100	11.39	90.9	1.08	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
26			125	7.22	93.5	1.65	1.80	18.80
26			160	1.60	95.5	2.47	0.00	21.10
26			200	-2.68	96.5	3.55	0.00	22.80
27	4,636	4,642						
27			20	37.97	73.8	0.00	5.60	7.60
27			25	34.57	77.2	0.09	5.40	8.30
27			32	30.03	79.1	0.14	5.20	9.20
27			40	25.03	80.3	0.23	5.00	10.30
27			50	21.04	82.3	0.32	4.70	11.50
27			63	19.26	86.6	0.51	4.30	13.00
27			80	15.62	89.3	0.74	3.70	14.80
27			100	10.71	90.9	1.16	3.00	16.80
27			125	6.50	93.5	1.76	1.80	18.80
27			160	0.82	95.5	2.65	0.00	21.10
27			200	-3.54	96.5	3.81	0.00	22.80
28	4,889	4,894						
28			20	37.51	73.8	0.00	5.60	7.60
28			25	34.11	77.2	0.10	5.40	8.30
28			32	29.56	79.1	0.15	5.20	9.20
28			40	24.56	80.3	0.24	5.00	10.30
28			50	20.56	82.3	0.34	4.70	11.50
28			63	18.77	86.6	0.54	4.30	13.00
28			80	15.12	89.3	0.78	3.70	14.80
28			100	10.18	90.9	1.22	3.00	16.80
28			125	5.95	93.5	1.86	1.80	18.80
28			160	0.22	95.5	2.79	0.00	21.10
28			200	-4.21	96.5	4.01	0.00	22.80
29	5,219	5,224						
29			20	36.94	73.8	0.00	5.60	7.60
29			25	33.54	77.2	0.10	5.40	8.30
29			32	28.98	79.1	0.16	5.20	9.20
29			40	23.98	80.3	0.26	5.00	10.30
29			50	19.97	82.3	0.37	4.70	11.50
29			63	18.17	86.6	0.57	4.30	13.00
29			80	14.50	89.3	0.84	3.70	14.80
29			100	9.53	90.9	1.31	3.00	16.80
29			125	5.25	93.5	1.99	1.80	18.80
29			160	-0.54	95.5	2.98	0.00	21.10
29			200	-5.04	96.5	4.28	0.00	22.80
3	2,060	2,071						
3			20	44.98	73.8	0.00	5.60	7.60
3			25	41.64	77.2	0.04	5.40	8.30
3			32	37.12	79.1	0.06	5.20	9.20
3			40	32.17	80.3	0.10	5.00	10.30
3			50	28.23	82.3	0.14	4.70	11.50
3			63	26.55	86.6	0.23	4.30	13.00
3			80	23.05	89.3	0.33	3.70	14.80
3			100	18.36	90.9	0.52	3.00	16.80
3			125	14.49	93.5	0.79	1.80	18.80
3			160	9.30	95.5	1.18	0.00	21.10
3			200	5.58	96.5	1.70	0.00	22.80
30	5,092	5,096						
30			20	37.16	73.8	0.00	5.60	7.60
30			25	33.75	77.2	0.10	5.40	8.30
30			32	29.20	79.1	0.15	5.20	9.20
30			40	24.20	80.3	0.25	5.00	10.30
30			50	20.20	82.3	0.36	4.70	11.50
30			63	18.40	86.6	0.56	4.30	13.00
30			80	14.74	89.3	0.82	3.70	14.80
30			100	9.78	90.9	1.27	3.00	16.80
30			125	5.52	93.5	1.94	1.80	18.80
30			160	-0.25	95.5	2.90	0.00	21.10
30			200	-4.72	96.5	4.18	0.00	22.80
31	5,644	5,648						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			20	36.26	73.8	0.00	5.60	7.60
31			25	32.85	77.2	0.11	5.40	8.30
31			32	28.29	79.1	0.17	5.20	9.20
31			40	23.28	80.3	0.28	5.00	10.30
31			50	19.27	82.3	0.40	4.70	11.50
31			63	17.44	86.6	0.62	4.30	13.00
31			80	13.76	89.3	0.90	3.70	14.80
31			100	8.75	90.9	1.41	3.00	16.80
31			125	4.42	93.5	2.15	1.80	18.80
31			160	-1.46	95.5	3.22	0.00	21.10
31			200	-6.07	96.5	4.63	0.00	22.80
32	5,556	5,560						
32			20	36.40	73.8	0.00	5.60	7.60
32			25	32.99	77.2	0.11	5.40	8.30
32			32	28.43	79.1	0.17	5.20	9.20
32			40	23.42	80.3	0.28	5.00	10.30
32			50	19.41	82.3	0.39	4.70	11.50
32			63	17.59	86.6	0.61	4.30	13.00
32			80	13.91	89.3	0.89	3.70	14.80
32			100	8.91	90.9	1.39	3.00	16.80
32			125	4.59	93.5	2.11	1.80	18.80
32			160	-1.27	95.5	3.17	0.00	21.10
32			200	-5.86	96.5	4.56	0.00	22.80
33	5,555	5,560						
33			20	36.40	73.8	0.00	5.60	7.60
33			25	32.99	77.2	0.11	5.40	8.30
33			32	28.43	79.1	0.17	5.20	9.20
33			40	23.42	80.3	0.28	5.00	10.30
33			50	19.41	82.3	0.39	4.70	11.50
33			63	17.59	86.6	0.61	4.30	13.00
33			80	13.91	89.3	0.89	3.70	14.80
33			100	8.91	90.9	1.39	3.00	16.80
33			125	4.59	93.5	2.11	1.80	18.80
33			160	-1.27	95.5	3.17	0.00	21.10
33			200	-5.86	96.5	4.56	0.00	22.80
4	2,161	2,171						
4			20	44.57	73.8	0.00	5.60	7.60
4			25	41.22	77.2	0.04	5.40	8.30
4			32	36.70	79.1	0.07	5.20	9.20
4			40	31.76	80.3	0.11	5.00	10.30
4			50	27.81	82.3	0.15	4.70	11.50
4			63	26.13	86.6	0.24	4.30	13.00
4			80	22.62	89.3	0.35	3.70	14.80
4			100	17.92	90.9	0.54	3.00	16.80
4			125	14.04	93.5	0.83	1.80	18.80
4			160	8.83	95.5	1.24	0.00	21.10
4			200	5.09	96.5	1.78	0.00	22.80
5	2,663	2,672						
5			20	42.76	73.8	0.00	5.60	7.60
5			25	39.41	77.2	0.05	5.40	8.30
5			32	34.88	79.1	0.08	5.20	9.20
5			40	29.93	80.3	0.13	5.00	10.30
5			50	25.98	82.3	0.19	4.70	11.50
5			63	24.27	86.6	0.29	4.30	13.00
5			80	20.74	89.3	0.43	3.70	14.80
5			100	16.00	90.9	0.67	3.00	16.80
5			125	12.05	93.5	1.02	1.80	18.80
5			160	6.74	95.5	1.52	0.00	21.10
5			200	2.87	96.5	2.19	0.00	22.80
6	1,521	1,536						
6			20	47.57	73.8	0.00	5.60	7.60
6			25	44.24	77.2	0.03	5.40	8.30
6			32	39.73	79.1	0.05	5.20	9.20
6			40	34.80	80.3	0.08	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			50	30.87	82.3	0.11	4.70	11.50
6			63	29.21	86.6	0.17	4.30	13.00
6			80	25.73	89.3	0.25	3.70	14.80
6			100	21.09	90.9	0.38	3.00	16.80
6			125	17.29	93.5	0.58	1.80	18.80
6			160	12.20	95.5	0.88	0.00	21.10
6			200	8.62	96.5	1.26	0.00	22.80
7	2,054	2,065						
7			20	45.00	73.8	0.00	5.60	7.60
7			25	41.66	77.2	0.04	5.40	8.30
7			32	37.14	79.1	0.06	5.20	9.20
7			40	32.20	80.3	0.10	5.00	10.30
7			50	28.26	82.3	0.14	4.70	11.50
7			63	26.58	86.6	0.23	4.30	13.00
7			80	23.07	89.3	0.33	3.70	14.80
7			100	18.39	90.9	0.52	3.00	16.80
7			125	14.52	93.5	0.78	1.80	18.80
7			160	9.33	95.5	1.18	0.00	21.10
7			200	5.61	96.5	1.69	0.00	22.80
8	2,332	2,341						
8			20	43.91	73.8	0.00	5.60	7.60
8			25	40.56	77.2	0.05	5.40	8.30
8			32	36.04	79.1	0.07	5.20	9.20
8			40	31.09	80.3	0.12	5.00	10.30
8			50	27.15	82.3	0.16	4.70	11.50
8			63	25.45	86.6	0.26	4.30	13.00
8			80	21.94	89.3	0.37	3.70	14.80
8			100	17.23	90.9	0.59	3.00	16.80
8			125	13.32	93.5	0.89	1.80	18.80
8			160	8.08	95.5	1.33	0.00	21.10
8			200	4.29	96.5	1.92	0.00	22.80
9	3,018	3,025						
9			20	41.69	73.8	0.00	5.60	7.60
9			25	38.33	77.2	0.06	5.40	8.30
9			32	33.80	79.1	0.09	5.20	9.20
9			40	28.84	80.3	0.15	5.00	10.30
9			50	24.87	82.3	0.21	4.70	11.50
9			63	23.15	86.6	0.33	4.30	13.00
9			80	19.60	89.3	0.48	3.70	14.80
9			100	14.83	90.9	0.76	3.00	16.80
9			125	10.84	93.5	1.15	1.80	18.80
9			160	5.46	95.5	1.72	0.00	21.10
9			200	1.51	96.5	2.48	0.00	22.80
Sum								
Sum			20	57.63				
Sum			25	54.28				
Sum			32	49.75				
Sum			40	44.80				
Sum			50	40.85				
Sum			63	39.15				
Sum			80	35.62				
Sum			100	30.89				
Sum			125	26.96				
Sum			160	21.69				
Sum			200	17.88				

Noise sensitive area: HH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (295)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,739	1,751						
1			20	46.44	73.8	0.00	5.60	7.60
1			25	43.10	77.2	0.04	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			32	38.58	79.1	0.05	5.20	9.20
1			40	33.65	80.3	0.09	5.00	10.30
1			50	29.71	82.3	0.12	4.70	11.50
1			63	28.04	86.6	0.19	4.30	13.00
1			80	24.56	89.3	0.28	3.70	14.80
1			100	19.90	90.9	0.44	3.00	16.80
1			125	16.07	93.5	0.67	1.80	18.80
1			160	10.94	95.5	1.00	0.00	21.10
1			200	7.30	96.5	1.44	0.00	22.80
10	2,836	2,843						
10			20	42.22	73.8	0.00	5.60	7.60
10			25	38.87	77.2	0.06	5.40	8.30
10			32	34.34	79.1	0.09	5.20	9.20
10			40	29.38	80.3	0.14	5.00	10.30
10			50	25.42	82.3	0.20	4.70	11.50
10			63	23.71	86.6	0.31	4.30	13.00
10			80	20.17	89.3	0.45	3.70	14.80
10			100	15.41	90.9	0.71	3.00	16.80
10			125	11.44	93.5	1.08	1.80	18.80
10			160	6.10	95.5	1.62	0.00	21.10
10			200	2.19	96.5	2.33	0.00	22.80
11	2,928	2,936						
11			20	41.95	73.8	0.00	5.60	7.60
11			25	38.59	77.2	0.06	5.40	8.30
11			32	34.06	79.1	0.09	5.20	9.20
11			40	29.10	80.3	0.15	5.00	10.30
11			50	25.14	82.3	0.21	4.70	11.50
11			63	23.42	86.6	0.32	4.30	13.00
11			80	19.88	89.3	0.47	3.70	14.80
11			100	15.11	90.9	0.73	3.00	16.80
11			125	11.13	93.5	1.12	1.80	18.80
11			160	5.77	95.5	1.67	0.00	21.10
11			200	1.84	96.5	2.41	0.00	22.80
12	3,229	3,236						
12			20	41.10	73.8	0.00	5.60	7.60
12			25	37.74	77.2	0.06	5.40	8.30
12			32	33.20	79.1	0.10	5.20	9.20
12			40	28.24	80.3	0.16	5.00	10.30
12			50	24.27	82.3	0.23	4.70	11.50
12			63	22.54	86.6	0.36	4.30	13.00
12			80	18.98	89.3	0.52	3.70	14.80
12			100	14.19	90.9	0.81	3.00	16.80
12			125	10.17	93.5	1.23	1.80	18.80
12			160	4.76	95.5	1.84	0.00	21.10
12			200	0.75	96.5	2.65	0.00	22.80
13	3,440	3,447						
13			20	40.55	73.8	0.00	5.60	7.60
13			25	37.18	77.2	0.07	5.40	8.30
13			32	32.65	79.1	0.10	5.20	9.20
13			40	27.68	80.3	0.17	5.00	10.30
13			50	23.71	82.3	0.24	4.70	11.50
13			63	21.97	86.6	0.38	4.30	13.00
13			80	18.40	89.3	0.55	3.70	14.80
13			100	13.59	90.9	0.86	3.00	16.80
13			125	9.54	93.5	1.31	1.80	18.80
13			160	4.09	95.5	1.96	0.00	21.10
13			200	0.03	96.5	2.83	0.00	22.80
14	3,193	3,200						
14			20	41.20	73.8	0.00	5.60	7.60
14			25	37.83	77.2	0.06	5.40	8.30
14			32	33.30	79.1	0.10	5.20	9.20
14			40	28.34	80.3	0.16	5.00	10.30
14			50	24.37	82.3	0.22	4.70	11.50
14			63	22.65	86.6	0.35	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			80	19.09	89.3	0.51	3.70	14.80
14			100	14.30	90.9	0.80	3.00	16.80
14			125	10.28	93.5	1.22	1.80	18.80
14			160	4.87	95.5	1.82	0.00	21.10
14			200	0.87	96.5	2.62	0.00	22.80
15	3,692	3,697						
15			20	39.94	73.8	0.00	5.60	7.60
15			25	36.57	77.2	0.07	5.40	8.30
15			32	32.03	79.1	0.11	5.20	9.20
15			40	27.06	80.3	0.18	5.00	10.30
15			50	23.08	82.3	0.26	4.70	11.50
15			63	21.34	86.6	0.41	4.30	13.00
15			80	17.75	89.3	0.59	3.70	14.80
15			100	12.92	90.9	0.92	3.00	16.80
15			125	8.84	93.5	1.41	1.80	18.80
15			160	3.33	95.5	2.11	0.00	21.10
15			200	-0.79	96.5	3.03	0.00	22.80
16	3,919	3,925						
16			20	39.42	73.8	0.00	5.60	7.60
16			25	36.05	77.2	0.08	5.40	8.30
16			32	31.51	79.1	0.12	5.20	9.20
16			40	26.53	80.3	0.20	5.00	10.30
16			50	22.55	82.3	0.27	4.70	11.50
16			63	20.79	86.6	0.43	4.30	13.00
16			80	17.20	89.3	0.63	3.70	14.80
16			100	12.34	90.9	0.98	3.00	16.80
16			125	8.23	93.5	1.49	1.80	18.80
16			160	2.69	95.5	2.24	0.00	21.10
16			200	-1.49	96.5	3.22	0.00	22.80
17	4,050	4,057						
17			20	39.14	73.8	0.00	5.60	7.60
17			25	35.76	77.2	0.08	5.40	8.30
17			32	31.21	79.1	0.12	5.20	9.20
17			40	26.23	80.3	0.20	5.00	10.30
17			50	22.25	82.3	0.28	4.70	11.50
17			63	20.49	86.6	0.45	4.30	13.00
17			80	16.89	89.3	0.65	3.70	14.80
17			100	12.02	90.9	1.01	3.00	16.80
17			125	7.89	93.5	1.54	1.80	18.80
17			160	2.32	95.5	2.31	0.00	21.10
17			200	-1.89	96.5	3.33	0.00	22.80
18	3,708	3,715						
18			20	39.90	73.8	0.00	5.60	7.60
18			25	36.53	77.2	0.07	5.40	8.30
18			32	31.99	79.1	0.11	5.20	9.20
18			40	27.01	80.3	0.19	5.00	10.30
18			50	23.04	82.3	0.26	4.70	11.50
18			63	21.29	86.6	0.41	4.30	13.00
18			80	17.71	89.3	0.59	3.70	14.80
18			100	12.87	90.9	0.93	3.00	16.80
18			125	8.79	93.5	1.41	1.80	18.80
18			160	3.28	95.5	2.12	0.00	21.10
18			200	-0.85	96.5	3.05	0.00	22.80
19	4,195	4,200						
19			20	38.84	73.8	0.00	5.60	7.60
19			25	35.45	77.2	0.08	5.40	8.30
19			32	30.91	79.1	0.13	5.20	9.20
19			40	25.93	80.3	0.21	5.00	10.30
19			50	21.94	82.3	0.29	4.70	11.50
19			63	20.17	86.6	0.46	4.30	13.00
19			80	16.56	89.3	0.67	3.70	14.80
19			100	11.69	90.9	1.05	3.00	16.80
19			125	7.54	93.5	1.60	1.80	18.80
19			160	1.94	95.5	2.39	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			200	-2.31	96.5	3.44	0.00	22.80
2	1,774	1,786						
2			20	46.26	73.8	0.00	5.60	7.60
2			25	42.93	77.2	0.04	5.40	8.30
2			32	38.41	79.1	0.05	5.20	9.20
2			40	33.47	80.3	0.09	5.00	10.30
2			50	29.54	82.3	0.13	4.70	11.50
2			63	27.87	86.6	0.20	4.30	13.00
2			80	24.38	89.3	0.29	3.70	14.80
2			100	19.72	90.9	0.45	3.00	16.80
2			125	15.88	93.5	0.68	1.80	18.80
2			160	10.74	95.5	1.02	0.00	21.10
2			200	7.10	96.5	1.46	0.00	22.80
20	4,536	4,540						
20			20	38.16	73.8	0.00	5.60	7.60
20			25	34.77	77.2	0.09	5.40	8.30
20			32	30.22	79.1	0.14	5.20	9.20
20			40	25.23	80.3	0.23	5.00	10.30
20			50	21.24	82.3	0.32	4.70	11.50
20			63	19.46	86.6	0.50	4.30	13.00
20			80	15.83	89.3	0.73	3.70	14.80
20			100	10.92	90.9	1.14	3.00	16.80
20			125	6.73	93.5	1.73	1.80	18.80
20			160	1.07	95.5	2.59	0.00	21.10
20			200	-3.27	96.5	3.72	0.00	22.80
21	4,458	4,465						
21			20	38.30	73.8	0.00	5.60	7.60
21			25	34.91	77.2	0.09	5.40	8.30
21			32	30.37	79.1	0.13	5.20	9.20
21			40	25.38	80.3	0.22	5.00	10.30
21			50	21.39	82.3	0.31	4.70	11.50
21			63	19.61	86.6	0.49	4.30	13.00
21			80	15.99	89.3	0.71	3.70	14.80
21			100	11.09	90.9	1.12	3.00	16.80
21			125	6.91	93.5	1.70	1.80	18.80
21			160	1.26	95.5	2.55	0.00	21.10
21			200	-3.06	96.5	3.66	0.00	22.80
22	4,847	4,852						
22			20	37.58	73.8	0.00	5.60	7.60
22			25	34.19	77.2	0.10	5.40	8.30
22			32	29.64	79.1	0.15	5.20	9.20
22			40	24.64	80.3	0.24	5.00	10.30
22			50	20.64	82.3	0.34	4.70	11.50
22			63	18.85	86.6	0.53	4.30	13.00
22			80	15.21	89.3	0.78	3.70	14.80
22			100	10.27	90.9	1.21	3.00	16.80
22			125	6.04	93.5	1.84	1.80	18.80
22			160	0.32	95.5	2.77	0.00	21.10
22			200	-4.10	96.5	3.98	0.00	22.80
23	4,864	4,868						
23			20	37.55	73.8	0.00	5.60	7.60
23			25	34.16	77.2	0.10	5.40	8.30
23			32	29.61	79.1	0.15	5.20	9.20
23			40	24.61	80.3	0.24	5.00	10.30
23			50	20.61	82.3	0.34	4.70	11.50
23			63	18.82	86.6	0.54	4.30	13.00
23			80	15.17	89.3	0.78	3.70	14.80
23			100	10.24	90.9	1.22	3.00	16.80
23			125	6.00	93.5	1.85	1.80	18.80
23			160	0.28	95.5	2.77	0.00	21.10
23			200	-4.14	96.5	3.99	0.00	22.80
24	5,034	5,039						
24			20	37.25	73.8	0.00	5.60	7.60
24			25	33.85	77.2	0.10	5.40	8.30

To be continued on next page...

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			32	29.30	79.1	0.15	5.20	9.20
24			40	24.30	80.3	0.25	5.00	10.30
24			50	20.30	82.3	0.35	4.70	11.50
24			63	18.50	86.6	0.55	4.30	13.00
24			80	14.85	89.3	0.81	3.70	14.80
24			100	9.89	90.9	1.26	3.00	16.80
24			125	5.64	93.5	1.91	1.80	18.80
24			160	-0.12	95.5	2.87	0.00	21.10
24			200	-4.58	96.5	4.13	0.00	22.80
25	4,619	4,624						
25			20	38.00	73.8	0.00	5.60	7.60
25			25	34.61	77.2	0.09	5.40	8.30
25			32	30.06	79.1	0.14	5.20	9.20
25			40	25.07	80.3	0.23	5.00	10.30
25			50	21.08	82.3	0.32	4.70	11.50
25			63	19.29	86.6	0.51	4.30	13.00
25			80	15.66	89.3	0.74	3.70	14.80
25			100	10.74	90.9	1.16	3.00	16.80
25			125	6.54	93.5	1.76	1.80	18.80
25			160	0.86	95.5	2.64	0.00	21.10
25			200	-3.49	96.5	3.79	0.00	22.80
26	4,990	4,996						
26			20	37.33	73.8	0.00	5.60	7.60
26			25	33.93	77.2	0.10	5.40	8.30
26			32	29.38	79.1	0.15	5.20	9.20
26			40	24.38	80.3	0.25	5.00	10.30
26			50	20.38	82.3	0.35	4.70	11.50
26			63	18.58	86.6	0.55	4.30	13.00
26			80	14.93	89.3	0.80	3.70	14.80
26			100	9.98	90.9	1.25	3.00	16.80
26			125	5.73	93.5	1.90	1.80	18.80
26			160	-0.02	95.5	2.85	0.00	21.10
26			200	-4.47	96.5	4.10	0.00	22.80
27	5,234	5,239						
27			20	36.92	73.8	0.00	5.60	7.60
27			25	33.51	77.2	0.10	5.40	8.30
27			32	28.96	79.1	0.16	5.20	9.20
27			40	23.95	80.3	0.26	5.00	10.30
27			50	19.95	82.3	0.37	4.70	11.50
27			63	18.14	86.6	0.58	4.30	13.00
27			80	14.48	89.3	0.84	3.70	14.80
27			100	9.51	90.9	1.31	3.00	16.80
27			125	5.22	93.5	1.99	1.80	18.80
27			160	-0.57	95.5	2.99	0.00	21.10
27			200	-5.08	96.5	4.30	0.00	22.80
28	5,386	5,390						
28			20	36.67	73.8	0.00	5.60	7.60
28			25	33.26	77.2	0.11	5.40	8.30
28			32	28.71	79.1	0.16	5.20	9.20
28			40	23.70	80.3	0.27	5.00	10.30
28			50	19.69	82.3	0.38	4.70	11.50
28			63	17.88	86.6	0.59	4.30	13.00
28			80	14.21	89.3	0.86	3.70	14.80
28			100	9.22	90.9	1.35	3.00	16.80
28			125	4.92	93.5	2.05	1.80	18.80
28			160	-0.90	95.5	3.07	0.00	21.10
28			200	-5.45	96.5	4.42	0.00	22.80
29	5,613	5,617						
29			20	36.31	73.8	0.00	5.60	7.60
29			25	32.90	77.2	0.11	5.40	8.30
29			32	28.34	79.1	0.17	5.20	9.20
29			40	23.33	80.3	0.28	5.00	10.30
29			50	19.32	82.3	0.39	4.70	11.50
29			63	17.49	86.6	0.62	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			80	13.81	89.3	0.90	3.70	14.80
29			100	8.81	90.9	1.40	3.00	16.80
29			125	4.47	93.5	2.13	1.80	18.80
29			160	-1.39	95.5	3.20	0.00	21.10
29			200	-6.00	96.5	4.61	0.00	22.80
3	1,964	1,975						
3			20	45.39	73.8	0.00	5.60	7.60
3			25	42.05	77.2	0.04	5.40	8.30
3			32	37.53	79.1	0.06	5.20	9.20
3			40	32.59	80.3	0.10	5.00	10.30
3			50	28.65	82.3	0.14	4.70	11.50
3			63	26.97	86.6	0.22	4.30	13.00
3			80	23.47	89.3	0.32	3.70	14.80
3			100	18.79	90.9	0.49	3.00	16.80
3			125	14.94	93.5	0.75	1.80	18.80
3			160	9.76	95.5	1.13	0.00	21.10
3			200	6.07	96.5	1.62	0.00	22.80
30	5,372	5,376						
30			20	36.69	73.8	0.00	5.60	7.60
30			25	33.28	77.2	0.11	5.40	8.30
30			32	28.73	79.1	0.16	5.20	9.20
30			40	23.72	80.3	0.27	5.00	10.30
30			50	19.71	82.3	0.38	4.70	11.50
30			63	17.90	86.6	0.59	4.30	13.00
30			80	14.23	89.3	0.86	3.70	14.80
30			100	9.25	90.9	1.34	3.00	16.80
30			125	4.95	93.5	2.04	1.80	18.80
30			160	-0.87	95.5	3.06	0.00	21.10
30			200	-5.42	96.5	4.41	0.00	22.80
31	5,980	5,983						
31			20	35.76	73.8	0.00	5.60	7.60
31			25	32.34	77.2	0.12	5.40	8.30
31			32	27.78	79.1	0.18	5.20	9.20
31			40	22.76	80.3	0.30	5.00	10.30
31			50	18.74	82.3	0.42	4.70	11.50
31			63	16.90	86.6	0.66	4.30	13.00
31			80	13.20	89.3	0.96	3.70	14.80
31			100	8.17	90.9	1.50	3.00	16.80
31			125	3.79	93.5	2.27	1.80	18.80
31			160	-2.15	95.5	3.41	0.00	21.10
31			200	-6.85	96.5	4.91	0.00	22.80
32	5,749	5,753						
32			20	36.10	73.8	0.00	5.60	7.60
32			25	32.69	77.2	0.12	5.40	8.30
32			32	28.13	79.1	0.17	5.20	9.20
32			40	23.12	80.3	0.29	5.00	10.30
32			50	19.10	82.3	0.40	4.70	11.50
32			63	17.27	86.6	0.63	4.30	13.00
32			80	13.58	89.3	0.92	3.70	14.80
32			100	8.56	90.9	1.44	3.00	16.80
32			125	4.22	93.5	2.19	1.80	18.80
32			160	-1.68	95.5	3.28	0.00	21.10
32			200	-6.31	96.5	4.72	0.00	22.80
33	5,628	5,632						
33			20	36.29	73.8	0.00	5.60	7.60
33			25	32.87	77.2	0.11	5.40	8.30
33			32	28.32	79.1	0.17	5.20	9.20
33			40	23.30	80.3	0.28	5.00	10.30
33			50	19.29	82.3	0.39	4.70	11.50
33			63	17.47	86.6	0.62	4.30	13.00
33			80	13.79	89.3	0.90	3.70	14.80
33			100	8.78	90.9	1.41	3.00	16.80
33			125	4.45	93.5	2.14	1.80	18.80
33			160	-1.42	95.5	3.21	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			200	-6.03	96.5	4.62	0.00	22.80
4	2,308	2,318						
4			20	44.00	73.8	0.00	5.60	7.60
4			25	40.65	77.2	0.05	5.40	8.30
4			32	36.13	79.1	0.07	5.20	9.20
4			40	31.18	80.3	0.12	5.00	10.30
4			50	27.24	82.3	0.16	4.70	11.50
4			63	25.54	86.6	0.25	4.30	13.00
4			80	22.03	89.3	0.37	3.70	14.80
4			100	17.32	90.9	0.58	3.00	16.80
4			125	13.42	93.5	0.88	1.80	18.80
4			160	8.18	95.5	1.32	0.00	21.10
4			200	4.40	96.5	1.90	0.00	22.80
5	2,865	2,873						
5			20	42.13	73.8	0.00	5.60	7.60
5			25	38.78	77.2	0.06	5.40	8.30
5			32	34.25	79.1	0.09	5.20	9.20
5			40	29.29	80.3	0.14	5.00	10.30
5			50	25.33	82.3	0.20	4.70	11.50
5			63	23.62	86.6	0.32	4.30	13.00
5			80	20.07	89.3	0.46	3.70	14.80
5			100	15.32	90.9	0.72	3.00	16.80
5			125	11.34	93.5	1.09	1.80	18.80
5			160	6.00	95.5	1.64	0.00	21.10
5			200	2.08	96.5	2.36	0.00	22.80
6	2,274	2,284						
6			20	44.13	73.8	0.00	5.60	7.60
6			25	40.78	77.2	0.05	5.40	8.30
6			32	36.26	79.1	0.07	5.20	9.20
6			40	31.31	80.3	0.11	5.00	10.30
6			50	27.37	82.3	0.16	4.70	11.50
6			63	25.67	86.6	0.25	4.30	13.00
6			80	22.16	89.3	0.37	3.70	14.80
6			100	17.46	90.9	0.57	3.00	16.80
6			125	13.56	93.5	0.87	1.80	18.80
6			160	8.32	95.5	1.30	0.00	21.10
6			200	4.55	96.5	1.87	0.00	22.80
7	2,638	2,646						
7			20	42.85	73.8	0.00	5.60	7.60
7			25	39.50	77.2	0.05	5.40	8.30
7			32	34.97	79.1	0.08	5.20	9.20
7			40	30.02	80.3	0.13	5.00	10.30
7			50	26.06	82.3	0.19	4.70	11.50
7			63	24.36	86.6	0.29	4.30	13.00
7			80	20.83	89.3	0.42	3.70	14.80
7			100	16.09	90.9	0.66	3.00	16.80
7			125	12.14	93.5	1.01	1.80	18.80
7			160	6.84	95.5	1.51	0.00	21.10
7			200	2.98	96.5	2.17	0.00	22.80
8	2,722	2,730						
8			20	42.58	73.8	0.00	5.60	7.60
8			25	39.22	77.2	0.05	5.40	8.30
8			32	34.70	79.1	0.08	5.20	9.20
8			40	29.74	80.3	0.14	5.00	10.30
8			50	25.79	82.3	0.19	4.70	11.50
8			63	24.08	86.6	0.30	4.30	13.00
8			80	20.54	89.3	0.44	3.70	14.80
8			100	15.79	90.9	0.68	3.00	16.80
8			125	11.84	93.5	1.04	1.80	18.80
8			160	6.52	95.5	1.56	0.00	21.10
8			200	2.64	96.5	2.24	0.00	22.80
9	3,343	3,349						
9			20	40.80	73.8	0.00	5.60	7.60
9			25	37.43	77.2	0.07	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			32	32.90	79.1	0.10	5.20	9.20
9			40	27.93	80.3	0.17	5.00	10.30
9			50	23.97	82.3	0.23	4.70	11.50
9			63	22.23	86.6	0.37	4.30	13.00
9			80	18.67	89.3	0.54	3.70	14.80
9			100	13.86	90.9	0.84	3.00	16.80
9			125	9.83	93.5	1.27	1.80	18.80
9			160	4.39	95.5	1.91	0.00	21.10
9			200	0.36	96.5	2.75	0.00	22.80
Sum								
Sum			20	56.27				
Sum			25	52.91				
Sum			32	48.38				
Sum			40	43.42				
Sum			50	39.46				
Sum			63	37.74				
Sum			80	34.19				
Sum			100	29.43				
Sum			125	25.44				
Sum			160	20.10				
Sum			200	16.19				

Noise sensitive area: HH Haukijärvi 2 Noise sensitive point: Finnish normal frequency - User defined (296)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,732	1,744						
1			20	46.47	73.8	0.00	5.60	7.60
1			25	43.14	77.2	0.03	5.40	8.30
1			32	38.62	79.1	0.05	5.20	9.20
1			40	33.68	80.3	0.09	5.00	10.30
1			50	29.75	82.3	0.12	4.70	11.50
1			63	28.08	86.6	0.19	4.30	13.00
1			80	24.59	89.3	0.28	3.70	14.80
1			100	19.93	90.9	0.44	3.00	16.80
1			125	16.11	93.5	0.66	1.80	18.80
1			160	10.98	95.5	0.99	0.00	21.10
1			200	7.34	96.5	1.43	0.00	22.80
10	2,934	2,942						
10			20	41.93	73.8	0.00	5.60	7.60
10			25	38.57	77.2	0.06	5.40	8.30
10			32	34.04	79.1	0.09	5.20	9.20
10			40	29.08	80.3	0.15	5.00	10.30
10			50	25.12	82.3	0.21	4.70	11.50
10			63	23.40	86.6	0.32	4.30	13.00
10			80	19.86	89.3	0.47	3.70	14.80
10			100	15.09	90.9	0.74	3.00	16.80
10			125	11.11	93.5	1.12	1.80	18.80
10			160	5.75	95.5	1.68	0.00	21.10
10			200	1.82	96.5	2.41	0.00	22.80
11	3,017	3,025						
11			20	41.69	73.8	0.00	5.60	7.60
11			25	38.33	77.2	0.06	5.40	8.30
11			32	33.80	79.1	0.09	5.20	9.20
11			40	28.83	80.3	0.15	5.00	10.30
11			50	24.87	82.3	0.21	4.70	11.50
11			63	23.15	86.6	0.33	4.30	13.00
11			80	19.60	89.3	0.48	3.70	14.80
11			100	14.83	90.9	0.76	3.00	16.80
11			125	10.84	93.5	1.15	1.80	18.80
11			160	5.46	95.5	1.72	0.00	21.10
11			200	1.51	96.5	2.48	0.00	22.80
12	3,332	3,338						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			20	40.83	73.8	0.00	5.60	7.60
12			25	37.46	77.2	0.07	5.40	8.30
12			32	32.93	79.1	0.10	5.20	9.20
12			40	27.96	80.3	0.17	5.00	10.30
12			50	24.00	82.3	0.23	4.70	11.50
12			63	22.26	86.6	0.37	4.30	13.00
12			80	18.70	89.3	0.53	3.70	14.80
12			100	13.90	90.9	0.83	3.00	16.80
12			125	9.86	93.5	1.27	1.80	18.80
12			160	4.43	95.5	1.90	0.00	21.10
12			200	0.39	96.5	2.74	0.00	22.80
13	3,535	3,541						
13			20	40.32	73.8	0.00	5.60	7.60
13			25	36.95	77.2	0.07	5.40	8.30
13			32	32.41	79.1	0.11	5.20	9.20
13			40	27.44	80.3	0.18	5.00	10.30
13			50	23.47	82.3	0.25	4.70	11.50
13			63	21.73	86.6	0.39	4.30	13.00
13			80	18.15	89.3	0.57	3.70	14.80
13			100	13.33	90.9	0.89	3.00	16.80
13			125	9.27	93.5	1.35	1.80	18.80
13			160	3.80	95.5	2.02	0.00	21.10
13			200	-0.29	96.5	2.90	0.00	22.80
14	3,258	3,265						
14			20	41.02	73.8	0.00	5.60	7.60
14			25	37.66	77.2	0.07	5.40	8.30
14			32	33.12	79.1	0.10	5.20	9.20
14			40	28.16	80.3	0.16	5.00	10.30
14			50	24.19	82.3	0.23	4.70	11.50
14			63	22.46	86.6	0.36	4.30	13.00
14			80	18.90	89.3	0.52	3.70	14.80
14			100	14.11	90.9	0.82	3.00	16.80
14			125	10.08	93.5	1.24	1.80	18.80
14			160	4.66	95.5	1.86	0.00	21.10
14			200	0.65	96.5	2.68	0.00	22.80
15	3,792	3,797						
15			20	39.71	73.8	0.00	5.60	7.60
15			25	36.34	77.2	0.08	5.40	8.30
15			32	31.80	79.1	0.11	5.20	9.20
15			40	26.82	80.3	0.19	5.00	10.30
15			50	22.85	82.3	0.27	4.70	11.50
15			63	21.09	86.6	0.42	4.30	13.00
15			80	17.50	89.3	0.61	3.70	14.80
15			100	12.66	90.9	0.95	3.00	16.80
15			125	8.57	93.5	1.44	1.80	18.80
15			160	3.05	95.5	2.16	0.00	21.10
15			200	-1.10	96.5	3.11	0.00	22.80
16	4,010	4,015						
16			20	39.23	73.8	0.00	5.60	7.60
16			25	35.85	77.2	0.08	5.40	8.30
16			32	31.31	79.1	0.12	5.20	9.20
16			40	26.33	80.3	0.20	5.00	10.30
16			50	22.34	82.3	0.28	4.70	11.50
16			63	20.58	86.6	0.44	4.30	13.00
16			80	16.98	89.3	0.64	3.70	14.80
16			100	12.12	90.9	1.00	3.00	16.80
16			125	8.00	93.5	1.53	1.80	18.80
16			160	2.44	95.5	2.29	0.00	21.10
16			200	-1.77	96.5	3.29	0.00	22.80
17	4,131	4,137						
17			20	38.97	73.8	0.00	5.60	7.60
17			25	35.58	77.2	0.08	5.40	8.30
17			32	31.04	79.1	0.12	5.20	9.20
17			40	26.06	80.3	0.21	5.00	10.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			50	22.08	82.3	0.29	4.70	11.50
17			63	20.31	86.6	0.46	4.30	13.00
17			80	16.70	89.3	0.66	3.70	14.80
17			100	11.83	90.9	1.03	3.00	16.80
17			125	7.69	93.5	1.57	1.80	18.80
17			160	2.11	95.5	2.36	0.00	21.10
17			200	-2.13	96.5	3.39	0.00	22.80
18	3,782	3,789						
18			20	39.73	73.8	0.00	5.60	7.60
18			25	36.35	77.2	0.08	5.40	8.30
18			32	31.82	79.1	0.11	5.20	9.20
18			40	26.84	80.3	0.19	5.00	10.30
18			50	22.86	82.3	0.27	4.70	11.50
18			63	21.11	86.6	0.42	4.30	13.00
18			80	17.52	89.3	0.61	3.70	14.80
18			100	12.68	90.9	0.95	3.00	16.80
18			125	8.59	93.5	1.44	1.80	18.80
18			160	3.07	95.5	2.16	0.00	21.10
18			200	-1.08	96.5	3.11	0.00	22.80
19	4,293	4,298						
19			20	38.64	73.8	0.00	5.60	7.60
19			25	35.25	77.2	0.09	5.40	8.30
19			32	30.71	79.1	0.13	5.20	9.20
19			40	25.72	80.3	0.21	5.00	10.30
19			50	21.73	82.3	0.30	4.70	11.50
19			63	19.96	86.6	0.47	4.30	13.00
19			80	16.35	89.3	0.69	3.70	14.80
19			100	11.46	90.9	1.07	3.00	16.80
19			125	7.30	93.5	1.63	1.80	18.80
19			160	1.69	95.5	2.45	0.00	21.10
19			200	-2.59	96.5	3.52	0.00	22.80
2	1,828	1,839						
2			20	46.01	73.8	0.00	5.60	7.60
2			25	42.67	77.2	0.04	5.40	8.30
2			32	38.15	79.1	0.06	5.20	9.20
2			40	33.21	80.3	0.09	5.00	10.30
2			50	29.28	82.3	0.13	4.70	11.50
2			63	27.60	86.6	0.20	4.30	13.00
2			80	24.11	89.3	0.29	3.70	14.80
2			100	19.45	90.9	0.46	3.00	16.80
2			125	15.61	93.5	0.70	1.80	18.80
2			160	10.46	95.5	1.05	0.00	21.10
2			200	6.80	96.5	1.51	0.00	22.80
20	4,629	4,634						
20			20	37.98	73.8	0.00	5.60	7.60
20			25	34.59	77.2	0.09	5.40	8.30
20			32	30.04	79.1	0.14	5.20	9.20
20			40	25.05	80.3	0.23	5.00	10.30
20			50	21.06	82.3	0.32	4.70	11.50
20			63	19.27	86.6	0.51	4.30	13.00
20			80	15.64	89.3	0.74	3.70	14.80
20			100	10.72	90.9	1.16	3.00	16.80
20			125	6.52	93.5	1.76	1.80	18.80
20			160	0.84	95.5	2.64	0.00	21.10
20			200	-3.52	96.5	3.80	0.00	22.80
21	4,531	4,538						
21			20	38.16	73.8	0.00	5.60	7.60
21			25	34.77	77.2	0.09	5.40	8.30
21			32	30.23	79.1	0.14	5.20	9.20
21			40	25.24	80.3	0.23	5.00	10.30
21			50	21.25	82.3	0.32	4.70	11.50
21			63	19.46	86.6	0.50	4.30	13.00
21			80	15.84	89.3	0.73	3.70	14.80
21			100	10.93	90.9	1.13	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			125	6.74	93.5	1.72	1.80	18.80
21			160	1.08	95.5	2.59	0.00	21.10
21			200	-3.26	96.5	3.72	0.00	22.80
22	4,912	4,917						
22			20	37.47	73.8	0.00	5.60	7.60
22			25	34.07	77.2	0.10	5.40	8.30
22			32	29.52	79.1	0.15	5.20	9.20
22			40	24.52	80.3	0.25	5.00	10.30
22			50	20.52	82.3	0.34	4.70	11.50
22			63	18.72	86.6	0.54	4.30	13.00
22			80	15.08	89.3	0.79	3.70	14.80
22			100	10.14	90.9	1.23	3.00	16.80
22			125	5.90	93.5	1.87	1.80	18.80
22			160	0.16	95.5	2.80	0.00	21.10
22			200	-4.27	96.5	4.03	0.00	22.80
23	4,918	4,923						
23			20	37.46	73.8	0.00	5.60	7.60
23			25	34.06	77.2	0.10	5.40	8.30
23			32	29.51	79.1	0.15	5.20	9.20
23			40	24.51	80.3	0.25	5.00	10.30
23			50	20.51	82.3	0.34	4.70	11.50
23			63	18.71	86.6	0.54	4.30	13.00
23			80	15.07	89.3	0.79	3.70	14.80
23			100	10.13	90.9	1.23	3.00	16.80
23			125	5.89	93.5	1.87	1.80	18.80
23			160	0.15	95.5	2.81	0.00	21.10
23			200	-4.28	96.5	4.04	0.00	22.80
24	5,123	5,127						
24			20	37.10	73.8	0.00	5.60	7.60
24			25	33.70	77.2	0.10	5.40	8.30
24			32	29.15	79.1	0.15	5.20	9.20
24			40	24.15	80.3	0.26	5.00	10.30
24			50	20.14	82.3	0.36	4.70	11.50
24			63	18.34	86.6	0.56	4.30	13.00
24			80	14.68	89.3	0.82	3.70	14.80
24			100	9.72	90.9	1.28	3.00	16.80
24			125	5.45	93.5	1.95	1.80	18.80
24			160	-0.32	95.5	2.92	0.00	21.10
24			200	-4.80	96.5	4.20	0.00	22.80
25	4,702	4,707						
25			20	37.84	73.8	0.00	5.60	7.60
25			25	34.45	77.2	0.09	5.40	8.30
25			32	29.90	79.1	0.14	5.20	9.20
25			40	24.91	80.3	0.24	5.00	10.30
25			50	20.91	82.3	0.33	4.70	11.50
25			63	19.13	86.6	0.52	4.30	13.00
25			80	15.49	89.3	0.75	3.70	14.80
25			100	10.57	90.9	1.18	3.00	16.80
25			125	6.36	93.5	1.79	1.80	18.80
25			160	0.66	95.5	2.68	0.00	21.10
25			200	-3.72	96.5	3.86	0.00	22.80
26	5,067	5,073						
26			20	37.19	73.8	0.00	5.60	7.60
26			25	33.79	77.2	0.10	5.40	8.30
26			32	29.24	79.1	0.15	5.20	9.20
26			40	24.24	80.3	0.25	5.00	10.30
26			50	20.24	82.3	0.36	4.70	11.50
26			63	18.44	86.6	0.56	4.30	13.00
26			80	14.78	89.3	0.81	3.70	14.80
26			100	9.83	90.9	1.27	3.00	16.80
26			125	5.57	93.5	1.93	1.80	18.80
26			160	-0.20	95.5	2.89	0.00	21.10
26			200	-4.67	96.5	4.16	0.00	22.80
27	5,305	5,310						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			20	36.80	73.8	0.00	5.60	7.60
27			25	33.39	77.2	0.11	5.40	8.30
27			32	28.84	79.1	0.16	5.20	9.20
27			40	23.83	80.3	0.27	5.00	10.30
27			50	19.83	82.3	0.37	4.70	11.50
27			63	18.01	86.6	0.58	4.30	13.00
27			80	14.35	89.3	0.85	3.70	14.80
27			100	9.37	90.9	1.33	3.00	16.80
27			125	5.08	93.5	2.02	1.80	18.80
27			160	-0.73	95.5	3.03	0.00	21.10
27			200	-5.26	96.5	4.35	0.00	22.80
28	5,448	5,452						
28			20	36.57	73.8	0.00	5.60	7.60
28			25	33.16	77.2	0.11	5.40	8.30
28			32	28.61	79.1	0.16	5.20	9.20
28			40	23.60	80.3	0.27	5.00	10.30
28			50	19.59	82.3	0.38	4.70	11.50
28			63	17.77	86.6	0.60	4.30	13.00
28			80	14.10	89.3	0.87	3.70	14.80
28			100	9.11	90.9	1.36	3.00	16.80
28			125	4.80	93.5	2.07	1.80	18.80
28			160	-1.04	95.5	3.11	0.00	21.10
28			200	-5.60	96.5	4.47	0.00	22.80
29	5,665	5,670						
29			20	36.23	73.8	0.00	5.60	7.60
29			25	32.82	77.2	0.11	5.40	8.30
29			32	28.26	79.1	0.17	5.20	9.20
29			40	23.25	80.3	0.28	5.00	10.30
29			50	19.23	82.3	0.40	4.70	11.50
29			63	17.41	86.6	0.62	4.30	13.00
29			80	13.72	89.3	0.91	3.70	14.80
29			100	8.71	90.9	1.42	3.00	16.80
29			125	4.37	93.5	2.15	1.80	18.80
29			160	-1.50	95.5	3.23	0.00	21.10
29			200	-6.12	96.5	4.65	0.00	22.80
3	1,987	1,997						
3			20	45.29	73.8	0.00	5.60	7.60
3			25	41.95	77.2	0.04	5.40	8.30
3			32	37.43	79.1	0.06	5.20	9.20
3			40	32.49	80.3	0.10	5.00	10.30
3			50	28.55	82.3	0.14	4.70	11.50
3			63	26.87	86.6	0.22	4.30	13.00
3			80	23.37	89.3	0.32	3.70	14.80
3			100	18.69	90.9	0.50	3.00	16.80
3			125	14.83	93.5	0.76	1.80	18.80
3			160	9.65	95.5	1.14	0.00	21.10
3			200	5.95	96.5	1.64	0.00	22.80
30	5,414	5,418						
30			20	36.62	73.8	0.00	5.60	7.60
30			25	33.21	77.2	0.11	5.40	8.30
30			32	28.66	79.1	0.16	5.20	9.20
30			40	23.65	80.3	0.27	5.00	10.30
30			50	19.64	82.3	0.38	4.70	11.50
30			63	17.83	86.6	0.60	4.30	13.00
30			80	14.16	89.3	0.87	3.70	14.80
30			100	9.17	90.9	1.35	3.00	16.80
30			125	4.86	93.5	2.06	1.80	18.80
30			160	-0.97	95.5	3.09	0.00	21.10
30			200	-5.52	96.5	4.44	0.00	22.80
31	6,027	6,030						
31			20	35.69	73.8	0.00	5.60	7.60
31			25	32.27	77.2	0.12	5.40	8.30
31			32	27.71	79.1	0.18	5.20	9.20
31			40	22.69	80.3	0.30	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			50	18.67	82.3	0.42	4.70	11.50
31			63	16.83	86.6	0.66	4.30	13.00
31			80	13.13	89.3	0.96	3.70	14.80
31			100	8.09	90.9	1.51	3.00	16.80
31			125	3.70	93.5	2.29	1.80	18.80
31			160	-2.24	95.5	3.44	0.00	21.10
31			200	-6.95	96.5	4.94	0.00	22.80
32	5,782	5,785						
32			20	36.05	73.8	0.00	5.60	7.60
32			25	32.64	77.2	0.12	5.40	8.30
32			32	28.08	79.1	0.17	5.20	9.20
32			40	23.06	80.3	0.29	5.00	10.30
32			50	19.05	82.3	0.40	4.70	11.50
32			63	17.22	86.6	0.64	4.30	13.00
32			80	13.53	89.3	0.93	3.70	14.80
32			100	8.51	90.9	1.45	3.00	16.80
32			125	4.15	93.5	2.20	1.80	18.80
32			160	-1.74	95.5	3.30	0.00	21.10
32			200	-6.39	96.5	4.74	0.00	22.80
33	5,649	5,653						
33			20	36.25	73.8	0.00	5.60	7.60
33			25	32.84	77.2	0.11	5.40	8.30
33			32	28.28	79.1	0.17	5.20	9.20
33			40	23.27	80.3	0.28	5.00	10.30
33			50	19.26	82.3	0.40	4.70	11.50
33			63	17.43	86.6	0.62	4.30	13.00
33			80	13.75	89.3	0.90	3.70	14.80
33			100	8.74	90.9	1.41	3.00	16.80
33			125	4.41	93.5	2.15	1.80	18.80
33			160	-1.47	95.5	3.22	0.00	21.10
33			200	-6.08	96.5	4.64	0.00	22.80
4	2,351	2,360						
4			20	43.84	73.8	0.00	5.60	7.60
4			25	40.49	77.2	0.05	5.40	8.30
4			32	35.97	79.1	0.07	5.20	9.20
4			40	31.02	80.3	0.12	5.00	10.30
4			50	27.08	82.3	0.17	4.70	11.50
4			63	25.38	86.6	0.26	4.30	13.00
4			80	21.86	89.3	0.38	3.70	14.80
4			100	17.15	90.9	0.59	3.00	16.80
4			125	13.24	93.5	0.90	1.80	18.80
4			160	8.00	95.5	1.35	0.00	21.10
4			200	4.21	96.5	1.94	0.00	22.80
5	2,909	2,916						
5			20	42.00	73.8	0.00	5.60	7.60
5			25	38.65	77.2	0.06	5.40	8.30
5			32	34.12	79.1	0.09	5.20	9.20
5			40	29.16	80.3	0.15	5.00	10.30
5			50	25.20	82.3	0.20	4.70	11.50
5			63	23.48	86.6	0.32	4.30	13.00
5			80	19.94	89.3	0.47	3.70	14.80
5			100	15.18	90.9	0.73	3.00	16.80
5			125	11.20	93.5	1.11	1.80	18.80
5			160	5.84	95.5	1.66	0.00	21.10
5			200	1.91	96.5	2.39	0.00	22.80
6	2,365	2,374						
6			20	43.79	73.8	0.00	5.60	7.60
6			25	40.44	77.2	0.05	5.40	8.30
6			32	35.92	79.1	0.07	5.20	9.20
6			40	30.97	80.3	0.12	5.00	10.30
6			50	27.02	82.3	0.17	4.70	11.50
6			63	25.33	86.6	0.26	4.30	13.00
6			80	21.81	89.3	0.38	3.70	14.80
6			100	17.10	90.9	0.59	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			125	13.19	93.5	0.90	1.80	18.80
6			160	7.94	95.5	1.35	0.00	21.10
6			200	4.14	96.5	1.95	0.00	22.80
7	2,715	2,722						
7			20	42.60	73.8	0.00	5.60	7.60
7			25	39.25	77.2	0.05	5.40	8.30
7			32	34.72	79.1	0.08	5.20	9.20
7			40	29.77	80.3	0.14	5.00	10.30
7			50	25.81	82.3	0.19	4.70	11.50
7			63	24.10	86.6	0.30	4.30	13.00
7			80	20.57	89.3	0.44	3.70	14.80
7			100	15.82	90.9	0.68	3.00	16.80
7			125	11.87	93.5	1.03	1.80	18.80
7			160	6.55	95.5	1.55	0.00	21.10
7			200	2.67	96.5	2.23	0.00	22.80
8	2,783	2,791						
8			20	42.39	73.8	0.00	5.60	7.60
8			25	39.03	77.2	0.06	5.40	8.30
8			32	34.50	79.1	0.08	5.20	9.20
8			40	29.55	80.3	0.14	5.00	10.30
8			50	25.59	82.3	0.20	4.70	11.50
8			63	23.88	86.6	0.31	4.30	13.00
8			80	20.34	89.3	0.45	3.70	14.80
8			100	15.59	90.9	0.70	3.00	16.80
8			125	11.63	93.5	1.06	1.80	18.80
8			160	6.30	95.5	1.59	0.00	21.10
8			200	2.40	96.5	2.29	0.00	22.80
9	3,395	3,401						
9			20	40.67	73.8	0.00	5.60	7.60
9			25	37.30	77.2	0.07	5.40	8.30
9			32	32.77	79.1	0.10	5.20	9.20
9			40	27.80	80.3	0.17	5.00	10.30
9			50	23.83	82.3	0.24	4.70	11.50
9			63	22.09	86.6	0.37	4.30	13.00
9			80	18.52	89.3	0.54	3.70	14.80
9			100	13.72	90.9	0.85	3.00	16.80
9			125	9.68	93.5	1.29	1.80	18.80
9			160	4.23	95.5	1.94	0.00	21.10
9			200	0.18	96.5	2.79	0.00	22.80
Sum								
Sum			20	56.11				
Sum			25	52.74				
Sum			32	48.21				
Sum			40	43.25				
Sum			50	39.29				
Sum			63	37.57				
Sum			80	34.02				
Sum			100	29.24				
Sum			125	25.26				
Sum			160	19.90				
Sum			200	15.98				

Noise sensitive area: HH Haukijärvi 3 Noise sensitive point: Finnish normal frequency - User defined (294)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,885	1,896						
1			20	45.74	73.8	0.00	5.60	7.60
1			25	42.41	77.2	0.04	5.40	8.30
1			32	37.89	79.1	0.06	5.20	9.20
1			40	32.95	80.3	0.09	5.00	10.30
1			50	29.01	82.3	0.13	4.70	11.50
1			63	27.34	86.6	0.21	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			80	23.84	89.3	0.30	3.70	14.80
1			100	19.17	90.9	0.47	3.00	16.80
1			125	15.32	93.5	0.72	1.80	18.80
1			160	10.16	95.5	1.08	0.00	21.10
1			200	6.49	96.5	1.55	0.00	22.80
10	3,161	3,167						
10			20	41.29	73.8	0.00	5.60	7.60
10			25	37.92	77.2	0.06	5.40	8.30
10			32	33.39	79.1	0.10	5.20	9.20
10			40	28.43	80.3	0.16	5.00	10.30
10			50	24.46	82.3	0.22	4.70	11.50
10			63	22.74	86.6	0.35	4.30	13.00
10			80	19.18	89.3	0.51	3.70	14.80
10			100	14.39	90.9	0.79	3.00	16.80
10			125	10.38	93.5	1.20	1.80	18.80
10			160	4.98	95.5	1.81	0.00	21.10
10			200	0.99	96.5	2.60	0.00	22.80
11	3,254	3,261						
11			20	41.03	73.8	0.00	5.60	7.60
11			25	37.67	77.2	0.07	5.40	8.30
11			32	33.13	79.1	0.10	5.20	9.20
11			40	28.17	80.3	0.16	5.00	10.30
11			50	24.20	82.3	0.23	4.70	11.50
11			63	22.47	86.6	0.36	4.30	13.00
11			80	18.91	89.3	0.52	3.70	14.80
11			100	14.12	90.9	0.82	3.00	16.80
11			125	10.09	93.5	1.24	1.80	18.80
11			160	4.67	95.5	1.86	0.00	21.10
11			200	0.66	96.5	2.67	0.00	22.80
12	3,545	3,551						
12			20	40.29	73.8	0.00	5.60	7.60
12			25	36.92	77.2	0.07	5.40	8.30
12			32	32.39	79.1	0.11	5.20	9.20
12			40	27.41	80.3	0.18	5.00	10.30
12			50	23.44	82.3	0.25	4.70	11.50
12			63	21.70	86.6	0.39	4.30	13.00
12			80	18.12	89.3	0.57	3.70	14.80
12			100	13.30	90.9	0.89	3.00	16.80
12			125	9.24	93.5	1.35	1.80	18.80
12			160	3.77	95.5	2.02	0.00	21.10
12			200	-0.32	96.5	2.91	0.00	22.80
13	3,768	3,774						
13			20	39.76	73.8	0.00	5.60	7.60
13			25	36.39	77.2	0.08	5.40	8.30
13			32	31.85	79.1	0.11	5.20	9.20
13			40	26.88	80.3	0.19	5.00	10.30
13			50	22.90	82.3	0.26	4.70	11.50
13			63	21.15	86.6	0.42	4.30	13.00
13			80	17.56	89.3	0.60	3.70	14.80
13			100	12.72	90.9	0.94	3.00	16.80
13			125	8.63	93.5	1.43	1.80	18.80
13			160	3.11	95.5	2.15	0.00	21.10
13			200	-1.03	96.5	3.09	0.00	22.80
14	3,493	3,499						
14			20	40.42	73.8	0.00	5.60	7.60
14			25	37.05	77.2	0.07	5.40	8.30
14			32	32.52	79.1	0.10	5.20	9.20
14			40	27.55	80.3	0.17	5.00	10.30
14			50	23.58	82.3	0.24	4.70	11.50
14			63	21.84	86.6	0.38	4.30	13.00
14			80	18.26	89.3	0.56	3.70	14.80
14			100	13.45	90.9	0.87	3.00	16.80
14			125	9.39	93.5	1.33	1.80	18.80
14			160	3.93	95.5	1.99	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			200	-0.15	96.5	2.87	0.00	22.80
15	4,015	4,020						
15			20	39.21	73.8	0.00	5.60	7.60
15			25	35.83	77.2	0.08	5.40	8.30
15			32	31.29	79.1	0.12	5.20	9.20
15			40	26.31	80.3	0.20	5.00	10.30
15			50	22.33	82.3	0.28	4.70	11.50
15			63	20.57	86.6	0.44	4.30	13.00
15			80	16.97	89.3	0.64	3.70	14.80
15			100	12.11	90.9	1.01	3.00	16.80
15			125	7.99	93.5	1.53	1.80	18.80
15			160	2.42	95.5	2.29	0.00	21.10
15			200	-1.78	96.5	3.30	0.00	22.80
16	4,246	4,251						
16			20	38.73	73.8	0.00	5.60	7.60
16			25	35.34	77.2	0.09	5.40	8.30
16			32	30.80	79.1	0.13	5.20	9.20
16			40	25.82	80.3	0.21	5.00	10.30
16			50	21.83	82.3	0.30	4.70	11.50
16			63	20.06	86.6	0.47	4.30	13.00
16			80	16.45	89.3	0.68	3.70	14.80
16			100	11.57	90.9	1.06	3.00	16.80
16			125	7.41	93.5	1.62	1.80	18.80
16			160	1.81	95.5	2.42	0.00	21.10
16			200	-2.46	96.5	3.49	0.00	22.80
17	4,370	4,376						
17			20	38.48	73.8	0.00	5.60	7.60
17			25	35.09	77.2	0.09	5.40	8.30
17			32	30.55	79.1	0.13	5.20	9.20
17			40	25.56	80.3	0.22	5.00	10.30
17			50	21.57	82.3	0.31	4.70	11.50
17			63	19.80	86.6	0.48	4.30	13.00
17			80	16.18	89.3	0.70	3.70	14.80
17			100	11.28	90.9	1.09	3.00	16.80
17			125	7.11	93.5	1.66	1.80	18.80
17			160	1.48	95.5	2.49	0.00	21.10
17			200	-2.81	96.5	3.59	0.00	22.80
18	4,020	4,027						
18			20	39.20	73.8	0.00	5.60	7.60
18			25	35.82	77.2	0.08	5.40	8.30
18			32	31.28	79.1	0.12	5.20	9.20
18			40	26.30	80.3	0.20	5.00	10.30
18			50	22.32	82.3	0.28	4.70	11.50
18			63	20.56	86.6	0.44	4.30	13.00
18			80	16.96	89.3	0.64	3.70	14.80
18			100	12.09	90.9	1.01	3.00	16.80
18			125	7.97	93.5	1.53	1.80	18.80
18			160	2.40	95.5	2.30	0.00	21.10
18			200	-1.80	96.5	3.30	0.00	22.80
19	4,520	4,524						
19			20	38.19	73.8	0.00	5.60	7.60
19			25	34.80	77.2	0.09	5.40	8.30
19			32	30.25	79.1	0.14	5.20	9.20
19			40	25.26	80.3	0.23	5.00	10.30
19			50	21.27	82.3	0.32	4.70	11.50
19			63	19.49	86.6	0.50	4.30	13.00
19			80	15.86	89.3	0.72	3.70	14.80
19			100	10.96	90.9	1.13	3.00	16.80
19			125	6.77	93.5	1.72	1.80	18.80
19			160	1.11	95.5	2.58	0.00	21.10
19			200	-3.22	96.5	3.71	0.00	22.80
2	2,056	2,066						
2			20	45.00	73.8	0.00	5.60	7.60
2			25	41.65	77.2	0.04	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			32	37.13	79.1	0.06	5.20	9.20
2			40	32.19	80.3	0.10	5.00	10.30
2			50	28.25	82.3	0.14	4.70	11.50
2			63	26.57	86.6	0.23	4.30	13.00
2			80	23.07	89.3	0.33	3.70	14.80
2			100	18.38	90.9	0.52	3.00	16.80
2			125	14.51	93.5	0.79	1.80	18.80
2			160	9.32	95.5	1.18	0.00	21.10
2			200	5.60	96.5	1.69	0.00	22.80
20	4,863	4,868						
20			20	37.55	73.8	0.00	5.60	7.60
20			25	34.16	77.2	0.10	5.40	8.30
20			32	29.61	79.1	0.15	5.20	9.20
20			40	24.61	80.3	0.24	5.00	10.30
20			50	20.61	82.3	0.34	4.70	11.50
20			63	18.82	86.6	0.54	4.30	13.00
20			80	15.17	89.3	0.78	3.70	14.80
20			100	10.24	90.9	1.22	3.00	16.80
20			125	6.00	93.5	1.85	1.80	18.80
20			160	0.28	95.5	2.77	0.00	21.10
20			200	-4.14	96.5	3.99	0.00	22.80
21	4,769	4,775						
21			20	37.72	73.8	0.00	5.60	7.60
21			25	34.32	77.2	0.10	5.40	8.30
21			32	29.78	79.1	0.14	5.20	9.20
21			40	24.78	80.3	0.24	5.00	10.30
21			50	20.79	82.3	0.33	4.70	11.50
21			63	18.99	86.6	0.53	4.30	13.00
21			80	15.36	89.3	0.76	3.70	14.80
21			100	10.43	90.9	1.19	3.00	16.80
21			125	6.21	93.5	1.81	1.80	18.80
21			160	0.50	95.5	2.72	0.00	21.10
21			200	-3.90	96.5	3.92	0.00	22.80
22	5,147	5,151						
22			20	37.06	73.8	0.00	5.60	7.60
22			25	33.66	77.2	0.10	5.40	8.30
22			32	29.11	79.1	0.15	5.20	9.20
22			40	24.10	80.3	0.26	5.00	10.30
22			50	20.10	82.3	0.36	4.70	11.50
22			63	18.29	86.6	0.57	4.30	13.00
22			80	14.64	89.3	0.82	3.70	14.80
22			100	9.67	90.9	1.29	3.00	16.80
22			125	5.40	93.5	1.96	1.80	18.80
22			160	-0.37	95.5	2.94	0.00	21.10
22			200	-4.86	96.5	4.22	0.00	22.80
23	5,145	5,149						
23			20	37.07	73.8	0.00	5.60	7.60
23			25	33.66	77.2	0.10	5.40	8.30
23			32	29.11	79.1	0.15	5.20	9.20
23			40	24.11	80.3	0.26	5.00	10.30
23			50	20.11	82.3	0.36	4.70	11.50
23			63	18.30	86.6	0.57	4.30	13.00
23			80	14.64	89.3	0.82	3.70	14.80
23			100	9.68	90.9	1.29	3.00	16.80
23			125	5.41	93.5	1.96	1.80	18.80
23			160	-0.37	95.5	2.93	0.00	21.10
23			200	-4.86	96.5	4.22	0.00	22.80
24	5,360	5,365						
24			20	36.71	73.8	0.00	5.60	7.60
24			25	33.30	77.2	0.11	5.40	8.30
24			32	28.75	79.1	0.16	5.20	9.20
24			40	23.74	80.3	0.27	5.00	10.30
24			50	19.73	82.3	0.38	4.70	11.50
24			63	17.92	86.6	0.59	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			80	14.25	89.3	0.86	3.70	14.80
24			100	9.27	90.9	1.34	3.00	16.80
24			125	4.97	93.5	2.04	1.80	18.80
24			160	-0.85	95.5	3.06	0.00	21.10
24			200	-5.39	96.5	4.40	0.00	22.80
25	4,942	4,946						
25			20	37.41	73.8	0.00	5.60	7.60
25			25	34.02	77.2	0.10	5.40	8.30
25			32	29.47	79.1	0.15	5.20	9.20
25			40	24.47	80.3	0.25	5.00	10.30
25			50	20.47	82.3	0.35	4.70	11.50
25			63	18.67	86.6	0.54	4.30	13.00
25			80	15.02	89.3	0.79	3.70	14.80
25			100	10.08	90.9	1.24	3.00	16.80
25			125	5.83	93.5	1.88	1.80	18.80
25			160	0.09	95.5	2.82	0.00	21.10
25			200	-4.34	96.5	4.06	0.00	22.80
26	5,306	5,312						
26			20	36.79	73.8	0.00	5.60	7.60
26			25	33.39	77.2	0.11	5.40	8.30
26			32	28.84	79.1	0.16	5.20	9.20
26			40	23.83	80.3	0.27	5.00	10.30
26			50	19.82	82.3	0.37	4.70	11.50
26			63	18.01	86.6	0.58	4.30	13.00
26			80	14.34	89.3	0.85	3.70	14.80
26			100	9.37	90.9	1.33	3.00	16.80
26			125	5.08	93.5	2.02	1.80	18.80
26			160	-0.73	95.5	3.03	0.00	21.10
26			200	-5.26	96.5	4.36	0.00	22.80
27	5,543	5,547						
27			20	36.42	73.8	0.00	5.60	7.60
27			25	33.01	77.2	0.11	5.40	8.30
27			32	28.45	79.1	0.17	5.20	9.20
27			40	23.44	80.3	0.28	5.00	10.30
27			50	19.43	82.3	0.39	4.70	11.50
27			63	17.61	86.6	0.61	4.30	13.00
27			80	13.93	89.3	0.89	3.70	14.80
27			100	8.93	90.9	1.39	3.00	16.80
27			125	4.61	93.5	2.11	1.80	18.80
27			160	-1.24	95.5	3.16	0.00	21.10
27			200	-5.83	96.5	4.55	0.00	22.80
28	5,680	5,684						
28			20	36.21	73.8	0.00	5.60	7.60
28			25	32.79	77.2	0.11	5.40	8.30
28			32	28.24	79.1	0.17	5.20	9.20
28			40	23.22	80.3	0.28	5.00	10.30
28			50	19.21	82.3	0.40	4.70	11.50
28			63	17.38	86.6	0.63	4.30	13.00
28			80	13.70	89.3	0.91	3.70	14.80
28			100	8.69	90.9	1.42	3.00	16.80
28			125	4.35	93.5	2.16	1.80	18.80
28			160	-1.53	95.5	3.24	0.00	21.10
28			200	-6.15	96.5	4.66	0.00	22.80
29	5,889	5,894						
29			20	35.89	73.8	0.00	5.60	7.60
29			25	32.47	77.2	0.12	5.40	8.30
29			32	27.92	79.1	0.18	5.20	9.20
29			40	22.90	80.3	0.29	5.00	10.30
29			50	18.88	82.3	0.41	4.70	11.50
29			63	17.04	86.6	0.65	4.30	13.00
29			80	13.35	89.3	0.94	3.70	14.80
29			100	8.32	90.9	1.47	3.00	16.80
29			125	3.95	93.5	2.24	1.80	18.80
29			160	-1.97	95.5	3.36	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			200	-6.64	96.5	4.83	0.00	22.80
3	2,182	2,192						
3			20	44.48	73.8	0.00	5.60	7.60
3			25	41.14	77.2	0.04	5.40	8.30
3			32	36.62	79.1	0.07	5.20	9.20
3			40	31.67	80.3	0.11	5.00	10.30
3			50	27.73	82.3	0.15	4.70	11.50
3			63	26.04	86.6	0.24	4.30	13.00
3			80	22.53	89.3	0.35	3.70	14.80
3			100	17.84	90.9	0.55	3.00	16.80
3			125	13.95	93.5	0.83	1.80	18.80
3			160	8.73	95.5	1.25	0.00	21.10
3			200	4.99	96.5	1.80	0.00	22.80
30	5,629	5,632						
30			20	36.29	73.8	0.00	5.60	7.60
30			25	32.87	77.2	0.11	5.40	8.30
30			32	28.32	79.1	0.17	5.20	9.20
30			40	23.30	80.3	0.28	5.00	10.30
30			50	19.29	82.3	0.39	4.70	11.50
30			63	17.47	86.6	0.62	4.30	13.00
30			80	13.79	89.3	0.90	3.70	14.80
30			100	8.78	90.9	1.41	3.00	16.80
30			125	4.45	93.5	2.14	1.80	18.80
30			160	-1.42	95.5	3.21	0.00	21.10
30			200	-6.03	96.5	4.62	0.00	22.80
31	6,245	6,248						
31			20	35.38	73.8	0.00	5.60	7.60
31			25	31.96	77.2	0.12	5.40	8.30
31			32	27.40	79.1	0.19	5.20	9.20
31			40	22.37	80.3	0.31	5.00	10.30
31			50	18.35	82.3	0.44	4.70	11.50
31			63	16.50	86.6	0.69	4.30	13.00
31			80	12.79	89.3	1.00	3.70	14.80
31			100	7.72	90.9	1.56	3.00	16.80
31			125	3.31	93.5	2.37	1.80	18.80
31			160	-2.68	95.5	3.56	0.00	21.10
31			200	-7.44	96.5	5.12	0.00	22.80
32	5,985	5,989						
32			20	35.75	73.8	0.00	5.60	7.60
32			25	32.33	77.2	0.12	5.40	8.30
32			32	27.77	79.1	0.18	5.20	9.20
32			40	22.75	80.3	0.30	5.00	10.30
32			50	18.73	82.3	0.42	4.70	11.50
32			63	16.89	86.6	0.66	4.30	13.00
32			80	13.20	89.3	0.96	3.70	14.80
32			100	8.16	90.9	1.50	3.00	16.80
32			125	3.78	93.5	2.28	1.80	18.80
32			160	-2.16	95.5	3.41	0.00	21.10
32			200	-6.86	96.5	4.91	0.00	22.80
33	5,836	5,841						
33			20	35.97	73.8	0.00	5.60	7.60
33			25	32.55	77.2	0.12	5.40	8.30
33			32	28.00	79.1	0.18	5.20	9.20
33			40	22.98	80.3	0.29	5.00	10.30
33			50	18.96	82.3	0.41	4.70	11.50
33			63	17.13	86.6	0.64	4.30	13.00
33			80	13.44	89.3	0.93	3.70	14.80
33			100	8.41	90.9	1.46	3.00	16.80
33			125	4.05	93.5	2.22	1.80	18.80
33			160	-1.86	95.5	3.33	0.00	21.10
33			200	-6.52	96.5	4.79	0.00	22.80
4	2,568	2,577						
4			20	43.08	73.8	0.00	5.60	7.60
4			25	39.73	77.2	0.05	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	35.20	79.1	0.08	5.20	9.20
4			40	30.25	80.3	0.13	5.00	10.30
4			50	26.30	82.3	0.18	4.70	11.50
4			63	24.59	86.6	0.28	4.30	13.00
4			80	21.07	89.3	0.41	3.70	14.80
4			100	16.33	90.9	0.64	3.00	16.80
4			125	12.40	93.5	0.98	1.80	18.80
4			160	7.11	95.5	1.47	0.00	21.10
4			200	3.27	96.5	2.11	0.00	22.80
5	3,126	3,133						
5			20	41.38	73.8	0.00	5.60	7.60
5			25	38.02	77.2	0.06	5.40	8.30
5			32	33.49	79.1	0.09	5.20	9.20
5			40	28.53	80.3	0.16	5.00	10.30
5			50	24.56	82.3	0.22	4.70	11.50
5			63	22.84	86.6	0.34	4.30	13.00
5			80	19.28	89.3	0.50	3.70	14.80
5			100	14.50	90.9	0.78	3.00	16.80
5			125	10.49	93.5	1.19	1.80	18.80
5			160	5.10	95.5	1.79	0.00	21.10
5			200	1.11	96.5	2.57	0.00	22.80
6	2,601	2,610						
6			20	42.97	73.8	0.00	5.60	7.60
6			25	39.62	77.2	0.05	5.40	8.30
6			32	35.09	79.1	0.08	5.20	9.20
6			40	30.14	80.3	0.13	5.00	10.30
6			50	26.19	82.3	0.18	4.70	11.50
6			63	24.48	86.6	0.29	4.30	13.00
6			80	20.95	89.3	0.42	3.70	14.80
6			100	16.22	90.9	0.65	3.00	16.80
6			125	12.28	93.5	0.99	1.80	18.80
6			160	6.98	95.5	1.49	0.00	21.10
6			200	3.13	96.5	2.14	0.00	22.80
7	2,954	2,961						
7			20	41.87	73.8	0.00	5.60	7.60
7			25	38.51	77.2	0.06	5.40	8.30
7			32	33.98	79.1	0.09	5.20	9.20
7			40	29.02	80.3	0.15	5.00	10.30
7			50	25.06	82.3	0.21	4.70	11.50
7			63	23.35	86.6	0.33	4.30	13.00
7			80	19.80	89.3	0.47	3.70	14.80
7			100	15.03	90.9	0.74	3.00	16.80
7			125	11.05	93.5	1.13	1.80	18.80
7			160	5.68	95.5	1.69	0.00	21.10
7			200	1.74	96.5	2.43	0.00	22.80
8	3,015	3,022						
8			20	41.69	73.8	0.00	5.60	7.60
8			25	38.33	77.2	0.06	5.40	8.30
8			32	33.80	79.1	0.09	5.20	9.20
8			40	28.84	80.3	0.15	5.00	10.30
8			50	24.88	82.3	0.21	4.70	11.50
8			63	23.16	86.6	0.33	4.30	13.00
8			80	19.61	89.3	0.48	3.70	14.80
8			100	14.84	90.9	0.76	3.00	16.80
8			125	10.85	93.5	1.15	1.80	18.80
8			160	5.47	95.5	1.72	0.00	21.10
8			200	1.52	96.5	2.48	0.00	22.80
9	3,620	3,625						
9			20	40.11	73.8	0.00	5.60	7.60
9			25	36.74	77.2	0.07	5.40	8.30
9			32	32.20	79.1	0.11	5.20	9.20
9			40	27.23	80.3	0.18	5.00	10.30
9			50	23.26	82.3	0.25	4.70	11.50
9			63	21.51	86.6	0.40	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	17.93	89.3	0.58	3.70	14.80
9			100	13.11	90.9	0.91	3.00	16.80
9			125	9.04	93.5	1.38	1.80	18.80
9			160	3.55	95.5	2.07	0.00	21.10
9			200	-0.56	96.5	2.97	0.00	22.80
Sum								
Sum			20	55.46				
Sum			25	52.09				
Sum			32	47.56				
Sum			40	42.59				
Sum			50	38.62				
Sum			63	36.89				
Sum			80	33.32				
Sum			100	28.53				
Sum			125	24.51				
Sum			160	19.10				
Sum			200	15.12				

Noise sensitive area: HH Hiekkaranta Noise sensitive point: Finnish normal frequency - User defined (300)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,684	2,692						
1			20	42.70	73.8	0.00	5.60	7.60
1			25	39.35	77.2	0.05	5.40	8.30
1			32	34.82	79.1	0.08	5.20	9.20
1			40	29.87	80.3	0.13	5.00	10.30
1			50	25.91	82.3	0.19	4.70	11.50
1			63	24.20	86.6	0.30	4.30	13.00
1			80	20.67	89.3	0.43	3.70	14.80
1			100	15.93	90.9	0.67	3.00	16.80
1			125	11.98	93.5	1.02	1.80	18.80
1			160	6.67	95.5	1.53	0.00	21.10
1			200	2.79	96.5	2.21	0.00	22.80
10	2,656	2,664						
10			20	42.79	73.8	0.00	5.60	7.60
10			25	39.43	77.2	0.05	5.40	8.30
10			32	34.91	79.1	0.08	5.20	9.20
10			40	29.96	80.3	0.13	5.00	10.30
10			50	26.00	82.3	0.19	4.70	11.50
10			63	24.30	86.6	0.29	4.30	13.00
10			80	20.76	89.3	0.43	3.70	14.80
10			100	16.02	90.9	0.67	3.00	16.80
10			125	12.08	93.5	1.01	1.80	18.80
10			160	6.77	95.5	1.52	0.00	21.10
10			200	2.90	96.5	2.18	0.00	22.80
11	2,966	2,974						
11			20	41.83	73.8	0.00	5.60	7.60
11			25	38.47	77.2	0.06	5.40	8.30
11			32	33.94	79.1	0.09	5.20	9.20
11			40	28.98	80.3	0.15	5.00	10.30
11			50	25.02	82.3	0.21	4.70	11.50
11			63	23.31	86.6	0.33	4.30	13.00
11			80	19.76	89.3	0.48	3.70	14.80
11			100	14.99	90.9	0.74	3.00	16.80
11			125	11.00	93.5	1.13	1.80	18.80
11			160	5.64	95.5	1.70	0.00	21.10
11			200	1.69	96.5	2.44	0.00	22.80
12	2,875	2,882						
12			20	42.11	73.8	0.00	5.60	7.60
12			25	38.75	77.2	0.06	5.40	8.30
12			32	34.22	79.1	0.09	5.20	9.20
12			40	29.26	80.3	0.14	5.00	10.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	25.30	82.3	0.20	4.70	11.50
12			63	23.59	86.6	0.32	4.30	13.00
12			80	20.04	89.3	0.46	3.70	14.80
12			100	15.29	90.9	0.72	3.00	16.80
12			125	11.31	93.5	1.10	1.80	18.80
12			160	5.96	95.5	1.64	0.00	21.10
12			200	2.04	96.5	2.36	0.00	22.80
13	3,345	3,352						
13			20	40.79	73.8	0.00	5.60	7.60
13			25	37.43	77.2	0.07	5.40	8.30
13			32	32.89	79.1	0.10	5.20	9.20
13			40	27.93	80.3	0.17	5.00	10.30
13			50	23.96	82.3	0.23	4.70	11.50
13			63	22.23	86.6	0.37	4.30	13.00
13			80	18.66	89.3	0.54	3.70	14.80
13			100	13.86	90.9	0.84	3.00	16.80
13			125	9.82	93.5	1.27	1.80	18.80
13			160	4.38	95.5	1.91	0.00	21.10
13			200	0.35	96.5	2.75	0.00	22.80
14	3,565	3,572						
14			20	40.24	73.8	0.00	5.60	7.60
14			25	36.87	77.2	0.07	5.40	8.30
14			32	32.34	79.1	0.11	5.20	9.20
14			40	27.36	80.3	0.18	5.00	10.30
14			50	23.39	82.3	0.25	4.70	11.50
14			63	21.65	86.6	0.39	4.30	13.00
14			80	18.07	89.3	0.57	3.70	14.80
14			100	13.25	90.9	0.89	3.00	16.80
14			125	9.19	93.5	1.36	1.80	18.80
14			160	3.71	95.5	2.04	0.00	21.10
14			200	-0.39	96.5	2.93	0.00	22.80
15	3,430	3,436						
15			20	40.58	73.8	0.00	5.60	7.60
15			25	37.21	77.2	0.07	5.40	8.30
15			32	32.68	79.1	0.10	5.20	9.20
15			40	27.71	80.3	0.17	5.00	10.30
15			50	23.74	82.3	0.24	4.70	11.50
15			63	22.00	86.6	0.38	4.30	13.00
15			80	18.43	89.3	0.55	3.70	14.80
15			100	13.62	90.9	0.86	3.00	16.80
15			125	9.57	93.5	1.31	1.80	18.80
15			160	4.12	95.5	1.96	0.00	21.10
15			200	0.06	96.5	2.82	0.00	22.80
16	3,885	3,890						
16			20	39.50	73.8	0.00	5.60	7.60
16			25	36.12	77.2	0.08	5.40	8.30
16			32	31.58	79.1	0.12	5.20	9.20
16			40	26.61	80.3	0.19	5.00	10.30
16			50	22.63	82.3	0.27	4.70	11.50
16			63	20.87	86.6	0.43	4.30	13.00
16			80	17.28	89.3	0.62	3.70	14.80
16			100	12.43	90.9	0.97	3.00	16.80
16			125	8.32	93.5	1.48	1.80	18.80
16			160	2.78	95.5	2.22	0.00	21.10
16			200	-1.39	96.5	3.19	0.00	22.80
17	4,185	4,192						
17			20	38.85	73.8	0.00	5.60	7.60
17			25	35.47	77.2	0.08	5.40	8.30
17			32	30.93	79.1	0.13	5.20	9.20
17			40	25.94	80.3	0.21	5.00	10.30
17			50	21.96	82.3	0.29	4.70	11.50
17			63	20.19	86.6	0.46	4.30	13.00
17			80	16.58	89.3	0.67	3.70	14.80
17			100	11.70	90.9	1.05	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	7.56	93.5	1.59	1.80	18.80
17			160	1.96	95.5	2.39	0.00	21.10
17			200	-2.28	96.5	3.44	0.00	22.80
18	3,953	3,960						
18			20	39.35	73.8	0.00	5.60	7.60
18			25	35.97	77.2	0.08	5.40	8.30
18			32	31.43	79.1	0.12	5.20	9.20
18			40	26.45	80.3	0.20	5.00	10.30
18			50	22.47	82.3	0.28	4.70	11.50
18			63	20.71	86.6	0.44	4.30	13.00
18			80	17.11	89.3	0.63	3.70	14.80
18			100	12.26	90.9	0.99	3.00	16.80
18			125	8.14	93.5	1.50	1.80	18.80
18			160	2.59	95.5	2.26	0.00	21.10
18			200	-1.60	96.5	3.25	0.00	22.80
19	3,959	3,964						
19			20	39.34	73.8	0.00	5.60	7.60
19			25	35.96	77.2	0.08	5.40	8.30
19			32	31.42	79.1	0.12	5.20	9.20
19			40	26.44	80.3	0.20	5.00	10.30
19			50	22.46	82.3	0.28	4.70	11.50
19			63	20.70	86.6	0.44	4.30	13.00
19			80	17.10	89.3	0.63	3.70	14.80
19			100	12.25	90.9	0.99	3.00	16.80
19			125	8.13	93.5	1.51	1.80	18.80
19			160	2.58	95.5	2.26	0.00	21.10
19			200	-1.61	96.5	3.25	0.00	22.80
2	2,365	2,374						
2			20	43.79	73.8	0.00	5.60	7.60
2			25	40.44	77.2	0.05	5.40	8.30
2			32	35.92	79.1	0.07	5.20	9.20
2			40	30.97	80.3	0.12	5.00	10.30
2			50	27.02	82.3	0.17	4.70	11.50
2			63	25.33	86.6	0.26	4.30	13.00
2			80	21.81	89.3	0.38	3.70	14.80
2			100	17.10	90.9	0.59	3.00	16.80
2			125	13.19	93.5	0.90	1.80	18.80
2			160	7.94	95.5	1.35	0.00	21.10
2			200	4.14	96.5	1.95	0.00	22.80
20	4,417	4,421						
20			20	38.39	73.8	0.00	5.60	7.60
20			25	35.00	77.2	0.09	5.40	8.30
20			32	30.46	79.1	0.13	5.20	9.20
20			40	25.47	80.3	0.22	5.00	10.30
20			50	21.48	82.3	0.31	4.70	11.50
20			63	19.70	86.6	0.49	4.30	13.00
20			80	16.08	89.3	0.71	3.70	14.80
20			100	11.18	90.9	1.11	3.00	16.80
20			125	7.01	93.5	1.68	1.80	18.80
20			160	1.37	95.5	2.52	0.00	21.10
20			200	-2.94	96.5	3.63	0.00	22.80
21	4,692	4,699						
21			20	37.86	73.8	0.00	5.60	7.60
21			25	34.47	77.2	0.09	5.40	8.30
21			32	29.92	79.1	0.14	5.20	9.20
21			40	24.93	80.3	0.23	5.00	10.30
21			50	20.93	82.3	0.33	4.70	11.50
21			63	19.14	86.6	0.52	4.30	13.00
21			80	15.51	89.3	0.75	3.70	14.80
21			100	10.59	90.9	1.17	3.00	16.80
21			125	6.37	93.5	1.79	1.80	18.80
21			160	0.68	95.5	2.68	0.00	21.10
21			200	-3.69	96.5	3.85	0.00	22.80
22	5,164	5,169						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	37.03	73.8	0.00	5.60	7.60
22			25	33.63	77.2	0.10	5.40	8.30
22			32	29.08	79.1	0.16	5.20	9.20
22			40	24.07	80.3	0.26	5.00	10.30
22			50	20.07	82.3	0.36	4.70	11.50
22			63	18.26	86.6	0.57	4.30	13.00
22			80	14.61	89.3	0.83	3.70	14.80
22			100	9.64	90.9	1.29	3.00	16.80
22			125	5.37	93.5	1.96	1.80	18.80
22			160	-0.41	95.5	2.95	0.00	21.10
22			200	-4.91	96.5	4.24	0.00	22.80
23	5,307	5,311						
23			20	36.80	73.8	0.00	5.60	7.60
23			25	33.39	77.2	0.11	5.40	8.30
23			32	28.84	79.1	0.16	5.20	9.20
23			40	23.83	80.3	0.27	5.00	10.30
23			50	19.83	82.3	0.37	4.70	11.50
23			63	18.01	86.6	0.58	4.30	13.00
23			80	14.35	89.3	0.85	3.70	14.80
23			100	9.37	90.9	1.33	3.00	16.80
23			125	5.08	93.5	2.02	1.80	18.80
23			160	-0.73	95.5	3.03	0.00	21.10
23			200	-5.26	96.5	4.35	0.00	22.80
24	5,007	5,012						
24			20	37.30	73.8	0.00	5.60	7.60
24			25	33.90	77.2	0.10	5.40	8.30
24			32	29.35	79.1	0.15	5.20	9.20
24			40	24.35	80.3	0.25	5.00	10.30
24			50	20.35	82.3	0.35	4.70	11.50
24			63	18.55	86.6	0.55	4.30	13.00
24			80	14.90	89.3	0.80	3.70	14.80
24			100	9.95	90.9	1.25	3.00	16.80
24			125	5.70	93.5	1.90	1.80	18.80
24			160	-0.06	95.5	2.86	0.00	21.10
24			200	-4.51	96.5	4.11	0.00	22.80
25	4,693	4,698						
25			20	37.86	73.8	0.00	5.60	7.60
25			25	34.47	77.2	0.09	5.40	8.30
25			32	29.92	79.1	0.14	5.20	9.20
25			40	24.93	80.3	0.23	5.00	10.30
25			50	20.93	82.3	0.33	4.70	11.50
25			63	19.14	86.6	0.52	4.30	13.00
25			80	15.51	89.3	0.75	3.70	14.80
25			100	10.59	90.9	1.17	3.00	16.80
25			125	6.38	93.5	1.79	1.80	18.80
25			160	0.68	95.5	2.68	0.00	21.10
25			200	-3.69	96.5	3.85	0.00	22.80
26	5,142	5,148						
26			20	37.07	73.8	0.00	5.60	7.60
26			25	33.66	77.2	0.10	5.40	8.30
26			32	29.11	79.1	0.15	5.20	9.20
26			40	24.11	80.3	0.26	5.00	10.30
26			50	20.11	82.3	0.36	4.70	11.50
26			63	18.30	86.6	0.57	4.30	13.00
26			80	14.64	89.3	0.82	3.70	14.80
26			100	9.68	90.9	1.29	3.00	16.80
26			125	5.41	93.5	1.96	1.80	18.80
26			160	-0.37	95.5	2.93	0.00	21.10
26			200	-4.85	96.5	4.22	0.00	22.80
27	5,469	5,474						
27			20	36.53	73.8	0.00	5.60	7.60
27			25	33.12	77.2	0.11	5.40	8.30
27			32	28.57	79.1	0.16	5.20	9.20
27			40	23.56	80.3	0.27	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			50	19.55	82.3	0.38	4.70	11.50
27			63	17.73	86.6	0.60	4.30	13.00
27			80	14.06	89.3	0.88	3.70	14.80
27			100	9.07	90.9	1.37	3.00	16.80
27			125	4.75	93.5	2.08	1.80	18.80
27			160	-1.09	95.5	3.12	0.00	21.10
27			200	-5.65	96.5	4.49	0.00	22.80
28	5,733	5,738						
28			20	36.13	73.8	0.00	5.60	7.60
28			25	32.71	77.2	0.11	5.40	8.30
28			32	28.15	79.1	0.17	5.20	9.20
28			40	23.14	80.3	0.29	5.00	10.30
28			50	19.12	82.3	0.40	4.70	11.50
28			63	17.29	86.6	0.63	4.30	13.00
28			80	13.61	89.3	0.92	3.70	14.80
28			100	8.59	90.9	1.43	3.00	16.80
28			125	4.25	93.5	2.18	1.80	18.80
28			160	-1.65	95.5	3.27	0.00	21.10
28			200	-6.28	96.5	4.70	0.00	22.80
29	6,064	6,068						
29			20	35.64	73.8	0.00	5.60	7.60
29			25	32.22	77.2	0.12	5.40	8.30
29			32	27.66	79.1	0.18	5.20	9.20
29			40	22.64	80.3	0.30	5.00	10.30
29			50	18.61	82.3	0.42	4.70	11.50
29			63	16.77	86.6	0.67	4.30	13.00
29			80	13.07	89.3	0.97	3.70	14.80
29			100	8.02	90.9	1.52	3.00	16.80
29			125	3.63	93.5	2.31	1.80	18.80
29			160	-2.32	95.5	3.46	0.00	21.10
29			200	-7.04	96.5	4.98	0.00	22.80
3	2,759	2,767						
3			20	42.46	73.8	0.00	5.60	7.60
3			25	39.10	77.2	0.06	5.40	8.30
3			32	34.58	79.1	0.08	5.20	9.20
3			40	29.62	80.3	0.14	5.00	10.30
3			50	25.66	82.3	0.19	4.70	11.50
3			63	23.95	86.6	0.30	4.30	13.00
3			80	20.42	89.3	0.44	3.70	14.80
3			100	15.67	90.9	0.69	3.00	16.80
3			125	11.71	93.5	1.05	1.80	18.80
3			160	6.38	95.5	1.58	0.00	21.10
3			200	2.49	96.5	2.27	0.00	22.80
30	5,927	5,930						
30			20	35.84	73.8	0.00	5.60	7.60
30			25	32.42	77.2	0.12	5.40	8.30
30			32	27.86	79.1	0.18	5.20	9.20
30			40	22.84	80.3	0.30	5.00	10.30
30			50	18.82	82.3	0.42	4.70	11.50
30			63	16.99	86.6	0.65	4.30	13.00
30			80	13.29	89.3	0.95	3.70	14.80
30			100	8.26	90.9	1.48	3.00	16.80
30			125	3.89	93.5	2.25	1.80	18.80
30			160	-2.04	95.5	3.38	0.00	21.10
30			200	-6.72	96.5	4.86	0.00	22.80
31	6,486	6,489						
31			20	35.06	73.8	0.00	5.60	7.60
31			25	31.63	77.2	0.13	5.40	8.30
31			32	27.06	79.1	0.19	5.20	9.20
31			40	22.03	80.3	0.32	5.00	10.30
31			50	18.00	82.3	0.45	4.70	11.50
31			63	16.14	86.6	0.71	4.30	13.00
31			80	12.42	89.3	1.04	3.70	14.80
31			100	7.33	90.9	1.62	3.00	16.80

To be continued on next page...

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wpd AG
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DE-28211 Bremen
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Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			125	2.89	93.5	2.47	1.80	18.80
31			160	-3.14	95.5	3.70	0.00	21.10
31			200	-7.96	96.5	5.32	0.00	22.80
32	6,378	6,381						
32			20	35.20	73.8	0.00	5.60	7.60
32			25	31.77	77.2	0.13	5.40	8.30
32			32	27.21	79.1	0.19	5.20	9.20
32			40	22.18	80.3	0.32	5.00	10.30
32			50	18.16	82.3	0.45	4.70	11.50
32			63	16.30	86.6	0.70	4.30	13.00
32			80	12.58	89.3	1.02	3.70	14.80
32			100	7.51	90.9	1.60	3.00	16.80
32			125	3.08	93.5	2.42	1.80	18.80
32			160	-2.94	95.5	3.64	0.00	21.10
32			200	-7.73	96.5	5.23	0.00	22.80
33	6,349	6,353						
33			20	35.24	73.8	0.00	5.60	7.60
33			25	31.81	77.2	0.13	5.40	8.30
33			32	27.25	79.1	0.19	5.20	9.20
33			40	22.22	80.3	0.32	5.00	10.30
33			50	18.20	82.3	0.44	4.70	11.50
33			63	16.34	86.6	0.70	4.30	13.00
33			80	12.62	89.3	1.02	3.70	14.80
33			100	7.55	90.9	1.59	3.00	16.80
33			125	3.13	93.5	2.41	1.80	18.80
33			160	-2.88	95.5	3.62	0.00	21.10
33			200	-7.67	96.5	5.21	0.00	22.80
4	2,948	2,955						
4			20	41.89	73.8	0.00	5.60	7.60
4			25	38.53	77.2	0.06	5.40	8.30
4			32	34.00	79.1	0.09	5.20	9.20
4			40	29.04	80.3	0.15	5.00	10.30
4			50	25.08	82.3	0.21	4.70	11.50
4			63	23.36	86.6	0.33	4.30	13.00
4			80	19.82	89.3	0.47	3.70	14.80
4			100	15.05	90.9	0.74	3.00	16.80
4			125	11.07	93.5	1.12	1.80	18.80
4			160	5.70	95.5	1.68	0.00	21.10
4			200	1.76	96.5	2.42	0.00	22.80
5	3,472	3,478						
5			20	40.47	73.8	0.00	5.60	7.60
5			25	37.10	77.2	0.07	5.40	8.30
5			32	32.57	79.1	0.10	5.20	9.20
5			40	27.60	80.3	0.17	5.00	10.30
5			50	23.63	82.3	0.24	4.70	11.50
5			63	21.89	86.6	0.38	4.30	13.00
5			80	18.32	89.3	0.56	3.70	14.80
5			100	13.50	90.9	0.87	3.00	16.80
5			125	9.45	93.5	1.32	1.80	18.80
5			160	3.99	95.5	1.98	0.00	21.10
5			200	-0.08	96.5	2.85	0.00	22.80
6	2,345	2,354						
6			20	43.86	73.8	0.00	5.60	7.60
6			25	40.52	77.2	0.05	5.40	8.30
6			32	35.99	79.1	0.07	5.20	9.20
6			40	31.04	80.3	0.12	5.00	10.30
6			50	27.10	82.3	0.16	4.70	11.50
6			63	25.40	86.6	0.26	4.30	13.00
6			80	21.89	89.3	0.38	3.70	14.80
6			100	17.17	90.9	0.59	3.00	16.80
6			125	13.27	93.5	0.89	1.80	18.80
6			160	8.02	95.5	1.34	0.00	21.10
6			200	4.23	96.5	1.93	0.00	22.80
7	2,898	2,906						

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			20	42.03	73.8	0.00	5.60	7.60
7			25	38.68	77.2	0.06	5.40	8.30
7			32	34.15	79.1	0.09	5.20	9.20
7			40	29.19	80.3	0.15	5.00	10.30
7			50	25.23	82.3	0.20	4.70	11.50
7			63	23.51	86.6	0.32	4.30	13.00
7			80	19.97	89.3	0.46	3.70	14.80
7			100	15.21	90.9	0.73	3.00	16.80
7			125	11.23	93.5	1.10	1.80	18.80
7			160	5.88	95.5	1.66	0.00	21.10
7			200	1.95	96.5	2.38	0.00	22.80
8	3,170	3,177						
8			20	41.26	73.8	0.00	5.60	7.60
8			25	37.90	77.2	0.06	5.40	8.30
8			32	33.36	79.1	0.10	5.20	9.20
8			40	28.40	80.3	0.16	5.00	10.30
8			50	24.44	82.3	0.22	4.70	11.50
8			63	22.71	86.6	0.35	4.30	13.00
8			80	19.15	89.3	0.51	3.70	14.80
8			100	14.36	90.9	0.79	3.00	16.80
8			125	10.35	93.5	1.21	1.80	18.80
8			160	4.95	95.5	1.81	0.00	21.10
8			200	0.95	96.5	2.61	0.00	22.80
9	3,852	3,858						
9			20	39.57	73.8	0.00	5.60	7.60
9			25	36.20	77.2	0.08	5.40	8.30
9			32	31.66	79.1	0.12	5.20	9.20
9			40	26.68	80.3	0.19	5.00	10.30
9			50	22.70	82.3	0.27	4.70	11.50
9			63	20.95	86.6	0.42	4.30	13.00
9			80	17.36	89.3	0.62	3.70	14.80
9			100	12.51	90.9	0.96	3.00	16.80
9			125	8.41	93.5	1.47	1.80	18.80
9			160	2.88	95.5	2.20	0.00	21.10
9			200	-1.29	96.5	3.16	0.00	22.80
Sum								
Sum			20	55.23				
Sum			25	51.86				
Sum			32	47.32				
Sum			40	42.35				
Sum			50	38.38				
Sum			63	36.64				
Sum			80	33.07				
Sum			100	28.26				
Sum			125	24.22				
Sum			160	18.77				
Sum			200	14.74				

Noise sensitive area: HH Iso Mäkijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (292)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,679	2,687						
1			20	42.71	73.8	0.00	5.60	7.60
1			25	39.36	77.2	0.05	5.40	8.30
1			32	34.83	79.1	0.08	5.20	9.20
1			40	29.88	80.3	0.13	5.00	10.30
1			50	25.93	82.3	0.19	4.70	11.50
1			63	24.22	86.6	0.30	4.30	13.00
1			80	20.68	89.3	0.43	3.70	14.80
1			100	15.94	90.9	0.67	3.00	16.80
1			125	11.99	93.5	1.02	1.80	18.80
1			160	6.68	95.5	1.53	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			200	2.81	96.5	2.20	0.00	22.80
10	4,637	4,642						
10			20	37.97	73.8	0.00	5.60	7.60
10			25	34.57	77.2	0.09	5.40	8.30
10			32	30.03	79.1	0.14	5.20	9.20
10			40	25.03	80.3	0.23	5.00	10.30
10			50	21.04	82.3	0.32	4.70	11.50
10			63	19.26	86.6	0.51	4.30	13.00
10			80	15.62	89.3	0.74	3.70	14.80
10			100	10.71	90.9	1.16	3.00	16.80
10			125	6.50	93.5	1.76	1.80	18.80
10			160	0.82	95.5	2.65	0.00	21.10
10			200	-3.54	96.5	3.81	0.00	22.80
11	4,083	4,089						
11			20	39.07	73.8	0.00	5.60	7.60
11			25	35.69	77.2	0.08	5.40	8.30
11			32	31.14	79.1	0.12	5.20	9.20
11			40	26.16	80.3	0.20	5.00	10.30
11			50	22.18	82.3	0.29	4.70	11.50
11			63	20.42	86.6	0.45	4.30	13.00
11			80	16.81	89.3	0.65	3.70	14.80
11			100	11.95	90.9	1.02	3.00	16.80
11			125	7.81	93.5	1.55	1.80	18.80
11			160	2.24	95.5	2.33	0.00	21.10
11			200	-1.99	96.5	3.35	0.00	22.80
12	5,198	5,202						
12			20	36.98	73.8	0.00	5.60	7.60
12			25	33.57	77.2	0.10	5.40	8.30
12			32	29.02	79.1	0.16	5.20	9.20
12			40	24.02	80.3	0.26	5.00	10.30
12			50	20.01	82.3	0.36	4.70	11.50
12			63	18.20	86.6	0.57	4.30	13.00
12			80	14.54	89.3	0.83	3.70	14.80
12			100	9.58	90.9	1.30	3.00	16.80
12			125	5.30	93.5	1.98	1.80	18.80
12			160	-0.49	95.5	2.97	0.00	21.10
12			200	-4.99	96.5	4.27	0.00	22.80
13	4,552	4,557						
13			20	38.13	73.8	0.00	5.60	7.60
13			25	34.74	77.2	0.09	5.40	8.30
13			32	30.19	79.1	0.14	5.20	9.20
13			40	25.20	80.3	0.23	5.00	10.30
13			50	21.21	82.3	0.32	4.70	11.50
13			63	19.43	86.6	0.50	4.30	13.00
13			80	15.80	89.3	0.73	3.70	14.80
13			100	10.89	90.9	1.14	3.00	16.80
13			125	6.70	93.5	1.73	1.80	18.80
13			160	1.03	95.5	2.60	0.00	21.10
13			200	-3.31	96.5	3.74	0.00	22.80
14	3,051	3,059						
14			20	41.59	73.8	0.00	5.60	7.60
14			25	38.23	77.2	0.06	5.40	8.30
14			32	33.70	79.1	0.09	5.20	9.20
14			40	28.74	80.3	0.15	5.00	10.30
14			50	24.77	82.3	0.21	4.70	11.50
14			63	23.05	86.6	0.34	4.30	13.00
14			80	19.50	89.3	0.49	3.70	14.80
14			100	14.72	90.9	0.76	3.00	16.80
14			125	10.73	93.5	1.16	1.80	18.80
14			160	5.35	95.5	1.74	0.00	21.10
14			200	1.38	96.5	2.51	0.00	22.80
15	5,129	5,133						
15			20	37.09	73.8	0.00	5.60	7.60
15			25	33.69	77.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			32	29.14	79.1	0.15	5.20	9.20
15			40	24.14	80.3	0.26	5.00	10.30
15			50	20.13	82.3	0.36	4.70	11.50
15			63	18.33	86.6	0.56	4.30	13.00
15			80	14.67	89.3	0.82	3.70	14.80
15			100	9.71	90.9	1.28	3.00	16.80
15			125	5.44	93.5	1.95	1.80	18.80
15			160	-0.33	95.5	2.93	0.00	21.10
15			200	-4.82	96.5	4.21	0.00	22.80
16	4,507	4,512						
16			20	38.21	73.8	0.00	5.60	7.60
16			25	34.82	77.2	0.09	5.40	8.30
16			32	30.28	79.1	0.14	5.20	9.20
16			40	25.29	80.3	0.23	5.00	10.30
16			50	21.30	82.3	0.32	4.70	11.50
16			63	19.52	86.6	0.50	4.30	13.00
16			80	15.89	89.3	0.72	3.70	14.80
16			100	10.99	90.9	1.13	3.00	16.80
16			125	6.80	93.5	1.71	1.80	18.80
16			160	1.14	95.5	2.57	0.00	21.10
16			200	-3.19	96.5	3.70	0.00	22.80
17	3,962	3,969						
17			20	39.33	73.8	0.00	5.60	7.60
17			25	35.95	77.2	0.08	5.40	8.30
17			32	31.41	79.1	0.12	5.20	9.20
17			40	26.43	80.3	0.20	5.00	10.30
17			50	22.45	82.3	0.28	4.70	11.50
17			63	20.69	86.6	0.44	4.30	13.00
17			80	17.09	89.3	0.64	3.70	14.80
17			100	12.23	90.9	0.99	3.00	16.80
17			125	8.12	93.5	1.51	1.80	18.80
17			160	2.56	95.5	2.26	0.00	21.10
17			200	-1.63	96.5	3.25	0.00	22.80
18	3,496	3,504						
18			20	40.41	73.8	0.00	5.60	7.60
18			25	37.04	77.2	0.07	5.40	8.30
18			32	32.50	79.1	0.11	5.20	9.20
18			40	27.53	80.3	0.18	5.00	10.30
18			50	23.56	82.3	0.25	4.70	11.50
18			63	21.82	86.6	0.39	4.30	13.00
18			80	18.25	89.3	0.56	3.70	14.80
18			100	13.43	90.9	0.88	3.00	16.80
18			125	9.38	93.5	1.33	1.80	18.80
18			160	3.91	95.5	2.00	0.00	21.10
18			200	-0.16	96.5	2.87	0.00	22.80
19	5,274	5,278						
19			20	36.85	73.8	0.00	5.60	7.60
19			25	33.44	77.2	0.11	5.40	8.30
19			32	28.89	79.1	0.16	5.20	9.20
19			40	23.89	80.3	0.26	5.00	10.30
19			50	19.88	82.3	0.37	4.70	11.50
19			63	18.07	86.6	0.58	4.30	13.00
19			80	14.41	89.3	0.84	3.70	14.80
19			100	9.43	90.9	1.32	3.00	16.80
19			125	5.14	93.5	2.01	1.80	18.80
19			160	-0.66	95.5	3.01	0.00	21.10
19			200	-5.18	96.5	4.33	0.00	22.80
2	3,136	3,144						
2			20	41.35	73.8	0.00	5.60	7.60
2			25	37.99	77.2	0.06	5.40	8.30
2			32	33.46	79.1	0.09	5.20	9.20
2			40	28.49	80.3	0.16	5.00	10.30
2			50	24.53	82.3	0.22	4.70	11.50
2			63	22.81	86.6	0.35	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			80	19.25	89.3	0.50	3.70	14.80
2			100	14.47	90.9	0.79	3.00	16.80
2			125	10.46	93.5	1.19	1.80	18.80
2			160	5.06	95.5	1.79	0.00	21.10
2			200	1.07	96.5	2.58	0.00	22.80
20	5,048	5,052						
20			20	37.23	73.8	0.00	5.60	7.60
20			25	33.83	77.2	0.10	5.40	8.30
20			32	29.28	79.1	0.15	5.20	9.20
20			40	24.28	80.3	0.25	5.00	10.30
20			50	20.28	82.3	0.35	4.70	11.50
20			63	18.47	86.6	0.56	4.30	13.00
20			80	14.82	89.3	0.81	3.70	14.80
20			100	9.87	90.9	1.26	3.00	16.80
20			125	5.61	93.5	1.92	1.80	18.80
20			160	-0.15	95.5	2.88	0.00	21.10
20			200	-4.61	96.5	4.14	0.00	22.80
21	3,705	3,714						
21			20	39.90	73.8	0.00	5.60	7.60
21			25	36.53	77.2	0.07	5.40	8.30
21			32	31.99	79.1	0.11	5.20	9.20
21			40	27.02	80.3	0.19	5.00	10.30
21			50	23.04	82.3	0.26	4.70	11.50
21			63	21.29	86.6	0.41	4.30	13.00
21			80	17.71	89.3	0.59	3.70	14.80
21			100	12.87	90.9	0.93	3.00	16.80
21			125	8.79	93.5	1.41	1.80	18.80
21			160	3.29	95.5	2.12	0.00	21.10
21			200	-0.84	96.5	3.05	0.00	22.80
22	3,494	3,501						
22			20	40.42	73.8	0.00	5.60	7.60
22			25	37.05	77.2	0.07	5.40	8.30
22			32	32.51	79.1	0.11	5.20	9.20
22			40	27.54	80.3	0.18	5.00	10.30
22			50	23.57	82.3	0.25	4.70	11.50
22			63	21.83	86.6	0.39	4.30	13.00
22			80	18.25	89.3	0.56	3.70	14.80
22			100	13.44	90.9	0.88	3.00	16.80
22			125	9.38	93.5	1.33	1.80	18.80
22			160	3.92	95.5	2.00	0.00	21.10
22			200	-0.16	96.5	2.87	0.00	22.80
23	2,933	2,941						
23			20	41.93	73.8	0.00	5.60	7.60
23			25	38.57	77.2	0.06	5.40	8.30
23			32	34.04	79.1	0.09	5.20	9.20
23			40	29.08	80.3	0.15	5.00	10.30
23			50	25.12	82.3	0.21	4.70	11.50
23			63	23.41	86.6	0.32	4.30	13.00
23			80	19.86	89.3	0.47	3.70	14.80
23			100	15.10	90.9	0.74	3.00	16.80
23			125	11.11	93.5	1.12	1.80	18.80
23			160	5.75	95.5	1.68	0.00	21.10
23			200	1.82	96.5	2.41	0.00	22.80
24	4,965	4,970						
24			20	37.37	73.8	0.00	5.60	7.60
24			25	33.97	77.2	0.10	5.40	8.30
24			32	29.42	79.1	0.15	5.20	9.20
24			40	24.42	80.3	0.25	5.00	10.30
24			50	20.42	82.3	0.35	4.70	11.50
24			63	18.63	86.6	0.55	4.30	13.00
24			80	14.98	89.3	0.80	3.70	14.80
24			100	10.03	90.9	1.24	3.00	16.80
24			125	5.78	93.5	1.89	1.80	18.80
24			160	0.04	95.5	2.83	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			200	-4.40	96.5	4.08	0.00	22.80
25	4,387	4,393						
25			20	38.44	73.8	0.00	5.60	7.60
25			25	35.06	77.2	0.09	5.40	8.30
25			32	30.51	79.1	0.13	5.20	9.20
25			40	25.52	80.3	0.22	5.00	10.30
25			50	21.54	82.3	0.31	4.70	11.50
25			63	19.76	86.6	0.48	4.30	13.00
25			80	16.14	89.3	0.70	3.70	14.80
25			100	11.25	90.9	1.10	3.00	16.80
25			125	7.08	93.5	1.67	1.80	18.80
25			160	1.44	95.5	2.50	0.00	21.10
25			200	-2.86	96.5	3.60	0.00	22.80
26	4,244	4,251						
26			20	38.73	73.8	0.00	5.60	7.60
26			25	35.34	77.2	0.09	5.40	8.30
26			32	30.80	79.1	0.13	5.20	9.20
26			40	25.82	80.3	0.21	5.00	10.30
26			50	21.83	82.3	0.30	4.70	11.50
26			63	20.06	86.6	0.47	4.30	13.00
26			80	16.45	89.3	0.68	3.70	14.80
26			100	11.57	90.9	1.06	3.00	16.80
26			125	7.41	93.5	1.62	1.80	18.80
26			160	1.81	95.5	2.42	0.00	21.10
26			200	-2.46	96.5	3.49	0.00	22.80
27	4,019	4,027						
27			20	39.20	73.8	0.00	5.60	7.60
27			25	35.82	77.2	0.08	5.40	8.30
27			32	31.28	79.1	0.12	5.20	9.20
27			40	26.30	80.3	0.20	5.00	10.30
27			50	22.32	82.3	0.28	4.70	11.50
27			63	20.56	86.6	0.44	4.30	13.00
27			80	16.96	89.3	0.64	3.70	14.80
27			100	12.09	90.9	1.01	3.00	16.80
27			125	7.97	93.5	1.53	1.80	18.80
27			160	2.41	95.5	2.30	0.00	21.10
27			200	-1.80	96.5	3.30	0.00	22.80
28	3,600	3,607						
28			20	40.16	73.8	0.00	5.60	7.60
28			25	36.78	77.2	0.07	5.40	8.30
28			32	32.25	79.1	0.11	5.20	9.20
28			40	27.28	80.3	0.18	5.00	10.30
28			50	23.30	82.3	0.25	4.70	11.50
28			63	21.56	86.6	0.40	4.30	13.00
28			80	17.98	89.3	0.58	3.70	14.80
28			100	13.15	90.9	0.90	3.00	16.80
28			125	9.09	93.5	1.37	1.80	18.80
28			160	3.60	95.5	2.06	0.00	21.10
28			200	-0.50	96.5	2.96	0.00	22.80
29	3,238	3,247						
29			20	41.07	73.8	0.00	5.60	7.60
29			25	37.71	77.2	0.06	5.40	8.30
29			32	33.17	79.1	0.10	5.20	9.20
29			40	28.21	80.3	0.16	5.00	10.30
29			50	24.24	82.3	0.23	4.70	11.50
29			63	22.51	86.6	0.36	4.30	13.00
29			80	18.95	89.3	0.52	3.70	14.80
29			100	14.16	90.9	0.81	3.00	16.80
29			125	10.14	93.5	1.23	1.80	18.80
29			160	4.72	95.5	1.85	0.00	21.10
29			200	0.71	96.5	2.66	0.00	22.80
3	2,596	2,606						
3			20	42.98	73.8	0.00	5.60	7.60
3			25	39.63	77.2	0.05	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			32	35.10	79.1	0.08	5.20	9.20
3			40	30.15	80.3	0.13	5.00	10.30
3			50	26.20	82.3	0.18	4.70	11.50
3			63	24.50	86.6	0.29	4.30	13.00
3			80	20.97	89.3	0.42	3.70	14.80
3			100	16.23	90.9	0.65	3.00	16.80
3			125	12.29	93.5	0.99	1.80	18.80
3			160	7.00	95.5	1.49	0.00	21.10
3			200	3.15	96.5	2.14	0.00	22.80
30	2,603	2,611						
30			20	42.96	73.8	0.00	5.60	7.60
30			25	39.61	77.2	0.05	5.40	8.30
30			32	35.08	79.1	0.08	5.20	9.20
30			40	30.13	80.3	0.13	5.00	10.30
30			50	26.18	82.3	0.18	4.70	11.50
30			63	24.48	86.6	0.29	4.30	13.00
30			80	20.94	89.3	0.42	3.70	14.80
30			100	16.21	90.9	0.65	3.00	16.80
30			125	12.27	93.5	0.99	1.80	18.80
30			160	6.97	95.5	1.49	0.00	21.10
30			200	3.12	96.5	2.14	0.00	22.80
31	3,196	3,202						
31			20	41.19	73.8	0.00	5.60	7.60
31			25	37.83	77.2	0.06	5.40	8.30
31			32	33.29	79.1	0.10	5.20	9.20
31			40	28.33	80.3	0.16	5.00	10.30
31			50	24.37	82.3	0.22	4.70	11.50
31			63	22.64	86.6	0.35	4.30	13.00
31			80	19.08	89.3	0.51	3.70	14.80
31			100	14.29	90.9	0.80	3.00	16.80
31			125	10.27	93.5	1.22	1.80	18.80
31			160	4.87	95.5	1.83	0.00	21.10
31			200	0.86	96.5	2.63	0.00	22.80
32	2,438	2,447						
32			20	43.53	73.8	0.00	5.60	7.60
32			25	40.18	77.2	0.05	5.40	8.30
32			32	35.65	79.1	0.07	5.20	9.20
32			40	30.71	80.3	0.12	5.00	10.30
32			50	26.76	82.3	0.17	4.70	11.50
32			63	25.06	86.6	0.27	4.30	13.00
32			80	21.54	89.3	0.39	3.70	14.80
32			100	16.82	90.9	0.61	3.00	16.80
32			125	12.90	93.5	0.93	1.80	18.80
32			160	7.63	95.5	1.39	0.00	21.10
32			200	3.82	96.5	2.01	0.00	22.80
33	1,883	1,898						
33			20	45.73	73.8	0.00	5.60	7.60
33			25	42.40	77.2	0.04	5.40	8.30
33			32	37.88	79.1	0.06	5.20	9.20
33			40	32.94	80.3	0.09	5.00	10.30
33			50	29.00	82.3	0.13	4.70	11.50
33			63	27.33	86.6	0.21	4.30	13.00
33			80	23.83	89.3	0.30	3.70	14.80
33			100	19.16	90.9	0.47	3.00	16.80
33			125	15.31	93.5	0.72	1.80	18.80
33			160	10.15	95.5	1.08	0.00	21.10
33			200	6.48	96.5	1.56	0.00	22.80
4	2,630	2,639						
4			20	42.87	73.8	0.00	5.60	7.60
4			25	39.52	77.2	0.05	5.40	8.30
4			32	34.99	79.1	0.08	5.20	9.20
4			40	30.04	80.3	0.13	5.00	10.30
4			50	26.09	82.3	0.18	4.70	11.50
4			63	24.38	86.6	0.29	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			80	20.85	89.3	0.42	3.70	14.80
4			100	16.11	90.9	0.66	3.00	16.80
4			125	12.17	93.5	1.00	1.80	18.80
4			160	6.87	95.5	1.50	0.00	21.10
4			200	3.01	96.5	2.16	0.00	22.80
5	2,366	2,375						
5			20	43.79	73.8	0.00	5.60	7.60
5			25	40.44	77.2	0.05	5.40	8.30
5			32	35.91	79.1	0.07	5.20	9.20
5			40	30.97	80.3	0.12	5.00	10.30
5			50	27.02	82.3	0.17	4.70	11.50
5			63	25.32	86.6	0.26	4.30	13.00
5			80	21.81	89.3	0.38	3.70	14.80
5			100	17.09	90.9	0.59	3.00	16.80
5			125	13.18	93.5	0.90	1.80	18.80
5			160	7.93	95.5	1.35	0.00	21.10
5			200	4.14	96.5	1.95	0.00	22.80
6	4,026	4,032						
6			20	39.19	73.8	0.00	5.60	7.60
6			25	35.81	77.2	0.08	5.40	8.30
6			32	31.27	79.1	0.12	5.20	9.20
6			40	26.29	80.3	0.20	5.00	10.30
6			50	22.31	82.3	0.28	4.70	11.50
6			63	20.55	86.6	0.44	4.30	13.00
6			80	16.94	89.3	0.65	3.70	14.80
6			100	12.08	90.9	1.01	3.00	16.80
6			125	7.96	93.5	1.53	1.80	18.80
6			160	2.39	95.5	2.30	0.00	21.10
6			200	-1.82	96.5	3.31	0.00	22.80
7	3,495	3,501						
7			20	40.42	73.8	0.00	5.60	7.60
7			25	37.05	77.2	0.07	5.40	8.30
7			32	32.51	79.1	0.11	5.20	9.20
7			40	27.54	80.3	0.18	5.00	10.30
7			50	23.57	82.3	0.25	4.70	11.50
7			63	21.83	86.6	0.39	4.30	13.00
7			80	18.26	89.3	0.56	3.70	14.80
7			100	13.44	90.9	0.88	3.00	16.80
7			125	9.39	93.5	1.33	1.80	18.80
7			160	3.92	95.5	2.00	0.00	21.10
7			200	-0.15	96.5	2.87	0.00	22.80
8	2,932	2,940						
8			20	41.93	73.8	0.00	5.60	7.60
8			25	38.57	77.2	0.06	5.40	8.30
8			32	34.04	79.1	0.09	5.20	9.20
8			40	29.09	80.3	0.15	5.00	10.30
8			50	25.13	82.3	0.21	4.70	11.50
8			63	23.41	86.6	0.32	4.30	13.00
8			80	19.86	89.3	0.47	3.70	14.80
8			100	15.10	90.9	0.74	3.00	16.80
8			125	11.12	93.5	1.12	1.80	18.80
8			160	5.76	95.5	1.68	0.00	21.10
8			200	1.82	96.5	2.41	0.00	22.80
9	2,526	2,535						
9			20	43.22	73.8	0.00	5.60	7.60
9			25	39.87	77.2	0.05	5.40	8.30
9			32	35.35	79.1	0.08	5.20	9.20
9			40	30.40	80.3	0.13	5.00	10.30
9			50	26.44	82.3	0.18	4.70	11.50
9			63	24.74	86.6	0.28	4.30	13.00
9			80	21.22	89.3	0.41	3.70	14.80
9			100	16.49	90.9	0.63	3.00	16.80
9			125	12.56	93.5	0.96	1.80	18.80
9			160	7.28	95.5	1.44	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			200	3.44	96.5	2.08	0.00	22.80
Sum								
Sum			20	56.17				
Sum			25	52.80				
Sum			32	48.27				
Sum			40	43.31				
Sum			50	39.35				
Sum			63	37.62				
Sum			80	34.06				
Sum			100	29.28				
Sum			125	25.28				
Sum			160	19.89				
Sum			200	15.93				

Noise sensitive area: HH Kallioniemi 2 Noise sensitive point: Finnish normal frequency - User defined (290)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,291	2,302						
1			20	44.06	73.8	0.00	5.60	7.60
1			25	40.71	77.2	0.05	5.40	8.30
1			32	36.19	79.1	0.07	5.20	9.20
1			40	31.24	80.3	0.12	5.00	10.30
1			50	27.30	82.3	0.16	4.70	11.50
1			63	25.61	86.6	0.25	4.30	13.00
1			80	22.09	89.3	0.37	3.70	14.80
1			100	17.38	90.9	0.58	3.00	16.80
1			125	13.49	93.5	0.87	1.80	18.80
1			160	8.25	95.5	1.31	0.00	21.10
1			200	4.47	96.5	1.89	0.00	22.80
10	4,609	4,615						
10			20	38.02	73.8	0.00	5.60	7.60
10			25	34.62	77.2	0.09	5.40	8.30
10			32	30.08	79.1	0.14	5.20	9.20
10			40	25.09	80.3	0.23	5.00	10.30
10			50	21.09	82.3	0.32	4.70	11.50
10			63	19.31	86.6	0.51	4.30	13.00
10			80	15.68	89.3	0.74	3.70	14.80
10			100	10.76	90.9	1.15	3.00	16.80
10			125	6.56	93.5	1.75	1.80	18.80
10			160	0.89	95.5	2.63	0.00	21.10
10			200	-3.47	96.5	3.78	0.00	22.80
11	4,103	4,109						
11			20	39.02	73.8	0.00	5.60	7.60
11			25	35.64	77.2	0.08	5.40	8.30
11			32	31.10	79.1	0.12	5.20	9.20
11			40	26.12	80.3	0.21	5.00	10.30
11			50	22.14	82.3	0.29	4.70	11.50
11			63	20.37	86.6	0.45	4.30	13.00
11			80	16.77	89.3	0.66	3.70	14.80
11			100	11.90	90.9	1.03	3.00	16.80
11			125	7.76	93.5	1.56	1.80	18.80
11			160	2.18	95.5	2.34	0.00	21.10
11			200	-2.05	96.5	3.37	0.00	22.80
12	5,185	5,190						
12			20	37.00	73.8	0.00	5.60	7.60
12			25	33.59	77.2	0.10	5.40	8.30
12			32	29.04	79.1	0.16	5.20	9.20
12			40	24.04	80.3	0.26	5.00	10.30
12			50	20.03	82.3	0.36	4.70	11.50
12			63	18.23	86.6	0.57	4.30	13.00
12			80	14.57	89.3	0.83	3.70	14.80
12			100	9.60	90.9	1.30	3.00	16.80

To be continued on next page...

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			125	5.32	93.5	1.97	1.80	18.80
12			160	-0.46	95.5	2.96	0.00	21.10
12			200	-4.96	96.5	4.26	0.00	22.80
13	4,622	4,628						
13			20	37.99	73.8	0.00	5.60	7.60
13			25	34.60	77.2	0.09	5.40	8.30
13			32	30.05	79.1	0.14	5.20	9.20
13			40	25.06	80.3	0.23	5.00	10.30
13			50	21.07	82.3	0.32	4.70	11.50
13			63	19.28	86.6	0.51	4.30	13.00
13			80	15.65	89.3	0.74	3.70	14.80
13			100	10.74	90.9	1.16	3.00	16.80
13			125	6.53	93.5	1.76	1.80	18.80
13			160	0.86	95.5	2.64	0.00	21.10
13			200	-3.50	96.5	3.79	0.00	22.80
14	3,156	3,165						
14			20	41.29	73.8	0.00	5.60	7.60
14			25	37.93	77.2	0.06	5.40	8.30
14			32	33.40	79.1	0.09	5.20	9.20
14			40	28.44	80.3	0.16	5.00	10.30
14			50	24.47	82.3	0.22	4.70	11.50
14			63	22.75	86.6	0.35	4.30	13.00
14			80	19.19	89.3	0.51	3.70	14.80
14			100	14.40	90.9	0.79	3.00	16.80
14			125	10.39	93.5	1.20	1.80	18.80
14			160	4.99	95.5	1.80	0.00	21.10
14			200	1.00	96.5	2.59	0.00	22.80
15	5,190	5,195						
15			20	36.99	73.8	0.00	5.60	7.60
15			25	33.58	77.2	0.10	5.40	8.30
15			32	29.03	79.1	0.16	5.20	9.20
15			40	24.03	80.3	0.26	5.00	10.30
15			50	20.02	82.3	0.36	4.70	11.50
15			63	18.22	86.6	0.57	4.30	13.00
15			80	14.56	89.3	0.83	3.70	14.80
15			100	9.59	90.9	1.30	3.00	16.80
15			125	5.31	93.5	1.97	1.80	18.80
15			160	-0.47	95.5	2.96	0.00	21.10
15			200	-4.97	96.5	4.26	0.00	22.80
16	4,654	4,659						
16			20	37.93	73.8	0.00	5.60	7.60
16			25	34.54	77.2	0.09	5.40	8.30
16			32	29.99	79.1	0.14	5.20	9.20
16			40	25.00	80.3	0.23	5.00	10.30
16			50	21.01	82.3	0.33	4.70	11.50
16			63	19.22	86.6	0.51	4.30	13.00
16			80	15.59	89.3	0.75	3.70	14.80
16			100	10.67	90.9	1.16	3.00	16.80
16			125	6.46	93.5	1.77	1.80	18.80
16			160	0.78	95.5	2.66	0.00	21.10
16			200	-3.59	96.5	3.82	0.00	22.80
17	4,172	4,180						
17			20	38.88	73.8	0.00	5.60	7.60
17			25	35.49	77.2	0.08	5.40	8.30
17			32	30.95	79.1	0.13	5.20	9.20
17			40	25.97	80.3	0.21	5.00	10.30
17			50	21.98	82.3	0.29	4.70	11.50
17			63	20.22	86.6	0.46	4.30	13.00
17			80	16.61	89.3	0.67	3.70	14.80
17			100	11.73	90.9	1.04	3.00	16.80
17			125	7.59	93.5	1.59	1.80	18.80
17			160	1.99	95.5	2.38	0.00	21.10
17			200	-2.25	96.5	3.43	0.00	22.80
18	3,679	3,688						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			20	39.96	73.8	0.00	5.60	7.60
18			25	36.59	77.2	0.07	5.40	8.30
18			32	32.05	79.1	0.11	5.20	9.20
18			40	27.08	80.3	0.18	5.00	10.30
18			50	23.11	82.3	0.26	4.70	11.50
18			63	21.36	86.6	0.41	4.30	13.00
18			80	17.77	89.3	0.59	3.70	14.80
18			100	12.94	90.9	0.92	3.00	16.80
18			125	8.86	93.5	1.40	1.80	18.80
18			160	3.36	95.5	2.10	0.00	21.10
18			200	-0.76	96.5	3.02	0.00	22.80
19	5,396	5,401						
19			20	36.65	73.8	0.00	5.60	7.60
19			25	33.24	77.2	0.11	5.40	8.30
19			32	28.69	79.1	0.16	5.20	9.20
19			40	23.68	80.3	0.27	5.00	10.30
19			50	19.67	82.3	0.38	4.70	11.50
19			63	17.86	86.6	0.59	4.30	13.00
19			80	14.19	89.3	0.86	3.70	14.80
19			100	9.20	90.9	1.35	3.00	16.80
19			125	4.90	93.5	2.05	1.80	18.80
19			160	-0.93	95.5	3.08	0.00	21.10
19			200	-5.48	96.5	4.43	0.00	22.80
2	2,935	2,944						
2			20	41.92	73.8	0.00	5.60	7.60
2			25	38.56	77.2	0.06	5.40	8.30
2			32	34.03	79.1	0.09	5.20	9.20
2			40	29.07	80.3	0.15	5.00	10.30
2			50	25.11	82.3	0.21	4.70	11.50
2			63	23.40	86.6	0.32	4.30	13.00
2			80	19.85	89.3	0.47	3.70	14.80
2			100	15.08	90.9	0.74	3.00	16.80
2			125	11.10	93.5	1.12	1.80	18.80
2			160	5.74	95.5	1.68	0.00	21.10
2			200	1.81	96.5	2.41	0.00	22.80
20	5,241	5,246						
20			20	36.90	73.8	0.00	5.60	7.60
20			25	33.50	77.2	0.10	5.40	8.30
20			32	28.95	79.1	0.16	5.20	9.20
20			40	23.94	80.3	0.26	5.00	10.30
20			50	19.94	82.3	0.37	4.70	11.50
20			63	18.13	86.6	0.58	4.30	13.00
20			80	14.46	89.3	0.84	3.70	14.80
20			100	9.49	90.9	1.31	3.00	16.80
20			125	5.21	93.5	1.99	1.80	18.80
20			160	-0.59	95.5	2.99	0.00	21.10
20			200	-5.10	96.5	4.30	0.00	22.80
21	4,001	4,011						
21			20	39.24	73.8	0.00	5.60	7.60
21			25	35.86	77.2	0.08	5.40	8.30
21			32	31.31	79.1	0.12	5.20	9.20
21			40	26.33	80.3	0.20	5.00	10.30
21			50	22.35	82.3	0.28	4.70	11.50
21			63	20.59	86.6	0.44	4.30	13.00
21			80	16.99	89.3	0.64	3.70	14.80
21			100	12.13	90.9	1.00	3.00	16.80
21			125	8.01	93.5	1.52	1.80	18.80
21			160	2.45	95.5	2.29	0.00	21.10
21			200	-1.75	96.5	3.29	0.00	22.80
22	3,871	3,879						
22			20	39.53	73.8	0.00	5.60	7.60
22			25	36.15	77.2	0.08	5.40	8.30
22			32	31.61	79.1	0.12	5.20	9.20
22			40	26.63	80.3	0.19	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			50	22.65	82.3	0.27	4.70	11.50
22			63	20.90	86.6	0.43	4.30	13.00
22			80	17.30	89.3	0.62	3.70	14.80
22			100	12.46	90.9	0.97	3.00	16.80
22			125	8.35	93.5	1.47	1.80	18.80
22			160	2.81	95.5	2.21	0.00	21.10
22			200	-1.36	96.5	3.18	0.00	22.80
23	3,362	3,370						
23			20	40.75	73.8	0.00	5.60	7.60
23			25	37.38	77.2	0.07	5.40	8.30
23			32	32.85	79.1	0.10	5.20	9.20
23			40	27.88	80.3	0.17	5.00	10.30
23			50	23.91	82.3	0.24	4.70	11.50
23			63	22.18	86.6	0.37	4.30	13.00
23			80	18.61	89.3	0.54	3.70	14.80
23			100	13.80	90.9	0.84	3.00	16.80
23			125	9.77	93.5	1.28	1.80	18.80
23			160	4.33	95.5	1.92	0.00	21.10
23			200	0.28	96.5	2.76	0.00	22.80
24	5,238	5,244						
24			20	36.91	73.8	0.00	5.60	7.60
24			25	33.50	77.2	0.10	5.40	8.30
24			32	28.95	79.1	0.16	5.20	9.20
24			40	23.95	80.3	0.26	5.00	10.30
24			50	19.94	82.3	0.37	4.70	11.50
24			63	18.13	86.6	0.58	4.30	13.00
24			80	14.47	89.3	0.84	3.70	14.80
24			100	9.50	90.9	1.31	3.00	16.80
24			125	5.21	93.5	1.99	1.80	18.80
24			160	-0.58	95.5	2.99	0.00	21.10
24			200	-5.09	96.5	4.30	0.00	22.80
25	4,652	4,658						
25			20	37.94	73.8	0.00	5.60	7.60
25			25	34.54	77.2	0.09	5.40	8.30
25			32	30.00	79.1	0.14	5.20	9.20
25			40	25.00	80.3	0.23	5.00	10.30
25			50	21.01	82.3	0.33	4.70	11.50
25			63	19.22	86.6	0.51	4.30	13.00
25			80	15.59	89.3	0.75	3.70	14.80
25			100	10.67	90.9	1.16	3.00	16.80
25			125	6.47	93.5	1.77	1.80	18.80
25			160	0.78	95.5	2.66	0.00	21.10
25			200	-3.58	96.5	3.82	0.00	22.80
26	4,577	4,585						
26			20	38.07	73.8	0.00	5.60	7.60
26			25	34.68	77.2	0.09	5.40	8.30
26			32	30.14	79.1	0.14	5.20	9.20
26			40	25.14	80.3	0.23	5.00	10.30
26			50	21.15	82.3	0.32	4.70	11.50
26			63	19.37	86.6	0.50	4.30	13.00
26			80	15.74	89.3	0.73	3.70	14.80
26			100	10.83	90.9	1.15	3.00	16.80
26			125	6.63	93.5	1.74	1.80	18.80
26			160	0.96	95.5	2.61	0.00	21.10
26			200	-3.39	96.5	3.76	0.00	22.80
27	4,409	4,417						
27			20	38.40	73.8	0.00	5.60	7.60
27			25	35.01	77.2	0.09	5.40	8.30
27			32	30.47	79.1	0.13	5.20	9.20
27			40	25.48	80.3	0.22	5.00	10.30
27			50	21.49	82.3	0.31	4.70	11.50
27			63	19.71	86.6	0.49	4.30	13.00
27			80	16.09	89.3	0.71	3.70	14.80
27			100	11.19	90.9	1.10	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			125	7.02	93.5	1.68	1.80	18.80
27			160	1.38	95.5	2.52	0.00	21.10
27			200	-2.92	96.5	3.62	0.00	22.80
28	4,051	4,058						
28			20	39.13	73.8	0.00	5.60	7.60
28			25	35.75	77.2	0.08	5.40	8.30
28			32	31.21	79.1	0.12	5.20	9.20
28			40	26.23	80.3	0.20	5.00	10.30
28			50	22.25	82.3	0.28	4.70	11.50
28			63	20.49	86.6	0.45	4.30	13.00
28			80	16.88	89.3	0.65	3.70	14.80
28			100	12.02	90.9	1.01	3.00	16.80
28			125	7.89	93.5	1.54	1.80	18.80
28			160	2.32	95.5	2.31	0.00	21.10
28			200	-1.89	96.5	3.33	0.00	22.80
29	3,756	3,764						
29			20	39.79	73.8	0.00	5.60	7.60
29			25	36.41	77.2	0.08	5.40	8.30
29			32	31.87	79.1	0.11	5.20	9.20
29			40	26.90	80.3	0.19	5.00	10.30
29			50	22.92	82.3	0.26	4.70	11.50
29			63	21.17	86.6	0.41	4.30	13.00
29			80	17.58	89.3	0.60	3.70	14.80
29			100	12.75	90.9	0.94	3.00	16.80
29			125	8.66	93.5	1.43	1.80	18.80
29			160	3.14	95.5	2.15	0.00	21.10
29			200	-1.00	96.5	3.09	0.00	22.80
3	2,337	2,349						
3			20	43.88	73.8	0.00	5.60	7.60
3			25	40.54	77.2	0.05	5.40	8.30
3			32	36.01	79.1	0.07	5.20	9.20
3			40	31.06	80.3	0.12	5.00	10.30
3			50	27.12	82.3	0.16	4.70	11.50
3			63	25.42	86.6	0.26	4.30	13.00
3			80	21.91	89.3	0.38	3.70	14.80
3			100	17.20	90.9	0.59	3.00	16.80
3			125	13.29	93.5	0.89	1.80	18.80
3			160	8.04	95.5	1.34	0.00	21.10
3			200	4.26	96.5	1.93	0.00	22.80
30	3,145	3,153						
30			20	41.33	73.8	0.00	5.60	7.60
30			25	37.96	77.2	0.06	5.40	8.30
30			32	33.43	79.1	0.09	5.20	9.20
30			40	28.47	80.3	0.16	5.00	10.30
30			50	24.51	82.3	0.22	4.70	11.50
30			63	22.78	86.6	0.35	4.30	13.00
30			80	19.22	89.3	0.50	3.70	14.80
30			100	14.44	90.9	0.79	3.00	16.80
30			125	10.43	93.5	1.20	1.80	18.80
30			160	5.03	95.5	1.80	0.00	21.10
30			200	1.04	96.5	2.59	0.00	22.80
31	3,765	3,771						
31			20	39.77	73.8	0.00	5.60	7.60
31			25	36.39	77.2	0.08	5.40	8.30
31			32	31.86	79.1	0.11	5.20	9.20
31			40	26.88	80.3	0.19	5.00	10.30
31			50	22.91	82.3	0.26	4.70	11.50
31			63	21.15	86.6	0.41	4.30	13.00
31			80	17.57	89.3	0.60	3.70	14.80
31			100	12.73	90.9	0.94	3.00	16.80
31			125	8.64	93.5	1.43	1.80	18.80
31			160	3.12	95.5	2.15	0.00	21.10
31			200	-1.02	96.5	3.09	0.00	22.80
32	3,044	3,052						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			20	41.61	73.8	0.00	5.60	7.60
32			25	38.25	77.2	0.06	5.40	8.30
32			32	33.72	79.1	0.09	5.20	9.20
32			40	28.75	80.3	0.15	5.00	10.30
32			50	24.79	82.3	0.21	4.70	11.50
32			63	23.07	86.6	0.34	4.30	13.00
32			80	19.52	89.3	0.49	3.70	14.80
32			100	14.74	90.9	0.76	3.00	16.80
32			125	10.75	93.5	1.16	1.80	18.80
32			160	5.37	95.5	1.74	0.00	21.10
32			200	1.40	96.5	2.50	0.00	22.80
33	2,518	2,530						
33			20	43.24	73.8	0.00	5.60	7.60
33			25	39.89	77.2	0.05	5.40	8.30
33			32	35.36	79.1	0.08	5.20	9.20
33			40	30.41	80.3	0.13	5.00	10.30
33			50	26.46	82.3	0.18	4.70	11.50
33			63	24.76	86.6	0.28	4.30	13.00
33			80	21.23	89.3	0.40	3.70	14.80
33			100	16.51	90.9	0.63	3.00	16.80
33			125	12.58	93.5	0.96	1.80	18.80
33			160	7.30	95.5	1.44	0.00	21.10
33			200	3.46	96.5	2.07	0.00	22.80
4	2,506	2,517						
4			20	43.28	73.8	0.00	5.60	7.60
4			25	39.93	77.2	0.05	5.40	8.30
4			32	35.41	79.1	0.08	5.20	9.20
4			40	30.46	80.3	0.13	5.00	10.30
4			50	26.51	82.3	0.18	4.70	11.50
4			63	24.81	86.6	0.28	4.30	13.00
4			80	21.28	89.3	0.40	3.70	14.80
4			100	16.55	90.9	0.63	3.00	16.80
4			125	12.63	93.5	0.96	1.80	18.80
4			160	7.35	95.5	1.43	0.00	21.10
4			200	3.52	96.5	2.06	0.00	22.80
5	2,377	2,388						
5			20	43.74	73.8	0.00	5.60	7.60
5			25	40.39	77.2	0.05	5.40	8.30
5			32	35.87	79.1	0.07	5.20	9.20
5			40	30.92	80.3	0.12	5.00	10.30
5			50	26.97	82.3	0.17	4.70	11.50
5			63	25.28	86.6	0.26	4.30	13.00
5			80	21.76	89.3	0.38	3.70	14.80
5			100	17.04	90.9	0.60	3.00	16.80
5			125	13.13	93.5	0.91	1.80	18.80
5			160	7.88	95.5	1.36	0.00	21.10
5			200	4.08	96.5	1.96	0.00	22.80
6	3,943	3,950						
6			20	39.37	73.8	0.00	5.60	7.60
6			25	35.99	77.2	0.08	5.40	8.30
6			32	31.45	79.1	0.12	5.20	9.20
6			40	26.47	80.3	0.20	5.00	10.30
6			50	22.49	82.3	0.28	4.70	11.50
6			63	20.73	86.6	0.43	4.30	13.00
6			80	17.14	89.3	0.63	3.70	14.80
6			100	12.28	90.9	0.99	3.00	16.80
6			125	8.17	93.5	1.50	1.80	18.80
6			160	2.62	95.5	2.25	0.00	21.10
6			200	-1.57	96.5	3.24	0.00	22.80
7	3,485	3,492						
7			20	40.44	73.8	0.00	5.60	7.60
7			25	37.07	77.2	0.07	5.40	8.30
7			32	32.53	79.1	0.10	5.20	9.20
7			40	27.56	80.3	0.17	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			50	23.59	82.3	0.24	4.70	11.50
7			63	21.85	86.6	0.38	4.30	13.00
7			80	18.28	89.3	0.56	3.70	14.80
7			100	13.47	90.9	0.87	3.00	16.80
7			125	9.41	93.5	1.33	1.80	18.80
7			160	3.95	95.5	1.99	0.00	21.10
7			200	-0.12	96.5	2.86	0.00	22.80
8	2,937	2,946						
8			20	41.92	73.8	0.00	5.60	7.60
8			25	38.56	77.2	0.06	5.40	8.30
8			32	34.03	79.1	0.09	5.20	9.20
8			40	29.07	80.3	0.15	5.00	10.30
8			50	25.11	82.3	0.21	4.70	11.50
8			63	23.39	86.6	0.32	4.30	13.00
8			80	19.84	89.3	0.47	3.70	14.80
8			100	15.08	90.9	0.74	3.00	16.80
8			125	11.10	93.5	1.12	1.80	18.80
8			160	5.74	95.5	1.68	0.00	21.10
8			200	1.80	96.5	2.42	0.00	22.80
9	2,670	2,679						
9			20	42.74	73.8	0.00	5.60	7.60
9			25	39.39	77.2	0.05	5.40	8.30
9			32	34.86	79.1	0.08	5.20	9.20
9			40	29.91	80.3	0.13	5.00	10.30
9			50	25.95	82.3	0.19	4.70	11.50
9			63	24.24	86.6	0.29	4.30	13.00
9			80	20.71	89.3	0.43	3.70	14.80
9			100	15.97	90.9	0.67	3.00	16.80
9			125	12.02	93.5	1.02	1.80	18.80
9			160	6.71	95.5	1.53	0.00	21.10
9			200	2.84	96.5	2.20	0.00	22.80
Sum								
Sum			20	55.70				
Sum			25	52.34				
Sum			32	47.80				
Sum			40	42.84				
Sum			50	38.87				
Sum			63	37.14				
Sum			80	33.57				
Sum			100	28.77				
Sum			125	24.75				
Sum			160	19.33				
Sum			200	15.32				

Noise sensitive area: HH Kauvanjärvi 5 Noise sensitive point: Finnish normal frequency - User defined (301)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,168	6,173						
1			20	35.49	73.8	0.00	5.60	7.60
1			25	32.07	77.2	0.12	5.40	8.30
1			32	27.51	79.1	0.19	5.20	9.20
1			40	22.48	80.3	0.31	5.00	10.30
1			50	18.46	82.3	0.43	4.70	11.50
1			63	16.61	86.6	0.68	4.30	13.00
1			80	12.90	89.3	0.99	3.70	14.80
1			100	7.85	90.9	1.54	3.00	16.80
1			125	3.45	93.5	2.35	1.80	18.80
1			160	-2.53	95.5	3.52	0.00	21.10
1			200	-7.27	96.5	5.06	0.00	22.80
10	6,456	6,460						
10			20	35.09	73.8	0.00	5.60	7.60
10			25	31.67	77.2	0.13	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			32	27.10	79.1	0.19	5.20	9.20
10			40	22.07	80.3	0.32	5.00	10.30
10			50	18.04	82.3	0.45	4.70	11.50
10			63	16.18	86.6	0.71	4.30	13.00
10			80	12.46	89.3	1.03	3.70	14.80
10			100	7.38	90.9	1.62	3.00	16.80
10			125	2.94	93.5	2.45	1.80	18.80
10			160	-3.09	95.5	3.68	0.00	21.10
10			200	-7.90	96.5	5.30	0.00	22.80
11	5,856	5,861						
11			20	35.94	73.8	0.00	5.60	7.60
11			25	32.52	77.2	0.12	5.40	8.30
11			32	27.96	79.1	0.18	5.20	9.20
11			40	22.95	80.3	0.29	5.00	10.30
11			50	18.93	82.3	0.41	4.70	11.50
11			63	17.10	86.6	0.64	4.30	13.00
11			80	13.40	89.3	0.94	3.70	14.80
11			100	8.37	90.9	1.47	3.00	16.80
11			125	4.01	93.5	2.23	1.80	18.80
11			160	-1.90	95.5	3.34	0.00	21.10
11			200	-6.57	96.5	4.81	0.00	22.80
12	6,810	6,814						
12			20	34.63	73.8	0.00	5.60	7.60
12			25	31.20	77.2	0.14	5.40	8.30
12			32	26.63	79.1	0.20	5.20	9.20
12			40	21.59	80.3	0.34	5.00	10.30
12			50	17.56	82.3	0.48	4.70	11.50
12			63	15.68	86.6	0.75	4.30	13.00
12			80	11.94	89.3	1.09	3.70	14.80
12			100	6.83	90.9	1.70	3.00	16.80
12			125	2.34	93.5	2.59	1.80	18.80
12			160	-3.75	95.5	3.88	0.00	21.10
12			200	-8.66	96.5	5.59	0.00	22.80
13	5,938	5,943						
13			20	35.82	73.8	0.00	5.60	7.60
13			25	32.40	77.2	0.12	5.40	8.30
13			32	27.84	79.1	0.18	5.20	9.20
13			40	22.82	80.3	0.30	5.00	10.30
13			50	18.80	82.3	0.42	4.70	11.50
13			63	16.97	86.6	0.65	4.30	13.00
13			80	13.27	89.3	0.95	3.70	14.80
13			100	8.23	90.9	1.49	3.00	16.80
13			125	3.86	93.5	2.26	1.80	18.80
13			160	-2.07	95.5	3.39	0.00	21.10
13			200	-6.75	96.5	4.87	0.00	22.80
14	4,891	4,897						
14			20	37.50	73.8	0.00	5.60	7.60
14			25	34.10	77.2	0.10	5.40	8.30
14			32	29.55	79.1	0.15	5.20	9.20
14			40	24.56	80.3	0.24	5.00	10.30
14			50	20.56	82.3	0.34	4.70	11.50
14			63	18.76	86.6	0.54	4.30	13.00
14			80	15.12	89.3	0.78	3.70	14.80
14			100	10.18	90.9	1.22	3.00	16.80
14			125	5.94	93.5	1.86	1.80	18.80
14			160	0.21	95.5	2.79	0.00	21.10
14			200	-4.21	96.5	4.02	0.00	22.80
15	6,394	6,398						
15			20	35.18	73.8	0.00	5.60	7.60
15			25	31.75	77.2	0.13	5.40	8.30
15			32	27.19	79.1	0.19	5.20	9.20
15			40	22.16	80.3	0.32	5.00	10.30
15			50	18.13	82.3	0.45	4.70	11.50
15			63	16.28	86.6	0.70	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			80	12.56	89.3	1.02	3.70	14.80
15			100	7.48	90.9	1.60	3.00	16.80
15			125	3.05	93.5	2.43	1.80	18.80
15			160	-2.97	95.5	3.65	0.00	21.10
15			200	-7.77	96.5	5.25	0.00	22.80
16	5,518	5,523						
16			20	36.46	73.8	0.00	5.60	7.60
16			25	33.05	77.2	0.11	5.40	8.30
16			32	28.49	79.1	0.17	5.20	9.20
16			40	23.48	80.3	0.28	5.00	10.30
16			50	19.47	82.3	0.39	4.70	11.50
16			63	17.65	86.6	0.61	4.30	13.00
16			80	13.97	89.3	0.88	3.70	14.80
16			100	8.98	90.9	1.38	3.00	16.80
16			125	4.66	93.5	2.10	1.80	18.80
16			160	-1.19	95.5	3.15	0.00	21.10
16			200	-5.77	96.5	4.53	0.00	22.80
17	4,862	4,869						
17			20	37.55	73.8	0.00	5.60	7.60
17			25	34.15	77.2	0.10	5.40	8.30
17			32	29.60	79.1	0.15	5.20	9.20
17			40	24.61	80.3	0.24	5.00	10.30
17			50	20.61	82.3	0.34	4.70	11.50
17			63	18.82	86.6	0.54	4.30	13.00
17			80	15.17	89.3	0.78	3.70	14.80
17			100	10.23	90.9	1.22	3.00	16.80
17			125	6.00	93.5	1.85	1.80	18.80
17			160	0.28	95.5	2.78	0.00	21.10
17			200	-4.14	96.5	3.99	0.00	22.80
18	4,757	4,765						
18			20	37.74	73.8	0.00	5.60	7.60
18			25	34.34	77.2	0.10	5.40	8.30
18			32	29.80	79.1	0.14	5.20	9.20
18			40	24.80	80.3	0.24	5.00	10.30
18			50	20.81	82.3	0.33	4.70	11.50
18			63	19.02	86.6	0.52	4.30	13.00
18			80	15.38	89.3	0.76	3.70	14.80
18			100	10.45	90.9	1.19	3.00	16.80
18			125	6.23	93.5	1.81	1.80	18.80
18			160	0.52	95.5	2.72	0.00	21.10
18			200	-3.87	96.5	3.91	0.00	22.80
19	6,179	6,184						
19			20	35.48	73.8	0.00	5.60	7.60
19			25	32.05	77.2	0.12	5.40	8.30
19			32	27.49	79.1	0.19	5.20	9.20
19			40	22.47	80.3	0.31	5.00	10.30
19			50	18.44	82.3	0.43	4.70	11.50
19			63	16.59	86.6	0.68	4.30	13.00
19			80	12.89	89.3	0.99	3.70	14.80
19			100	7.83	90.9	1.55	3.00	16.80
19			125	3.43	93.5	2.35	1.80	18.80
19			160	-2.55	95.5	3.52	0.00	21.10
19			200	-7.30	96.5	5.07	0.00	22.80
2	6,016	6,020						
2			20	35.71	73.8	0.00	5.60	7.60
2			25	32.29	77.2	0.12	5.40	8.30
2			32	27.73	79.1	0.18	5.20	9.20
2			40	22.71	80.3	0.30	5.00	10.30
2			50	18.69	82.3	0.42	4.70	11.50
2			63	16.85	86.6	0.66	4.30	13.00
2			80	13.14	89.3	0.96	3.70	14.80
2			100	8.10	90.9	1.51	3.00	16.80
2			125	3.72	93.5	2.29	1.80	18.80
2			160	-2.22	95.5	3.43	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			200	-6.93	96.5	4.94	0.00	22.80
20	5,622	5,627						
20			20	36.29	73.8	0.00	5.60	7.60
20			25	32.88	77.2	0.11	5.40	8.30
20			32	28.33	79.1	0.17	5.20	9.20
20			40	23.31	80.3	0.28	5.00	10.30
20			50	19.30	82.3	0.39	4.70	11.50
20			63	17.48	86.6	0.62	4.30	13.00
20			80	13.79	89.3	0.90	3.70	14.80
20			100	8.79	90.9	1.41	3.00	16.80
20			125	4.46	93.5	2.14	1.80	18.80
20			160	-1.41	95.5	3.21	0.00	21.10
20			200	-6.02	96.5	4.61	0.00	22.80
21	4,252	4,261						
21			20	38.71	73.8	0.00	5.60	7.60
21			25	35.32	77.2	0.09	5.40	8.30
21			32	30.78	79.1	0.13	5.20	9.20
21			40	25.80	80.3	0.21	5.00	10.30
21			50	21.81	82.3	0.30	4.70	11.50
21			63	20.04	86.6	0.47	4.30	13.00
21			80	16.43	89.3	0.68	3.70	14.80
21			100	11.54	90.9	1.07	3.00	16.80
21			125	7.39	93.5	1.62	1.80	18.80
21			160	1.78	95.5	2.43	0.00	21.10
21			200	-2.48	96.5	3.49	0.00	22.80
22	3,672	3,680						
22			20	39.98	73.8	0.00	5.60	7.60
22			25	36.61	77.2	0.07	5.40	8.30
22			32	32.07	79.1	0.11	5.20	9.20
22			40	27.10	80.3	0.18	5.00	10.30
22			50	23.12	82.3	0.26	4.70	11.50
22			63	21.38	86.6	0.40	4.30	13.00
22			80	17.79	89.3	0.59	3.70	14.80
22			100	12.96	90.9	0.92	3.00	16.80
22			125	8.88	93.5	1.40	1.80	18.80
22			160	3.38	95.5	2.10	0.00	21.10
22			200	-0.74	96.5	3.02	0.00	22.80
23	3,226	3,235						
23			20	41.10	73.8	0.00	5.60	7.60
23			25	37.74	77.2	0.06	5.40	8.30
23			32	33.21	79.1	0.10	5.20	9.20
23			40	28.24	80.3	0.16	5.00	10.30
23			50	24.28	82.3	0.23	4.70	11.50
23			63	22.55	86.6	0.36	4.30	13.00
23			80	18.98	89.3	0.52	3.70	14.80
23			100	14.19	90.9	0.81	3.00	16.80
23			125	10.17	93.5	1.23	1.80	18.80
23			160	4.76	95.5	1.84	0.00	21.10
23			200	0.75	96.5	2.65	0.00	22.80
24	5,077	5,083						
24			20	37.18	73.8	0.00	5.60	7.60
24			25	33.78	77.2	0.10	5.40	8.30
24			32	29.23	79.1	0.15	5.20	9.20
24			40	24.22	80.3	0.25	5.00	10.30
24			50	20.22	82.3	0.36	4.70	11.50
24			63	18.42	86.6	0.56	4.30	13.00
24			80	14.76	89.3	0.81	3.70	14.80
24			100	9.81	90.9	1.27	3.00	16.80
24			125	5.55	93.5	1.93	1.80	18.80
24			160	-0.22	95.5	2.90	0.00	21.10
24			200	-4.69	96.5	4.17	0.00	22.80
25	4,784	4,791						
25			20	37.69	73.8	0.00	5.60	7.60
25			25	34.30	77.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			32	29.75	79.1	0.14	5.20	9.20
25			40	24.75	80.3	0.24	5.00	10.30
25			50	20.76	82.3	0.34	4.70	11.50
25			63	18.96	86.6	0.53	4.30	13.00
25			80	15.33	89.3	0.77	3.70	14.80
25			100	10.39	90.9	1.20	3.00	16.80
25			125	6.17	93.5	1.82	1.80	18.80
25			160	0.46	95.5	2.73	0.00	21.10
25			200	-3.94	96.5	3.93	0.00	22.80
26	4,271	4,280						
26			20	38.67	73.8	0.00	5.60	7.60
26			25	35.29	77.2	0.09	5.40	8.30
26			32	30.74	79.1	0.13	5.20	9.20
26			40	25.76	80.3	0.21	5.00	10.30
26			50	21.77	82.3	0.30	4.70	11.50
26			63	20.00	86.6	0.47	4.30	13.00
26			80	16.39	89.3	0.68	3.70	14.80
26			100	11.50	90.9	1.07	3.00	16.80
26			125	7.35	93.5	1.63	1.80	18.80
26			160	1.73	95.5	2.44	0.00	21.10
26			200	-2.54	96.5	3.51	0.00	22.80
27	3,772	3,781						
27			20	39.75	73.8	0.00	5.60	7.60
27			25	36.37	77.2	0.08	5.40	8.30
27			32	31.83	79.1	0.11	5.20	9.20
27			40	26.86	80.3	0.19	5.00	10.30
27			50	22.88	82.3	0.26	4.70	11.50
27			63	21.13	86.6	0.42	4.30	13.00
27			80	17.54	89.3	0.60	3.70	14.80
27			100	12.70	90.9	0.95	3.00	16.80
27			125	8.61	93.5	1.44	1.80	18.80
27			160	3.09	95.5	2.16	0.00	21.10
27			200	-1.05	96.5	3.10	0.00	22.80
28	3,169	3,179						
28			20	41.25	73.8	0.00	5.60	7.60
28			25	37.89	77.2	0.06	5.40	8.30
28			32	33.36	79.1	0.10	5.20	9.20
28			40	28.40	80.3	0.16	5.00	10.30
28			50	24.43	82.3	0.22	4.70	11.50
28			63	22.71	86.6	0.35	4.30	13.00
28			80	19.15	89.3	0.51	3.70	14.80
28			100	14.36	90.9	0.79	3.00	16.80
28			125	10.35	93.5	1.21	1.80	18.80
28			160	4.94	95.5	1.81	0.00	21.10
28			200	0.95	96.5	2.61	0.00	22.80
29	2,562	2,575						
29			20	43.08	73.8	0.00	5.60	7.60
29			25	39.73	77.2	0.05	5.40	8.30
29			32	35.21	79.1	0.08	5.20	9.20
29			40	30.25	80.3	0.13	5.00	10.30
29			50	26.30	82.3	0.18	4.70	11.50
29			63	24.60	86.6	0.28	4.30	13.00
29			80	21.07	89.3	0.41	3.70	14.80
29			100	16.34	90.9	0.64	3.00	16.80
29			125	12.40	93.5	0.98	1.80	18.80
29			160	7.12	95.5	1.47	0.00	21.10
29			200	3.27	96.5	2.11	0.00	22.80
3	5,788	5,793						
3			20	36.04	73.8	0.00	5.60	7.60
3			25	32.63	77.2	0.12	5.40	8.30
3			32	28.07	79.1	0.17	5.20	9.20
3			40	23.05	80.3	0.29	5.00	10.30
3			50	19.04	82.3	0.41	4.70	11.50
3			63	17.20	86.6	0.64	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	13.51	89.3	0.93	3.70	14.80
3			100	8.49	90.9	1.45	3.00	16.80
3			125	4.14	93.5	2.20	1.80	18.80
3			160	-1.76	95.5	3.30	0.00	21.10
3			200	-6.41	96.5	4.75	0.00	22.80
30	2,462	2,473						
30			20	43.44	73.8	0.00	5.60	7.60
30			25	40.09	77.2	0.05	5.40	8.30
30			32	35.56	79.1	0.07	5.20	9.20
30			40	30.61	80.3	0.12	5.00	10.30
30			50	26.66	82.3	0.17	4.70	11.50
30			63	24.96	86.6	0.27	4.30	13.00
30			80	21.44	89.3	0.40	3.70	14.80
30			100	16.72	90.9	0.62	3.00	16.80
30			125	12.80	93.5	0.94	1.80	18.80
30			160	7.53	95.5	1.41	0.00	21.10
30			200	3.71	96.5	2.03	0.00	22.80
31	2,042	2,055						
31			20	45.04	73.8	0.00	5.60	7.60
31			25	41.70	77.2	0.04	5.40	8.30
31			32	37.18	79.1	0.06	5.20	9.20
31			40	32.24	80.3	0.10	5.00	10.30
31			50	28.30	82.3	0.14	4.70	11.50
31			63	26.62	86.6	0.23	4.30	13.00
31			80	23.12	89.3	0.33	3.70	14.80
31			100	18.43	90.9	0.51	3.00	16.80
31			125	14.56	93.5	0.78	1.80	18.80
31			160	9.37	95.5	1.17	0.00	21.10
31			200	5.66	96.5	1.68	0.00	22.80
32	1,989	2,003						
32			20	45.26	73.8	0.00	5.60	7.60
32			25	41.92	77.2	0.04	5.40	8.30
32			32	37.40	79.1	0.06	5.20	9.20
32			40	32.46	80.3	0.10	5.00	10.30
32			50	28.52	82.3	0.14	4.70	11.50
32			63	26.84	86.6	0.22	4.30	13.00
32			80	23.34	89.3	0.32	3.70	14.80
32			100	18.66	90.9	0.50	3.00	16.80
32			125	14.80	93.5	0.76	1.80	18.80
32			160	9.62	95.5	1.14	0.00	21.10
32			200	5.92	96.5	1.64	0.00	22.80
33	2,221	2,236						
33			20	44.31	73.8	0.00	5.60	7.60
33			25	40.96	77.2	0.04	5.40	8.30
33			32	36.44	79.1	0.07	5.20	9.20
33			40	31.50	80.3	0.11	5.00	10.30
33			50	27.55	82.3	0.16	4.70	11.50
33			63	25.86	86.6	0.25	4.30	13.00
33			80	22.35	89.3	0.36	3.70	14.80
33			100	17.65	90.9	0.56	3.00	16.80
33			125	13.76	93.5	0.85	1.80	18.80
33			160	8.53	95.5	1.27	0.00	21.10
33			200	4.78	96.5	1.83	0.00	22.80
4	5,445	5,451						
4			20	36.57	73.8	0.00	5.60	7.60
4			25	33.16	77.2	0.11	5.40	8.30
4			32	28.61	79.1	0.16	5.20	9.20
4			40	23.60	80.3	0.27	5.00	10.30
4			50	19.59	82.3	0.38	4.70	11.50
4			63	17.77	86.6	0.60	4.30	13.00
4			80	14.10	89.3	0.87	3.70	14.80
4			100	9.11	90.9	1.36	3.00	16.80
4			125	4.80	93.5	2.07	1.80	18.80
4			160	-1.04	95.5	3.11	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			200	-5.60	96.5	4.47	0.00	22.80
5	4,899	4,905						
5			20	37.49	73.8	0.00	5.60	7.60
5			25	34.09	77.2	0.10	5.40	8.30
5			32	29.54	79.1	0.15	5.20	9.20
5			40	24.54	80.3	0.25	5.00	10.30
5			50	20.54	82.3	0.34	4.70	11.50
5			63	18.75	86.6	0.54	4.30	13.00
5			80	15.10	89.3	0.78	3.70	14.80
5			100	10.16	90.9	1.23	3.00	16.80
5			125	5.92	93.5	1.86	1.80	18.80
5			160	0.19	95.5	2.80	0.00	21.10
5			200	-4.24	96.5	4.02	0.00	22.80
6	6,247	6,251						
6			20	35.38	73.8	0.00	5.60	7.60
6			25	31.96	77.2	0.13	5.40	8.30
6			32	27.39	79.1	0.19	5.20	9.20
6			40	22.37	80.3	0.31	5.00	10.30
6			50	18.34	82.3	0.44	4.70	11.50
6			63	16.49	86.6	0.69	4.30	13.00
6			80	12.78	89.3	1.00	3.70	14.80
6			100	7.72	90.9	1.56	3.00	16.80
6			125	3.30	93.5	2.38	1.80	18.80
6			160	-2.68	95.5	3.56	0.00	21.10
6			200	-7.45	96.5	5.13	0.00	22.80
7	5,596	5,601						
7			20	36.33	73.8	0.00	5.60	7.60
7			25	32.92	77.2	0.11	5.40	8.30
7			32	28.37	79.1	0.17	5.20	9.20
7			40	23.35	80.3	0.28	5.00	10.30
7			50	19.34	82.3	0.39	4.70	11.50
7			63	17.52	86.6	0.62	4.30	13.00
7			80	13.84	89.3	0.90	3.70	14.80
7			100	8.83	90.9	1.40	3.00	16.80
7			125	4.51	93.5	2.13	1.80	18.80
7			160	-1.36	95.5	3.19	0.00	21.10
7			200	-5.96	96.5	4.59	0.00	22.80
8	5,209	5,214						
8			20	36.96	73.8	0.00	5.60	7.60
8			25	33.55	77.2	0.10	5.40	8.30
8			32	29.00	79.1	0.16	5.20	9.20
8			40	24.00	80.3	0.26	5.00	10.30
8			50	19.99	82.3	0.37	4.70	11.50
8			63	18.18	86.6	0.57	4.30	13.00
8			80	14.52	89.3	0.83	3.70	14.80
8			100	9.55	90.9	1.30	3.00	16.80
8			125	5.27	93.5	1.98	1.80	18.80
8			160	-0.52	95.5	2.97	0.00	21.10
8			200	-5.02	96.5	4.28	0.00	22.80
9	4,519	4,525						
9			20	38.19	73.8	0.00	5.60	7.60
9			25	34.80	77.2	0.09	5.40	8.30
9			32	30.25	79.1	0.14	5.20	9.20
9			40	25.26	80.3	0.23	5.00	10.30
9			50	21.27	82.3	0.32	4.70	11.50
9			63	19.49	86.6	0.50	4.30	13.00
9			80	15.86	89.3	0.72	3.70	14.80
9			100	10.96	90.9	1.13	3.00	16.80
9			125	6.77	93.5	1.72	1.80	18.80
9			160	1.11	95.5	2.58	0.00	21.10
9			200	-3.22	96.5	3.71	0.00	22.80
Sum								
Sum			20	54.68				
Sum			25	51.31				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			32	46.77				
Sum			40	41.80				
Sum			50	37.83				
Sum			63	36.09				
Sum			80	32.51				
Sum			100	27.70				
Sum			125	23.65				
Sum			160	18.21				
Sum			200	14.19				

Noise sensitive area: HH Kellarimäentie Noise sensitive point: Finnish normal frequency - User defined (331)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,257	4,262						
1			20	38.71	73.8	0.00	5.60	7.60
1			25	35.32	77.2	0.09	5.40	8.30
1			32	30.78	79.1	0.13	5.20	9.20
1			40	25.79	80.3	0.21	5.00	10.30
1			50	21.81	82.3	0.30	4.70	11.50
1			63	20.04	86.6	0.47	4.30	13.00
1			80	16.43	89.3	0.68	3.70	14.80
1			100	11.54	90.9	1.07	3.00	16.80
1			125	7.39	93.5	1.62	1.80	18.80
1			160	1.78	95.5	2.43	0.00	21.10
1			200	-2.49	96.5	3.49	0.00	22.80
10	5,339	5,343						
10			20	36.74	73.8	0.00	5.60	7.60
10			25	33.34	77.2	0.11	5.40	8.30
10			32	28.78	79.1	0.16	5.20	9.20
10			40	23.78	80.3	0.27	5.00	10.30
10			50	19.77	82.3	0.37	4.70	11.50
10			63	17.96	86.6	0.59	4.30	13.00
10			80	14.29	89.3	0.85	3.70	14.80
10			100	9.31	90.9	1.34	3.00	16.80
10			125	5.01	93.5	2.03	1.80	18.80
10			160	-0.80	95.5	3.05	0.00	21.10
10			200	-5.34	96.5	4.38	0.00	22.80
11	4,723	4,727						
11			20	37.81	73.8	0.00	5.60	7.60
11			25	34.41	77.2	0.09	5.40	8.30
11			32	29.87	79.1	0.14	5.20	9.20
11			40	24.87	80.3	0.24	5.00	10.30
11			50	20.88	82.3	0.33	4.70	11.50
11			63	19.09	86.6	0.52	4.30	13.00
11			80	15.45	89.3	0.76	3.70	14.80
11			100	10.53	90.9	1.18	3.00	16.80
11			125	6.31	93.5	1.80	1.80	18.80
11			160	0.61	95.5	2.69	0.00	21.10
11			200	-3.77	96.5	3.88	0.00	22.80
12	5,819	5,823						
12			20	36.00	73.8	0.00	5.60	7.60
12			25	32.58	77.2	0.12	5.40	8.30
12			32	28.02	79.1	0.17	5.20	9.20
12			40	23.01	80.3	0.29	5.00	10.30
12			50	18.99	82.3	0.41	4.70	11.50
12			63	17.16	86.6	0.64	4.30	13.00
12			80	13.47	89.3	0.93	3.70	14.80
12			100	8.44	90.9	1.46	3.00	16.80
12			125	4.09	93.5	2.21	1.80	18.80
12			160	-1.82	95.5	3.32	0.00	21.10
12			200	-6.48	96.5	4.77	0.00	22.80
13	5,011	5,015						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			20	37.29	73.8	0.00	5.60	7.60
13			25	33.89	77.2	0.10	5.40	8.30
13			32	29.34	79.1	0.15	5.20	9.20
13			40	24.34	80.3	0.25	5.00	10.30
13			50	20.34	82.3	0.35	4.70	11.50
13			63	18.54	86.6	0.55	4.30	13.00
13			80	14.89	89.3	0.80	3.70	14.80
13			100	9.94	90.9	1.25	3.00	16.80
13			125	5.69	93.5	1.91	1.80	18.80
13			160	-0.06	95.5	2.86	0.00	21.10
13			200	-4.52	96.5	4.11	0.00	22.80
14	3,629	3,635						
14			20	40.09	73.8	0.00	5.60	7.60
14			25	36.72	77.2	0.07	5.40	8.30
14			32	32.18	79.1	0.11	5.20	9.20
14			40	27.21	80.3	0.18	5.00	10.30
14			50	23.24	82.3	0.25	4.70	11.50
14			63	21.49	86.6	0.40	4.30	13.00
14			80	17.91	89.3	0.58	3.70	14.80
14			100	13.08	90.9	0.91	3.00	16.80
14			125	9.01	93.5	1.38	1.80	18.80
14			160	3.52	95.5	2.07	0.00	21.10
14			200	-0.59	96.5	2.98	0.00	22.80
15	5,561	5,565						
15			20	36.39	73.8	0.00	5.60	7.60
15			25	32.98	77.2	0.11	5.40	8.30
15			32	28.42	79.1	0.17	5.20	9.20
15			40	23.41	80.3	0.28	5.00	10.30
15			50	19.40	82.3	0.39	4.70	11.50
15			63	17.58	86.6	0.61	4.30	13.00
15			80	13.90	89.3	0.89	3.70	14.80
15			100	8.90	90.9	1.39	3.00	16.80
15			125	4.58	93.5	2.11	1.80	18.80
15			160	-1.28	95.5	3.17	0.00	21.10
15			200	-5.87	96.5	4.56	0.00	22.80
16	4,757	4,761						
16			20	37.75	73.8	0.00	5.60	7.60
16			25	34.35	77.2	0.10	5.40	8.30
16			32	29.80	79.1	0.14	5.20	9.20
16			40	24.81	80.3	0.24	5.00	10.30
16			50	20.81	82.3	0.33	4.70	11.50
16			63	19.02	86.6	0.52	4.30	13.00
16			80	15.38	89.3	0.76	3.70	14.80
16			100	10.45	90.9	1.19	3.00	16.80
16			125	6.24	93.5	1.81	1.80	18.80
16			160	0.53	95.5	2.71	0.00	21.10
16			200	-3.86	96.5	3.90	0.00	22.80
17	4,096	4,102						
17			20	39.04	73.8	0.00	5.60	7.60
17			25	35.66	77.2	0.08	5.40	8.30
17			32	31.12	79.1	0.12	5.20	9.20
17			40	26.13	80.3	0.21	5.00	10.30
17			50	22.15	82.3	0.29	4.70	11.50
17			63	20.39	86.6	0.45	4.30	13.00
17			80	16.78	89.3	0.66	3.70	14.80
17			100	11.91	90.9	1.03	3.00	16.80
17			125	7.78	93.5	1.56	1.80	18.80
17			160	2.20	95.5	2.34	0.00	21.10
17			200	-2.02	96.5	3.36	0.00	22.80
18	3,779	3,786						
18			20	39.74	73.8	0.00	5.60	7.60
18			25	36.36	77.2	0.08	5.40	8.30
18			32	31.82	79.1	0.11	5.20	9.20
18			40	26.85	80.3	0.19	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			50	22.87	82.3	0.27	4.70	11.50
18			63	21.12	86.6	0.42	4.30	13.00
18			80	17.53	89.3	0.61	3.70	14.80
18			100	12.69	90.9	0.95	3.00	16.80
18			125	8.60	93.5	1.44	1.80	18.80
18			160	3.08	95.5	2.16	0.00	21.10
18			200	-1.07	96.5	3.10	0.00	22.80
19	5,526	5,529						
19			20	36.45	73.8	0.00	5.60	7.60
19			25	33.04	77.2	0.11	5.40	8.30
19			32	28.48	79.1	0.17	5.20	9.20
19			40	23.47	80.3	0.28	5.00	10.30
19			50	19.46	82.3	0.39	4.70	11.50
19			63	17.64	86.6	0.61	4.30	13.00
19			80	13.96	89.3	0.88	3.70	14.80
19			100	8.96	90.9	1.38	3.00	16.80
19			125	4.65	93.5	2.10	1.80	18.80
19			160	-1.21	95.5	3.15	0.00	21.10
19			200	-5.79	96.5	4.53	0.00	22.80
2	4,363	4,368						
2			20	38.49	73.8	0.00	5.60	7.60
2			25	35.11	77.2	0.09	5.40	8.30
2			32	30.56	79.1	0.13	5.20	9.20
2			40	25.58	80.3	0.22	5.00	10.30
2			50	21.59	82.3	0.31	4.70	11.50
2			63	19.81	86.6	0.48	4.30	13.00
2			80	16.19	89.3	0.70	3.70	14.80
2			100	11.30	90.9	1.09	3.00	16.80
2			125	7.13	93.5	1.66	1.80	18.80
2			160	1.50	95.5	2.49	0.00	21.10
2			200	-2.79	96.5	3.58	0.00	22.80
20	5,111	5,115						
20			20	37.12	73.8	0.00	5.60	7.60
20			25	33.72	77.2	0.10	5.40	8.30
20			32	29.17	79.1	0.15	5.20	9.20
20			40	24.17	80.3	0.26	5.00	10.30
20			50	20.17	82.3	0.36	4.70	11.50
20			63	18.36	86.6	0.56	4.30	13.00
20			80	14.70	89.3	0.82	3.70	14.80
20			100	9.74	90.9	1.28	3.00	16.80
20			125	5.48	93.5	1.94	1.80	18.80
20			160	-0.29	95.5	2.92	0.00	21.10
20			200	-4.77	96.5	4.19	0.00	22.80
21	3,604	3,613						
21			20	40.14	73.8	0.00	5.60	7.60
21			25	36.77	77.2	0.07	5.40	8.30
21			32	32.23	79.1	0.11	5.20	9.20
21			40	27.26	80.3	0.18	5.00	10.30
21			50	23.29	82.3	0.25	4.70	11.50
21			63	21.55	86.6	0.40	4.30	13.00
21			80	17.97	89.3	0.58	3.70	14.80
21			100	13.14	90.9	0.90	3.00	16.80
21			125	9.07	93.5	1.37	1.80	18.80
21			160	3.58	95.5	2.06	0.00	21.10
21			200	-0.52	96.5	2.96	0.00	22.80
22	3,144	3,152						
22			20	41.33	73.8	0.00	5.60	7.60
22			25	37.96	77.2	0.06	5.40	8.30
22			32	33.43	79.1	0.09	5.20	9.20
22			40	28.47	80.3	0.16	5.00	10.30
22			50	24.51	82.3	0.22	4.70	11.50
22			63	22.78	86.6	0.35	4.30	13.00
22			80	19.22	89.3	0.50	3.70	14.80
22			100	14.44	90.9	0.79	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			125	10.43	93.5	1.20	1.80	18.80
22			160	5.03	95.5	1.80	0.00	21.10
22			200	1.04	96.5	2.58	0.00	22.80
23	2,507	2,516						
23			20	43.29	73.8	0.00	5.60	7.60
23			25	39.94	77.2	0.05	5.40	8.30
23			32	35.41	79.1	0.08	5.20	9.20
23			40	30.46	80.3	0.13	5.00	10.30
23			50	26.51	82.3	0.18	4.70	11.50
23			63	24.81	86.6	0.28	4.30	13.00
23			80	21.28	89.3	0.40	3.70	14.80
23			100	16.56	90.9	0.63	3.00	16.80
23			125	12.63	93.5	0.96	1.80	18.80
23			160	7.35	95.5	1.43	0.00	21.10
23			200	3.52	96.5	2.06	0.00	22.80
24	4,783	4,788						
24			20	37.70	73.8	0.00	5.60	7.60
24			25	34.30	77.2	0.10	5.40	8.30
24			32	29.75	79.1	0.14	5.20	9.20
24			40	24.76	80.3	0.24	5.00	10.30
24			50	20.76	82.3	0.34	4.70	11.50
24			63	18.97	86.6	0.53	4.30	13.00
24			80	15.33	89.3	0.77	3.70	14.80
24			100	10.40	90.9	1.20	3.00	16.80
24			125	6.18	93.5	1.82	1.80	18.80
24			160	0.47	95.5	2.73	0.00	21.10
24			200	-3.93	96.5	3.93	0.00	22.80
25	4,295	4,301						
25			20	38.63	73.8	0.00	5.60	7.60
25			25	35.24	77.2	0.09	5.40	8.30
25			32	30.70	79.1	0.13	5.20	9.20
25			40	25.71	80.3	0.22	5.00	10.30
25			50	21.73	82.3	0.30	4.70	11.50
25			63	19.96	86.6	0.47	4.30	13.00
25			80	16.34	89.3	0.69	3.70	14.80
25			100	11.45	90.9	1.08	3.00	16.80
25			125	7.30	93.5	1.63	1.80	18.80
25			160	1.68	95.5	2.45	0.00	21.10
25			200	-2.60	96.5	3.53	0.00	22.80
26	3,938	3,945						
26			20	39.38	73.8	0.00	5.60	7.60
26			25	36.00	77.2	0.08	5.40	8.30
26			32	31.46	79.1	0.12	5.20	9.20
26			40	26.48	80.3	0.20	5.00	10.30
26			50	22.50	82.3	0.28	4.70	11.50
26			63	20.74	86.6	0.43	4.30	13.00
26			80	17.15	89.3	0.63	3.70	14.80
26			100	12.29	90.9	0.99	3.00	16.80
26			125	8.18	93.5	1.50	1.80	18.80
26			160	2.63	95.5	2.25	0.00	21.10
26			200	-1.56	96.5	3.24	0.00	22.80
27	3,535	3,543						
27			20	40.31	73.8	0.00	5.60	7.60
27			25	36.94	77.2	0.07	5.40	8.30
27			32	32.41	79.1	0.11	5.20	9.20
27			40	27.44	80.3	0.18	5.00	10.30
27			50	23.46	82.3	0.25	4.70	11.50
27			63	21.72	86.6	0.39	4.30	13.00
27			80	18.15	89.3	0.57	3.70	14.80
27			100	13.33	90.9	0.89	3.00	16.80
27			125	9.27	93.5	1.35	1.80	18.80
27			160	3.79	95.5	2.02	0.00	21.10
27			200	-0.29	96.5	2.91	0.00	22.80
28	2,935	2,943						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			20	41.92	73.8	0.00	5.60	7.60
28			25	38.57	77.2	0.06	5.40	8.30
28			32	34.04	79.1	0.09	5.20	9.20
28			40	29.08	80.3	0.15	5.00	10.30
28			50	25.12	82.3	0.21	4.70	11.50
28			63	23.40	86.6	0.32	4.30	13.00
28			80	19.85	89.3	0.47	3.70	14.80
28			100	15.09	90.9	0.74	3.00	16.80
28			125	11.11	93.5	1.12	1.80	18.80
28			160	5.75	95.5	1.68	0.00	21.10
28			200	1.81	96.5	2.41	0.00	22.80
29	2,331	2,342						
29			20	43.91	73.8	0.00	5.60	7.60
29			25	40.56	77.2	0.05	5.40	8.30
29			32	36.04	79.1	0.07	5.20	9.20
29			40	31.09	80.3	0.12	5.00	10.30
29			50	27.14	82.3	0.16	4.70	11.50
29			63	25.45	86.6	0.26	4.30	13.00
29			80	21.93	89.3	0.37	3.70	14.80
29			100	17.22	90.9	0.59	3.00	16.80
29			125	13.32	93.5	0.89	1.80	18.80
29			160	8.07	95.5	1.33	0.00	21.10
29			200	4.29	96.5	1.92	0.00	22.80
3	3,987	3,993						
3			20	39.27	73.8	0.00	5.60	7.60
3			25	35.90	77.2	0.08	5.40	8.30
3			32	31.36	79.1	0.12	5.20	9.20
3			40	26.38	80.3	0.20	5.00	10.30
3			50	22.40	82.3	0.28	4.70	11.50
3			63	20.64	86.6	0.44	4.30	13.00
3			80	17.04	89.3	0.64	3.70	14.80
3			100	12.18	90.9	1.00	3.00	16.80
3			125	8.06	93.5	1.52	1.80	18.80
3			160	2.50	95.5	2.28	0.00	21.10
3			200	-1.70	96.5	3.27	0.00	22.80
30	1,732	1,744						
30			20	46.47	73.8	0.00	5.60	7.60
30			25	43.13	77.2	0.03	5.40	8.30
30			32	38.61	79.1	0.05	5.20	9.20
30			40	33.68	80.3	0.09	5.00	10.30
30			50	29.75	82.3	0.12	4.70	11.50
30			63	28.08	86.6	0.19	4.30	13.00
30			80	24.59	89.3	0.28	3.70	14.80
30			100	19.93	90.9	0.44	3.00	16.80
30			125	16.10	93.5	0.66	1.80	18.80
30			160	10.97	95.5	0.99	0.00	21.10
30			200	7.34	96.5	1.43	0.00	22.80
31	2,003	2,013						
31			20	45.22	73.8	0.00	5.60	7.60
31			25	41.88	77.2	0.04	5.40	8.30
31			32	37.36	79.1	0.06	5.20	9.20
31			40	32.42	80.3	0.10	5.00	10.30
31			50	28.48	82.3	0.14	4.70	11.50
31			63	26.80	86.6	0.22	4.30	13.00
31			80	23.30	89.3	0.32	3.70	14.80
31			100	18.62	90.9	0.50	3.00	16.80
31			125	14.76	93.5	0.76	1.80	18.80
31			160	9.58	95.5	1.15	0.00	21.10
31			200	5.87	96.5	1.65	0.00	22.80
32	1,162	1,180						
32			20	49.87	73.8	0.00	5.60	7.60
32			25	46.54	77.2	0.02	5.40	8.30
32			32	42.03	79.1	0.04	5.20	9.20
32			40	37.11	80.3	0.06	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			50	33.18	82.3	0.08	4.70	11.50
32			63	31.54	86.6	0.13	4.30	13.00
32			80	28.08	89.3	0.19	3.70	14.80
32			100	23.47	90.9	0.29	3.00	16.80
32			125	19.72	93.5	0.45	1.80	18.80
32			160	14.69	95.5	0.67	0.00	21.10
32			200	11.20	96.5	0.97	0.00	22.80
33	553	599						
33			20	55.76	73.8	0.00	5.60	7.60
33			25	52.44	77.2	0.01	5.40	8.30
33			32	47.94	79.1	0.02	5.20	9.20
33			40	43.03	80.3	0.03	5.00	10.30
33			50	39.11	82.3	0.04	4.70	11.50
33			63	37.49	86.6	0.07	4.30	13.00
33			80	34.06	89.3	0.10	3.70	14.80
33			100	29.51	90.9	0.15	3.00	16.80
33			125	25.83	93.5	0.23	1.80	18.80
33			160	20.91	95.5	0.34	0.00	21.10
33			200	17.56	96.5	0.49	0.00	22.80
4	3,783	3,789						
4			20	39.73	73.8	0.00	5.60	7.60
4			25	36.35	77.2	0.08	5.40	8.30
4			32	31.82	79.1	0.11	5.20	9.20
4			40	26.84	80.3	0.19	5.00	10.30
4			50	22.86	82.3	0.27	4.70	11.50
4			63	21.11	86.6	0.42	4.30	13.00
4			80	17.52	89.3	0.61	3.70	14.80
4			100	12.68	90.9	0.95	3.00	16.80
4			125	8.59	93.5	1.44	1.80	18.80
4			160	3.07	95.5	2.16	0.00	21.10
4			200	-1.08	96.5	3.11	0.00	22.80
5	3,308	3,314						
5			20	40.89	73.8	0.00	5.60	7.60
5			25	37.53	77.2	0.07	5.40	8.30
5			32	32.99	79.1	0.10	5.20	9.20
5			40	28.03	80.3	0.17	5.00	10.30
5			50	24.06	82.3	0.23	4.70	11.50
5			63	22.33	86.6	0.36	4.30	13.00
5			80	18.76	89.3	0.53	3.70	14.80
5			100	13.96	90.9	0.83	3.00	16.80
5			125	9.93	93.5	1.26	1.80	18.80
5			160	4.50	95.5	1.89	0.00	21.10
5			200	0.47	96.5	2.72	0.00	22.80
6	4,918	4,922						
6			20	37.46	73.8	0.00	5.60	7.60
6			25	34.06	77.2	0.10	5.40	8.30
6			32	29.51	79.1	0.15	5.20	9.20
6			40	24.51	80.3	0.25	5.00	10.30
6			50	20.51	82.3	0.34	4.70	11.50
6			63	18.72	86.6	0.54	4.30	13.00
6			80	15.07	89.3	0.79	3.70	14.80
6			100	10.13	90.9	1.23	3.00	16.80
6			125	5.89	93.5	1.87	1.80	18.80
6			160	0.15	95.5	2.81	0.00	21.10
6			200	-4.28	96.5	4.04	0.00	22.80
7	4,278	4,283						
7			20	38.67	73.8	0.00	5.60	7.60
7			25	35.28	77.2	0.09	5.40	8.30
7			32	30.74	79.1	0.13	5.20	9.20
7			40	25.75	80.3	0.21	5.00	10.30
7			50	21.77	82.3	0.30	4.70	11.50
7			63	19.99	86.6	0.47	4.30	13.00
7			80	16.38	89.3	0.69	3.70	14.80
7			100	11.49	90.9	1.07	3.00	16.80

To be continued on next page...

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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	7.34	93.5	1.63	1.80	18.80
7			160	1.72	95.5	2.44	0.00	21.10
7			200	-2.55	96.5	3.51	0.00	22.80
8	3,770	3,776						
8			20	39.76	73.8	0.00	5.60	7.60
8			25	36.38	77.2	0.08	5.40	8.30
8			32	31.85	79.1	0.11	5.20	9.20
8			40	26.87	80.3	0.19	5.00	10.30
8			50	22.90	82.3	0.26	4.70	11.50
8			63	21.14	86.6	0.42	4.30	13.00
8			80	17.56	89.3	0.60	3.70	14.80
8			100	12.72	90.9	0.94	3.00	16.80
8			125	8.62	93.5	1.43	1.80	18.80
8			160	3.11	95.5	2.15	0.00	21.10
8			200	-1.04	96.5	3.10	0.00	22.80
9	3,126	3,133						
9			20	41.38	73.8	0.00	5.60	7.60
9			25	38.02	77.2	0.06	5.40	8.30
9			32	33.49	79.1	0.09	5.20	9.20
9			40	28.53	80.3	0.16	5.00	10.30
9			50	24.56	82.3	0.22	4.70	11.50
9			63	22.84	86.6	0.34	4.30	13.00
9			80	19.28	89.3	0.50	3.70	14.80
9			100	14.50	90.9	0.78	3.00	16.80
9			125	10.49	93.5	1.19	1.80	18.80
9			160	5.10	95.5	1.79	0.00	21.10
9			200	1.11	96.5	2.57	0.00	22.80
Sum								
Sum			20	59.12				
Sum			25	55.79				
Sum			32	51.27				
Sum			40	46.33				
Sum			50	42.40				
Sum			63	40.73				
Sum			80	37.24				
Sum			100	32.59				
Sum			125	28.77				
Sum			160	23.67				
Sum			200	20.10				

Noise sensitive area: HH Koivuharju Noise sensitive point: Finnish normal frequency - User defined (281)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,416	6,420						
1			20	35.15	73.8	0.00	5.60	7.60
1			25	31.72	77.2	0.13	5.40	8.30
1			32	27.16	79.1	0.19	5.20	9.20
1			40	22.13	80.3	0.32	5.00	10.30
1			50	18.10	82.3	0.45	4.70	11.50
1			63	16.24	86.6	0.71	4.30	13.00
1			80	12.52	89.3	1.03	3.70	14.80
1			100	7.44	90.9	1.60	3.00	16.80
1			125	3.01	93.5	2.44	1.80	18.80
1			160	-3.01	95.5	3.66	0.00	21.10
1			200	-7.81	96.5	5.26	0.00	22.80
10	3,594	3,600						
10			20	40.17	73.8	0.00	5.60	7.60
10			25	36.80	77.2	0.07	5.40	8.30
10			32	32.27	79.1	0.11	5.20	9.20
10			40	27.29	80.3	0.18	5.00	10.30
10			50	23.32	82.3	0.25	4.70	11.50
10			63	21.58	86.6	0.40	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	18.00	89.3	0.58	3.70	14.80
10			100	13.17	90.9	0.90	3.00	16.80
10			125	9.11	93.5	1.37	1.80	18.80
10			160	3.62	95.5	2.05	0.00	21.10
10			200	-0.48	96.5	2.95	0.00	22.80
11	3,754	3,760						
11			20	39.80	73.8	0.00	5.60	7.60
11			25	36.42	77.2	0.08	5.40	8.30
11			32	31.88	79.1	0.11	5.20	9.20
11			40	26.91	80.3	0.19	5.00	10.30
11			50	22.93	82.3	0.26	4.70	11.50
11			63	21.18	86.6	0.41	4.30	13.00
11			80	17.59	89.3	0.60	3.70	14.80
11			100	12.76	90.9	0.94	3.00	16.80
11			125	8.67	93.5	1.43	1.80	18.80
11			160	3.15	95.5	2.14	0.00	21.10
11			200	-0.99	96.5	3.08	0.00	22.80
12	3,163	3,170						
12			20	41.28	73.8	0.00	5.60	7.60
12			25	37.92	77.2	0.06	5.40	8.30
12			32	33.39	79.1	0.10	5.20	9.20
12			40	28.42	80.3	0.16	5.00	10.30
12			50	24.46	82.3	0.22	4.70	11.50
12			63	22.73	86.6	0.35	4.30	13.00
12			80	19.17	89.3	0.51	3.70	14.80
12			100	14.39	90.9	0.79	3.00	16.80
12			125	10.38	93.5	1.20	1.80	18.80
12			160	4.97	95.5	1.81	0.00	21.10
12			200	0.98	96.5	2.60	0.00	22.80
13	3,152	3,159						
13			20	41.31	73.8	0.00	5.60	7.60
13			25	37.95	77.2	0.06	5.40	8.30
13			32	33.42	79.1	0.09	5.20	9.20
13			40	28.45	80.3	0.16	5.00	10.30
13			50	24.49	82.3	0.22	4.70	11.50
13			63	22.76	86.6	0.35	4.30	13.00
13			80	19.20	89.3	0.51	3.70	14.80
13			100	14.42	90.9	0.79	3.00	16.80
13			125	10.41	93.5	1.20	1.80	18.80
13			160	5.01	95.5	1.80	0.00	21.10
13			200	1.02	96.5	2.59	0.00	22.80
14	4,417	4,421						
14			20	38.39	73.8	0.00	5.60	7.60
14			25	35.00	77.2	0.09	5.40	8.30
14			32	30.46	79.1	0.13	5.20	9.20
14			40	25.47	80.3	0.22	5.00	10.30
14			50	21.48	82.3	0.31	4.70	11.50
14			63	19.70	86.6	0.49	4.30	13.00
14			80	16.08	89.3	0.71	3.70	14.80
14			100	11.18	90.9	1.11	3.00	16.80
14			125	7.01	93.5	1.68	1.80	18.80
14			160	1.37	95.5	2.52	0.00	21.10
14			200	-2.94	96.5	3.63	0.00	22.80
15	2,735	2,742						
15			20	42.54	73.8	0.00	5.60	7.60
15			25	39.18	77.2	0.05	5.40	8.30
15			32	34.66	79.1	0.08	5.20	9.20
15			40	29.70	80.3	0.14	5.00	10.30
15			50	25.75	82.3	0.19	4.70	11.50
15			63	24.04	86.6	0.30	4.30	13.00
15			80	20.50	89.3	0.44	3.70	14.80
15			100	15.75	90.9	0.69	3.00	16.80
15			125	11.80	93.5	1.04	1.80	18.80
15			160	6.47	95.5	1.56	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	2.59	96.5	2.25	0.00	22.80
16	2,924	2,932						
16			20	41.96	73.8	0.00	5.60	7.60
16			25	38.60	77.2	0.06	5.40	8.30
16			32	34.07	79.1	0.09	5.20	9.20
16			40	29.11	80.3	0.15	5.00	10.30
16			50	25.15	82.3	0.21	4.70	11.50
16			63	23.44	86.6	0.32	4.30	13.00
16			80	19.89	89.3	0.47	3.70	14.80
16			100	15.13	90.9	0.73	3.00	16.80
16			125	11.14	93.5	1.11	1.80	18.80
16			160	5.79	95.5	1.67	0.00	21.10
16			200	1.85	96.5	2.40	0.00	22.80
17	3,366	3,374						
17			20	40.74	73.8	0.00	5.60	7.60
17			25	37.37	77.2	0.07	5.40	8.30
17			32	32.84	79.1	0.10	5.20	9.20
17			40	27.87	80.3	0.17	5.00	10.30
17			50	23.90	82.3	0.24	4.70	11.50
17			63	22.17	86.6	0.37	4.30	13.00
17			80	18.60	89.3	0.54	3.70	14.80
17			100	13.79	90.9	0.84	3.00	16.80
17			125	9.76	93.5	1.28	1.80	18.80
17			160	4.32	95.5	1.92	0.00	21.10
17			200	0.27	96.5	2.77	0.00	22.80
18	3,856	3,863						
18			20	39.56	73.8	0.00	5.60	7.60
18			25	36.18	77.2	0.08	5.40	8.30
18			32	31.64	79.1	0.12	5.20	9.20
18			40	26.67	80.3	0.19	5.00	10.30
18			50	22.69	82.3	0.27	4.70	11.50
18			63	20.94	86.6	0.42	4.30	13.00
18			80	17.34	89.3	0.62	3.70	14.80
18			100	12.50	90.9	0.97	3.00	16.80
18			125	8.39	93.5	1.47	1.80	18.80
18			160	2.86	95.5	2.20	0.00	21.10
18			200	-1.31	96.5	3.17	0.00	22.80
19	2,301	2,310						
19			20	44.03	73.8	0.00	5.60	7.60
19			25	40.68	77.2	0.05	5.40	8.30
19			32	36.16	79.1	0.07	5.20	9.20
19			40	31.21	80.3	0.12	5.00	10.30
19			50	27.27	82.3	0.16	4.70	11.50
19			63	25.57	86.6	0.25	4.30	13.00
19			80	22.06	89.3	0.37	3.70	14.80
19			100	17.35	90.9	0.58	3.00	16.80
19			125	13.45	93.5	0.88	1.80	18.80
19			160	8.21	95.5	1.32	0.00	21.10
19			200	4.44	96.5	1.89	0.00	22.80
2	5,369	5,372						
2			20	36.70	73.8	0.00	5.60	7.60
2			25	33.29	77.2	0.11	5.40	8.30
2			32	28.74	79.1	0.16	5.20	9.20
2			40	23.73	80.3	0.27	5.00	10.30
2			50	19.72	82.3	0.38	4.70	11.50
2			63	17.91	86.6	0.59	4.30	13.00
2			80	14.24	89.3	0.86	3.70	14.80
2			100	9.25	90.9	1.34	3.00	16.80
2			125	4.96	93.5	2.04	1.80	18.80
2			160	-0.87	95.5	3.06	0.00	21.10
2			200	-5.41	96.5	4.41	0.00	22.80
20	2,298	2,307						
20			20	44.04	73.8	0.00	5.60	7.60
20			25	40.69	77.2	0.05	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	36.17	79.1	0.07	5.20	9.20
20			40	31.22	80.3	0.12	5.00	10.30
20			50	27.28	82.3	0.16	4.70	11.50
20			63	25.59	86.6	0.25	4.30	13.00
20			80	22.07	89.3	0.37	3.70	14.80
20			100	17.36	90.9	0.58	3.00	16.80
20			125	13.46	93.5	0.88	1.80	18.80
20			160	8.22	95.5	1.31	0.00	21.10
20			200	4.45	96.5	1.89	0.00	22.80
21	3,652	3,661						
21			20	40.03	73.8	0.00	5.60	7.60
21			25	36.66	77.2	0.07	5.40	8.30
21			32	32.12	79.1	0.11	5.20	9.20
21			40	27.15	80.3	0.18	5.00	10.30
21			50	23.17	82.3	0.26	4.70	11.50
21			63	21.43	86.6	0.40	4.30	13.00
21			80	17.84	89.3	0.59	3.70	14.80
21			100	13.01	90.9	0.92	3.00	16.80
21			125	8.94	93.5	1.39	1.80	18.80
21			160	3.44	95.5	2.09	0.00	21.10
21			200	-0.67	96.5	3.00	0.00	22.80
22	4,030	4,036						
22			20	39.18	73.8	0.00	5.60	7.60
22			25	35.80	77.2	0.08	5.40	8.30
22			32	31.26	79.1	0.12	5.20	9.20
22			40	26.28	80.3	0.20	5.00	10.30
22			50	22.30	82.3	0.28	4.70	11.50
22			63	20.54	86.6	0.44	4.30	13.00
22			80	16.93	89.3	0.65	3.70	14.80
22			100	12.07	90.9	1.01	3.00	16.80
22			125	7.95	93.5	1.53	1.80	18.80
22			160	2.38	95.5	2.30	0.00	21.10
22			200	-1.83	96.5	3.31	0.00	22.80
23	4,671	4,676						
23			20	37.90	73.8	0.00	5.60	7.60
23			25	34.51	77.2	0.09	5.40	8.30
23			32	29.96	79.1	0.14	5.20	9.20
23			40	24.97	80.3	0.23	5.00	10.30
23			50	20.98	82.3	0.33	4.70	11.50
23			63	19.19	86.6	0.51	4.30	13.00
23			80	15.55	89.3	0.75	3.70	14.80
23			100	10.63	90.9	1.17	3.00	16.80
23			125	6.43	93.5	1.78	1.80	18.80
23			160	0.74	95.5	2.67	0.00	21.10
23			200	-3.63	96.5	3.83	0.00	22.80
24	2,401	2,411						
24			20	43.66	73.8	0.00	5.60	7.60
24			25	40.31	77.2	0.05	5.40	8.30
24			32	35.79	79.1	0.07	5.20	9.20
24			40	30.84	80.3	0.12	5.00	10.30
24			50	26.89	82.3	0.17	4.70	11.50
24			63	25.19	86.6	0.27	4.30	13.00
24			80	21.67	89.3	0.39	3.70	14.80
24			100	16.95	90.9	0.60	3.00	16.80
24			125	13.04	93.5	0.92	1.80	18.80
24			160	7.78	95.5	1.37	0.00	21.10
24			200	3.98	96.5	1.98	0.00	22.80
25	2,948	2,956						
25			20	41.88	73.8	0.00	5.60	7.60
25			25	38.53	77.2	0.06	5.40	8.30
25			32	34.00	79.1	0.09	5.20	9.20
25			40	29.04	80.3	0.15	5.00	10.30
25			50	25.08	82.3	0.21	4.70	11.50
25			63	23.36	86.6	0.33	4.30	13.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			80	19.81	89.3	0.47	3.70	14.80
25			100	15.05	90.9	0.74	3.00	16.80
25			125	11.06	93.5	1.12	1.80	18.80
25			160	5.70	95.5	1.69	0.00	21.10
25			200	1.76	96.5	2.42	0.00	22.80
26	3,231	3,240						
26			20	41.09	73.8	0.00	5.60	7.60
26			25	37.72	77.2	0.06	5.40	8.30
26			32	33.19	79.1	0.10	5.20	9.20
26			40	28.23	80.3	0.16	5.00	10.30
26			50	24.26	82.3	0.23	4.70	11.50
26			63	22.53	86.6	0.36	4.30	13.00
26			80	18.97	89.3	0.52	3.70	14.80
26			100	14.18	90.9	0.81	3.00	16.80
26			125	10.16	93.5	1.23	1.80	18.80
26			160	4.74	95.5	1.85	0.00	21.10
26			200	0.73	96.5	2.66	0.00	22.80
27	3,645	3,652						
27			20	40.05	73.8	0.00	5.60	7.60
27			25	36.68	77.2	0.07	5.40	8.30
27			32	32.14	79.1	0.11	5.20	9.20
27			40	27.17	80.3	0.18	5.00	10.30
27			50	23.19	82.3	0.26	4.70	11.50
27			63	21.45	86.6	0.40	4.30	13.00
27			80	17.86	89.3	0.58	3.70	14.80
27			100	13.04	90.9	0.91	3.00	16.80
27			125	8.96	93.5	1.39	1.80	18.80
27			160	3.47	95.5	2.08	0.00	21.10
27			200	-0.65	96.5	2.99	0.00	22.80
28	4,272	4,277						
28			20	38.68	73.8	0.00	5.60	7.60
28			25	35.29	77.2	0.09	5.40	8.30
28			32	30.75	79.1	0.13	5.20	9.20
28			40	25.76	80.3	0.21	5.00	10.30
28			50	21.78	82.3	0.30	4.70	11.50
28			63	20.01	86.6	0.47	4.30	13.00
28			80	16.39	89.3	0.68	3.70	14.80
28			100	11.51	90.9	1.07	3.00	16.80
28			125	7.35	93.5	1.63	1.80	18.80
28			160	1.74	95.5	2.44	0.00	21.10
28			200	-2.53	96.5	3.51	0.00	22.80
29	4,925	4,930						
29			20	37.44	73.8	0.00	5.60	7.60
29			25	34.04	77.2	0.10	5.40	8.30
29			32	29.50	79.1	0.15	5.20	9.20
29			40	24.50	80.3	0.25	5.00	10.30
29			50	20.50	82.3	0.35	4.70	11.50
29			63	18.70	86.6	0.54	4.30	13.00
29			80	15.05	89.3	0.79	3.70	14.80
29			100	10.11	90.9	1.23	3.00	16.80
29			125	5.87	93.5	1.87	1.80	18.80
29			160	0.13	95.5	2.81	0.00	21.10
29			200	-4.30	96.5	4.04	0.00	22.80
3	5,892	5,895						
3			20	35.89	73.8	0.00	5.60	7.60
3			25	32.47	77.2	0.12	5.40	8.30
3			32	27.91	79.1	0.18	5.20	9.20
3			40	22.90	80.3	0.29	5.00	10.30
3			50	18.88	82.3	0.41	4.70	11.50
3			63	17.04	86.6	0.65	4.30	13.00
3			80	13.35	89.3	0.94	3.70	14.80
3			100	8.32	90.9	1.47	3.00	16.80
3			125	3.95	93.5	2.24	1.80	18.80
3			160	-1.97	95.5	3.36	0.00	21.10

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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			200	-6.64	96.5	4.83	0.00	22.80
30	5,444	5,448						
30			20	36.58	73.8	0.00	5.60	7.60
30			25	33.17	77.2	0.11	5.40	8.30
30			32	28.61	79.1	0.16	5.20	9.20
30			40	23.60	80.3	0.27	5.00	10.30
30			50	19.59	82.3	0.38	4.70	11.50
30			63	17.78	86.6	0.60	4.30	13.00
30			80	14.10	89.3	0.87	3.70	14.80
30			100	9.11	90.9	1.36	3.00	16.80
30			125	4.81	93.5	2.07	1.80	18.80
30			160	-1.03	95.5	3.11	0.00	21.10
30			200	-5.59	96.5	4.47	0.00	22.80
31	5,399	5,402						
31			20	36.65	73.8	0.00	5.60	7.60
31			25	33.24	77.2	0.11	5.40	8.30
31			32	28.69	79.1	0.16	5.20	9.20
31			40	23.68	80.3	0.27	5.00	10.30
31			50	19.67	82.3	0.38	4.70	11.50
31			63	17.85	86.6	0.59	4.30	13.00
31			80	14.18	89.3	0.86	3.70	14.80
31			100	9.20	90.9	1.35	3.00	16.80
31			125	4.90	93.5	2.05	1.80	18.80
31			160	-0.93	95.5	3.08	0.00	21.10
31			200	-5.48	96.5	4.43	0.00	22.80
32	6,068	6,072						
32			20	35.63	73.8	0.00	5.60	7.60
32			25	32.21	77.2	0.12	5.40	8.30
32			32	27.65	79.1	0.18	5.20	9.20
32			40	22.63	80.3	0.30	5.00	10.30
32			50	18.61	82.3	0.43	4.70	11.50
32			63	16.77	86.6	0.67	4.30	13.00
32			80	13.06	89.3	0.97	3.70	14.80
32			100	8.02	90.9	1.52	3.00	16.80
32			125	3.63	93.5	2.31	1.80	18.80
32			160	-2.33	95.5	3.46	0.00	21.10
32			200	-7.05	96.5	4.98	0.00	22.80
33	6,615	6,619						
33			20	34.88	73.8	0.00	5.60	7.60
33			25	31.45	77.2	0.13	5.40	8.30
33			32	26.89	79.1	0.20	5.20	9.20
33			40	21.85	80.3	0.33	5.00	10.30
33			50	17.82	82.3	0.46	4.70	11.50
33			63	15.96	86.6	0.73	4.30	13.00
33			80	12.22	89.3	1.06	3.70	14.80
33			100	7.13	90.9	1.65	3.00	16.80
33			125	2.67	93.5	2.52	1.80	18.80
33			160	-3.39	95.5	3.77	0.00	21.10
33			200	-8.24	96.5	5.43	0.00	22.80
4	5,393	5,397						
4			20	36.66	73.8	0.00	5.60	7.60
4			25	33.25	77.2	0.11	5.40	8.30
4			32	28.69	79.1	0.16	5.20	9.20
4			40	23.69	80.3	0.27	5.00	10.30
4			50	19.68	82.3	0.38	4.70	11.50
4			63	17.86	86.6	0.59	4.30	13.00
4			80	14.19	89.3	0.86	3.70	14.80
4			100	9.21	90.9	1.35	3.00	16.80
4			125	4.91	93.5	2.05	1.80	18.80
4			160	-0.92	95.5	3.08	0.00	21.10
4			200	-5.47	96.5	4.43	0.00	22.80
5	5,248	5,253						
5			20	36.89	73.8	0.00	5.60	7.60
5			25	33.49	77.2	0.11	5.40	8.30

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			32	28.94	79.1	0.16	5.20	9.20
5			40	23.93	80.3	0.26	5.00	10.30
5			50	19.92	82.3	0.37	4.70	11.50
5			63	18.11	86.6	0.58	4.30	13.00
5			80	14.45	89.3	0.84	3.70	14.80
5			100	9.48	90.9	1.31	3.00	16.80
5			125	5.20	93.5	2.00	1.80	18.80
5			160	-0.60	95.5	2.99	0.00	21.10
5			200	-5.11	96.5	4.31	0.00	22.80
6	4,287	4,292						
6			20	38.65	73.8	0.00	5.60	7.60
6			25	35.26	77.2	0.09	5.40	8.30
6			32	30.72	79.1	0.13	5.20	9.20
6			40	25.73	80.3	0.21	5.00	10.30
6			50	21.75	82.3	0.30	4.70	11.50
6			63	19.97	86.6	0.47	4.30	13.00
6			80	16.36	89.3	0.69	3.70	14.80
6			100	11.47	90.9	1.07	3.00	16.80
6			125	7.32	93.5	1.63	1.80	18.80
6			160	1.70	95.5	2.45	0.00	21.10
6			200	-2.57	96.5	3.52	0.00	22.80
7	4,342	4,347						
7			20	38.54	73.8	0.00	5.60	7.60
7			25	35.15	77.2	0.09	5.40	8.30
7			32	30.61	79.1	0.13	5.20	9.20
7			40	25.62	80.3	0.22	5.00	10.30
7			50	21.63	82.3	0.30	4.70	11.50
7			63	19.86	86.6	0.48	4.30	13.00
7			80	16.24	89.3	0.70	3.70	14.80
7			100	11.35	90.9	1.09	3.00	16.80
7			125	7.19	93.5	1.65	1.80	18.80
7			160	1.56	95.5	2.48	0.00	21.10
7			200	-2.73	96.5	3.56	0.00	22.80
8	4,765	4,769						
8			20	37.73	73.8	0.00	5.60	7.60
8			25	34.34	77.2	0.10	5.40	8.30
8			32	29.79	79.1	0.14	5.20	9.20
8			40	24.79	80.3	0.24	5.00	10.30
8			50	20.80	82.3	0.33	4.70	11.50
8			63	19.01	86.6	0.52	4.30	13.00
8			80	15.37	89.3	0.76	3.70	14.80
8			100	10.44	90.9	1.19	3.00	16.80
8			125	6.22	93.5	1.81	1.80	18.80
8			160	0.51	95.5	2.72	0.00	21.10
8			200	-3.88	96.5	3.91	0.00	22.80
9	4,868	4,873						
9			20	37.54	73.8	0.00	5.60	7.60
9			25	34.15	77.2	0.10	5.40	8.30
9			32	29.60	79.1	0.15	5.20	9.20
9			40	24.60	80.3	0.24	5.00	10.30
9			50	20.60	82.3	0.34	4.70	11.50
9			63	18.81	86.6	0.54	4.30	13.00
9			80	15.17	89.3	0.78	3.70	14.80
9			100	10.23	90.9	1.22	3.00	16.80
9			125	5.99	93.5	1.85	1.80	18.80
9			160	0.27	95.5	2.78	0.00	21.10
9			200	-4.15	96.5	4.00	0.00	22.80
Sum								
Sum			20	55.07				
Sum			25	51.70				
Sum			32	47.16				
Sum			40	42.19				
Sum			50	38.22				
Sum			63	36.48				

To be continued on next page...

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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			80	32.90				
Sum			100	28.09				
Sum			125	24.03				
Sum			160	18.58				
Sum			200	14.53				

Noise sensitive area: HH Koivula 3 Noise sensitive point: Finnish normal frequency - User defined (291)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,754	1,768						
1			20	46.35	73.8	0.00	5.60	7.60
1			25	43.02	77.2	0.04	5.40	8.30
1			32	38.50	79.1	0.05	5.20	9.20
1			40	33.56	80.3	0.09	5.00	10.30
1			50	29.63	82.3	0.12	4.70	11.50
1			63	27.96	86.6	0.19	4.30	13.00
1			80	24.47	89.3	0.28	3.70	14.80
1			100	19.81	90.9	0.44	3.00	16.80
1			125	15.98	93.5	0.67	1.80	18.80
1			160	10.84	95.5	1.01	0.00	21.10
1			200	7.20	96.5	1.45	0.00	22.80
10	4,047	4,053						
10			20	39.14	73.8	0.00	5.60	7.60
10			25	35.76	77.2	0.08	5.40	8.30
10			32	31.22	79.1	0.12	5.20	9.20
10			40	26.24	80.3	0.20	5.00	10.30
10			50	22.26	82.3	0.28	4.70	11.50
10			63	20.50	86.6	0.45	4.30	13.00
10			80	16.89	89.3	0.65	3.70	14.80
10			100	12.03	90.9	1.01	3.00	16.80
10			125	7.90	93.5	1.54	1.80	18.80
10			160	2.33	95.5	2.31	0.00	21.10
10			200	-1.88	96.5	3.32	0.00	22.80
11	3,556	3,563						
11			20	40.26	73.8	0.00	5.60	7.60
11			25	36.89	77.2	0.07	5.40	8.30
11			32	32.36	79.1	0.11	5.20	9.20
11			40	27.39	80.3	0.18	5.00	10.30
11			50	23.41	82.3	0.25	4.70	11.50
11			63	21.67	86.6	0.39	4.30	13.00
11			80	18.09	89.3	0.57	3.70	14.80
11			100	13.27	90.9	0.89	3.00	16.80
11			125	9.21	93.5	1.35	1.80	18.80
11			160	3.73	95.5	2.03	0.00	21.10
11			200	-0.36	96.5	2.92	0.00	22.80
12	4,625	4,631						
12			20	37.99	73.8	0.00	5.60	7.60
12			25	34.59	77.2	0.09	5.40	8.30
12			32	30.05	79.1	0.14	5.20	9.20
12			40	25.06	80.3	0.23	5.00	10.30
12			50	21.06	82.3	0.32	4.70	11.50
12			63	19.28	86.6	0.51	4.30	13.00
12			80	15.65	89.3	0.74	3.70	14.80
12			100	10.73	90.9	1.16	3.00	16.80
12			125	6.53	93.5	1.76	1.80	18.80
12			160	0.85	95.5	2.64	0.00	21.10
12			200	-3.51	96.5	3.80	0.00	22.80
13	4,090	4,096						
13			20	39.05	73.8	0.00	5.60	7.60
13			25	35.67	77.2	0.08	5.40	8.30
13			32	31.13	79.1	0.12	5.20	9.20
13			40	26.15	80.3	0.20	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			50	22.17	82.3	0.29	4.70	11.50
13			63	20.40	86.6	0.45	4.30	13.00
13			80	16.80	89.3	0.66	3.70	14.80
13			100	11.93	90.9	1.02	3.00	16.80
13			125	7.80	93.5	1.56	1.80	18.80
13			160	2.22	95.5	2.33	0.00	21.10
13			200	-2.01	96.5	3.36	0.00	22.80
14	2,652	2,662						
14			20	42.80	73.8	0.00	5.60	7.60
14			25	39.44	77.2	0.05	5.40	8.30
14			32	34.92	79.1	0.08	5.20	9.20
14			40	29.96	80.3	0.13	5.00	10.30
14			50	26.01	82.3	0.19	4.70	11.50
14			63	24.30	86.6	0.29	4.30	13.00
14			80	20.77	89.3	0.43	3.70	14.80
14			100	16.03	90.9	0.67	3.00	16.80
14			125	12.09	93.5	1.01	1.80	18.80
14			160	6.78	95.5	1.52	0.00	21.10
14			200	2.91	96.5	2.18	0.00	22.80
15	4,653	4,658						
15			20	37.94	73.8	0.00	5.60	7.60
15			25	34.54	77.2	0.09	5.40	8.30
15			32	30.00	79.1	0.14	5.20	9.20
15			40	25.00	80.3	0.23	5.00	10.30
15			50	21.01	82.3	0.33	4.70	11.50
15			63	19.22	86.6	0.51	4.30	13.00
15			80	15.59	89.3	0.75	3.70	14.80
15			100	10.67	90.9	1.16	3.00	16.80
15			125	6.47	93.5	1.77	1.80	18.80
15			160	0.78	95.5	2.65	0.00	21.10
15			200	-3.58	96.5	3.82	0.00	22.80
16	4,155	4,161						
16			20	38.92	73.8	0.00	5.60	7.60
16			25	35.53	77.2	0.08	5.40	8.30
16			32	30.99	79.1	0.12	5.20	9.20
16			40	26.01	80.3	0.21	5.00	10.30
16			50	22.02	82.3	0.29	4.70	11.50
16			63	20.26	86.6	0.46	4.30	13.00
16			80	16.65	89.3	0.67	3.70	14.80
16			100	11.78	90.9	1.04	3.00	16.80
16			125	7.63	93.5	1.58	1.80	18.80
16			160	2.04	95.5	2.37	0.00	21.10
16			200	-2.20	96.5	3.41	0.00	22.80
17	3,712	3,720						
17			20	39.89	73.8	0.00	5.60	7.60
17			25	36.51	77.2	0.07	5.40	8.30
17			32	31.98	79.1	0.11	5.20	9.20
17			40	27.00	80.3	0.19	5.00	10.30
17			50	23.03	82.3	0.26	4.70	11.50
17			63	21.28	86.6	0.41	4.30	13.00
17			80	17.69	89.3	0.60	3.70	14.80
17			100	12.86	90.9	0.93	3.00	16.80
17			125	8.78	93.5	1.41	1.80	18.80
17			160	3.27	95.5	2.12	0.00	21.10
17			200	-0.86	96.5	3.05	0.00	22.80
18	3,209	3,219						
18			20	41.15	73.8	0.00	5.60	7.60
18			25	37.78	77.2	0.06	5.40	8.30
18			32	33.25	79.1	0.10	5.20	9.20
18			40	28.28	80.3	0.16	5.00	10.30
18			50	24.32	82.3	0.23	4.70	11.50
18			63	22.59	86.6	0.35	4.30	13.00
18			80	19.03	89.3	0.52	3.70	14.80
18			100	14.24	90.9	0.80	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			125	10.22	93.5	1.22	1.80	18.80
18			160	4.81	95.5	1.83	0.00	21.10
18			200	0.81	96.5	2.64	0.00	22.80
19	4,882	4,887						
19			20	37.52	73.8	0.00	5.60	7.60
19			25	34.12	77.2	0.10	5.40	8.30
19			32	29.57	79.1	0.15	5.20	9.20
19			40	24.58	80.3	0.24	5.00	10.30
19			50	20.58	82.3	0.34	4.70	11.50
19			63	18.78	86.6	0.54	4.30	13.00
19			80	15.14	89.3	0.78	3.70	14.80
19			100	10.20	90.9	1.22	3.00	16.80
19			125	5.96	93.5	1.86	1.80	18.80
19			160	0.23	95.5	2.79	0.00	21.10
19			200	-4.19	96.5	4.01	0.00	22.80
2	2,356	2,367						
2			20	43.82	73.8	0.00	5.60	7.60
2			25	40.47	77.2	0.05	5.40	8.30
2			32	35.95	79.1	0.07	5.20	9.20
2			40	31.00	80.3	0.12	5.00	10.30
2			50	27.05	82.3	0.17	4.70	11.50
2			63	25.36	86.6	0.26	4.30	13.00
2			80	21.84	89.3	0.38	3.70	14.80
2			100	17.13	90.9	0.59	3.00	16.80
2			125	13.22	93.5	0.90	1.80	18.80
2			160	7.97	95.5	1.35	0.00	21.10
2			200	4.18	96.5	1.94	0.00	22.80
20	4,762	4,767						
20			20	37.73	73.8	0.00	5.60	7.60
20			25	34.34	77.2	0.10	5.40	8.30
20			32	29.79	79.1	0.14	5.20	9.20
20			40	24.80	80.3	0.24	5.00	10.30
20			50	20.80	82.3	0.33	4.70	11.50
20			63	19.01	86.6	0.52	4.30	13.00
20			80	15.37	89.3	0.76	3.70	14.80
20			100	10.44	90.9	1.19	3.00	16.80
20			125	6.22	93.5	1.81	1.80	18.80
20			160	0.52	95.5	2.72	0.00	21.10
20			200	-3.87	96.5	3.91	0.00	22.80
21	3,601	3,611						
21			20	40.15	73.8	0.00	5.60	7.60
21			25	36.77	77.2	0.07	5.40	8.30
21			32	32.24	79.1	0.11	5.20	9.20
21			40	27.27	80.3	0.18	5.00	10.30
21			50	23.29	82.3	0.25	4.70	11.50
21			63	21.55	86.6	0.40	4.30	13.00
21			80	17.97	89.3	0.58	3.70	14.80
21			100	13.14	90.9	0.90	3.00	16.80
21			125	9.07	93.5	1.37	1.80	18.80
21			160	3.59	95.5	2.06	0.00	21.10
21			200	-0.51	96.5	2.96	0.00	22.80
22	3,540	3,548						
22			20	40.30	73.8	0.00	5.60	7.60
22			25	36.93	77.2	0.07	5.40	8.30
22			32	32.39	79.1	0.11	5.20	9.20
22			40	27.42	80.3	0.18	5.00	10.30
22			50	23.45	82.3	0.25	4.70	11.50
22			63	21.71	86.6	0.39	4.30	13.00
22			80	18.13	89.3	0.57	3.70	14.80
22			100	13.31	90.9	0.89	3.00	16.80
22			125	9.25	93.5	1.35	1.80	18.80
22			160	3.78	95.5	2.02	0.00	21.10
22			200	-0.31	96.5	2.91	0.00	22.80
23	3,091	3,100						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			20	41.47	73.8	0.00	5.60	7.60
23			25	38.11	77.2	0.06	5.40	8.30
23			32	33.58	79.1	0.09	5.20	9.20
23			40	28.62	80.3	0.15	5.00	10.30
23			50	24.66	82.3	0.22	4.70	11.50
23			63	22.93	86.6	0.34	4.30	13.00
23			80	19.38	89.3	0.50	3.70	14.80
23			100	14.60	90.9	0.77	3.00	16.80
23			125	10.60	93.5	1.18	1.80	18.80
23			160	5.21	95.5	1.77	0.00	21.10
23			200	1.23	96.5	2.54	0.00	22.80
24	4,808	4,814						
24			20	37.65	73.8	0.00	5.60	7.60
24			25	34.25	77.2	0.10	5.40	8.30
24			32	29.71	79.1	0.14	5.20	9.20
24			40	24.71	80.3	0.24	5.00	10.30
24			50	20.71	82.3	0.34	4.70	11.50
24			63	18.92	86.6	0.53	4.30	13.00
24			80	15.28	89.3	0.77	3.70	14.80
24			100	10.35	90.9	1.20	3.00	16.80
24			125	6.12	93.5	1.83	1.80	18.80
24			160	0.41	95.5	2.74	0.00	21.10
24			200	-4.00	96.5	3.95	0.00	22.80
25	4,221	4,228						
25			20	38.78	73.8	0.00	5.60	7.60
25			25	35.39	77.2	0.08	5.40	8.30
25			32	30.85	79.1	0.13	5.20	9.20
25			40	25.87	80.3	0.21	5.00	10.30
25			50	21.88	82.3	0.30	4.70	11.50
25			63	20.11	86.6	0.47	4.30	13.00
25			80	16.50	89.3	0.68	3.70	14.80
25			100	11.62	90.9	1.06	3.00	16.80
25			125	7.47	93.5	1.61	1.80	18.80
25			160	1.87	95.5	2.41	0.00	21.10
25			200	-2.39	96.5	3.47	0.00	22.80
26	4,198	4,206						
26			20	38.82	73.8	0.00	5.60	7.60
26			25	35.44	77.2	0.08	5.40	8.30
26			32	30.90	79.1	0.13	5.20	9.20
26			40	25.91	80.3	0.21	5.00	10.30
26			50	21.93	82.3	0.29	4.70	11.50
26			63	20.16	86.6	0.46	4.30	13.00
26			80	16.55	89.3	0.67	3.70	14.80
26			100	11.67	90.9	1.05	3.00	16.80
26			125	7.52	93.5	1.60	1.80	18.80
26			160	1.93	95.5	2.40	0.00	21.10
26			200	-2.33	96.5	3.45	0.00	22.80
27	4,081	4,089						
27			20	39.07	73.8	0.00	5.60	7.60
27			25	35.69	77.2	0.08	5.40	8.30
27			32	31.15	79.1	0.12	5.20	9.20
27			40	26.16	80.3	0.20	5.00	10.30
27			50	22.18	82.3	0.29	4.70	11.50
27			63	20.42	86.6	0.45	4.30	13.00
27			80	16.81	89.3	0.65	3.70	14.80
27			100	11.95	90.9	1.02	3.00	16.80
27			125	7.81	93.5	1.55	1.80	18.80
27			160	2.24	95.5	2.33	0.00	21.10
27			200	-1.98	96.5	3.35	0.00	22.80
28	3,790	3,797						
28			20	39.71	73.8	0.00	5.60	7.60
28			25	36.34	77.2	0.08	5.40	8.30
28			32	31.80	79.1	0.11	5.20	9.20
28			40	26.82	80.3	0.19	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			50	22.85	82.3	0.27	4.70	11.50
28			63	21.09	86.6	0.42	4.30	13.00
28			80	17.50	89.3	0.61	3.70	14.80
28			100	12.66	90.9	0.95	3.00	16.80
28			125	8.57	93.5	1.44	1.80	18.80
28			160	3.05	95.5	2.16	0.00	21.10
28			200	-1.10	96.5	3.11	0.00	22.80
29	3,580	3,589						
29			20	40.20	73.8	0.00	5.60	7.60
29			25	36.83	77.2	0.07	5.40	8.30
29			32	32.29	79.1	0.11	5.20	9.20
29			40	27.32	80.3	0.18	5.00	10.30
29			50	23.35	82.3	0.25	4.70	11.50
29			63	21.61	86.6	0.39	4.30	13.00
29			80	18.03	89.3	0.57	3.70	14.80
29			100	13.20	90.9	0.90	3.00	16.80
29			125	9.14	93.5	1.36	1.80	18.80
29			160	3.66	95.5	2.05	0.00	21.10
29			200	-0.44	96.5	2.94	0.00	22.80
3	1,761	1,776						
3			20	46.31	73.8	0.00	5.60	7.60
3			25	42.98	77.2	0.04	5.40	8.30
3			32	38.46	79.1	0.05	5.20	9.20
3			40	33.52	80.3	0.09	5.00	10.30
3			50	29.59	82.3	0.12	4.70	11.50
3			63	27.92	86.6	0.20	4.30	13.00
3			80	24.43	89.3	0.28	3.70	14.80
3			100	19.77	90.9	0.44	3.00	16.80
3			125	15.94	93.5	0.67	1.80	18.80
3			160	10.80	95.5	1.01	0.00	21.10
3			200	7.16	96.5	1.46	0.00	22.80
30	3,019	3,027						
30			20	41.68	73.8	0.00	5.60	7.60
30			25	38.32	77.2	0.06	5.40	8.30
30			32	33.79	79.1	0.09	5.20	9.20
30			40	28.83	80.3	0.15	5.00	10.30
30			50	24.87	82.3	0.21	4.70	11.50
30			63	23.15	86.6	0.33	4.30	13.00
30			80	19.60	89.3	0.48	3.70	14.80
30			100	14.82	90.9	0.76	3.00	16.80
30			125	10.83	93.5	1.15	1.80	18.80
30			160	5.46	95.5	1.73	0.00	21.10
30			200	1.50	96.5	2.48	0.00	22.80
31	3,669	3,676						
31			20	39.99	73.8	0.00	5.60	7.60
31			25	36.62	77.2	0.07	5.40	8.30
31			32	32.08	79.1	0.11	5.20	9.20
31			40	27.11	80.3	0.18	5.00	10.30
31			50	23.14	82.3	0.26	4.70	11.50
31			63	21.39	86.6	0.40	4.30	13.00
31			80	17.80	89.3	0.59	3.70	14.80
31			100	12.97	90.9	0.92	3.00	16.80
31			125	8.90	93.5	1.40	1.80	18.80
31			160	3.40	95.5	2.10	0.00	21.10
31			200	-0.72	96.5	3.01	0.00	22.80
32	3,039	3,047						
32			20	41.62	73.8	0.00	5.60	7.60
32			25	38.26	77.2	0.06	5.40	8.30
32			32	33.73	79.1	0.09	5.20	9.20
32			40	28.77	80.3	0.15	5.00	10.30
32			50	24.81	82.3	0.21	4.70	11.50
32			63	23.09	86.6	0.34	4.30	13.00
32			80	19.54	89.3	0.49	3.70	14.80
32			100	14.76	90.9	0.76	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			125	10.76	93.5	1.16	1.80	18.80
32			160	5.39	95.5	1.74	0.00	21.10
32			200	1.42	96.5	2.50	0.00	22.80
33	2,612	2,624						
33			20	42.92	73.8	0.00	5.60	7.60
33			25	39.57	77.2	0.05	5.40	8.30
33			32	35.04	79.1	0.08	5.20	9.20
33			40	30.09	80.3	0.13	5.00	10.30
33			50	26.14	82.3	0.18	4.70	11.50
33			63	24.43	86.6	0.29	4.30	13.00
33			80	20.90	89.3	0.42	3.70	14.80
33			100	16.17	90.9	0.66	3.00	16.80
33			125	12.22	93.5	1.00	1.80	18.80
33			160	6.93	95.5	1.50	0.00	21.10
33			200	3.07	96.5	2.15	0.00	22.80
4	1,933	1,947						
4			20	45.51	73.8	0.00	5.60	7.60
4			25	42.18	77.2	0.04	5.40	8.30
4			32	37.66	79.1	0.06	5.20	9.20
4			40	32.72	80.3	0.10	5.00	10.30
4			50	28.78	82.3	0.14	4.70	11.50
4			63	27.10	86.6	0.21	4.30	13.00
4			80	23.60	89.3	0.31	3.70	14.80
4			100	18.93	90.9	0.49	3.00	16.80
4			125	15.07	93.5	0.74	1.80	18.80
4			160	9.90	95.5	1.11	0.00	21.10
4			200	6.22	96.5	1.60	0.00	22.80
5	1,845	1,859						
5			20	45.91	73.8	0.00	5.60	7.60
5			25	42.58	77.2	0.04	5.40	8.30
5			32	38.06	79.1	0.06	5.20	9.20
5			40	33.12	80.3	0.09	5.00	10.30
5			50	29.18	82.3	0.13	4.70	11.50
5			63	27.51	86.6	0.20	4.30	13.00
5			80	24.02	89.3	0.30	3.70	14.80
5			100	19.35	90.9	0.46	3.00	16.80
5			125	15.51	93.5	0.71	1.80	18.80
5			160	10.36	95.5	1.06	0.00	21.10
5			200	6.69	96.5	1.52	0.00	22.80
6	3,371	3,379						
6			20	40.72	73.8	0.00	5.60	7.60
6			25	37.36	77.2	0.07	5.40	8.30
6			32	32.82	79.1	0.10	5.20	9.20
6			40	27.85	80.3	0.17	5.00	10.30
6			50	23.89	82.3	0.24	4.70	11.50
6			63	22.15	86.6	0.37	4.30	13.00
6			80	18.58	89.3	0.54	3.70	14.80
6			100	13.78	90.9	0.84	3.00	16.80
6			125	9.74	93.5	1.28	1.80	18.80
6			160	4.30	95.5	1.93	0.00	21.10
6			200	0.25	96.5	2.77	0.00	22.80
7	2,932	2,941						
7			20	41.93	73.8	0.00	5.60	7.60
7			25	38.57	77.2	0.06	5.40	8.30
7			32	34.04	79.1	0.09	5.20	9.20
7			40	29.08	80.3	0.15	5.00	10.30
7			50	25.13	82.3	0.21	4.70	11.50
7			63	23.41	86.6	0.32	4.30	13.00
7			80	19.86	89.3	0.47	3.70	14.80
7			100	15.10	90.9	0.74	3.00	16.80
7			125	11.11	93.5	1.12	1.80	18.80
7			160	5.76	95.5	1.68	0.00	21.10
7			200	1.82	96.5	2.41	0.00	22.80
8	2,394	2,404						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			20	43.68	73.8	0.00	5.60	7.60
8			25	40.33	77.2	0.05	5.40	8.30
8			32	35.81	79.1	0.07	5.20	9.20
8			40	30.86	80.3	0.12	5.00	10.30
8			50	26.91	82.3	0.17	4.70	11.50
8			63	25.22	86.6	0.26	4.30	13.00
8			80	21.69	89.3	0.38	3.70	14.80
8			100	16.98	90.9	0.60	3.00	16.80
8			125	13.07	93.5	0.91	1.80	18.80
8			160	7.81	95.5	1.37	0.00	21.10
8			200	4.01	96.5	1.97	0.00	22.80
9	2,196	2,207						
9			20	44.42	73.8	0.00	5.60	7.60
9			25	41.08	77.2	0.04	5.40	8.30
9			32	36.56	79.1	0.07	5.20	9.20
9			40	31.61	80.3	0.11	5.00	10.30
9			50	27.67	82.3	0.15	4.70	11.50
9			63	25.98	86.6	0.24	4.30	13.00
9			80	22.47	89.3	0.35	3.70	14.80
9			100	17.77	90.9	0.55	3.00	16.80
9			125	13.88	93.5	0.84	1.80	18.80
9			160	8.66	95.5	1.26	0.00	21.10
9			200	4.91	96.5	1.81	0.00	22.80
Sum								
Sum			20	57.05				
Sum			25	53.69				
Sum			32	49.16				
Sum			40	44.21				
Sum			50	40.25				
Sum			63	38.54				
Sum			80	35.00				
Sum			100	30.25				
Sum			125	26.29				
Sum			160	20.97				
Sum			200	17.10				

Noise sensitive area: HH Korsu 1 Noise sensitive point: Finnish normal frequency - User defined (299)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,565	5,570						
1			20	36.38	73.8	0.00	5.60	7.60
1			25	32.97	77.2	0.11	5.40	8.30
1			32	28.42	79.1	0.17	5.20	9.20
1			40	23.41	80.3	0.28	5.00	10.30
1			50	19.39	82.3	0.39	4.70	11.50
1			63	17.57	86.6	0.61	4.30	13.00
1			80	13.89	89.3	0.89	3.70	14.80
1			100	8.89	90.9	1.39	3.00	16.80
1			125	4.57	93.5	2.12	1.80	18.80
1			160	-1.29	95.5	3.17	0.00	21.10
1			200	-5.88	96.5	4.57	0.00	22.80
10	6,677	6,681						
10			20	34.80	73.8	0.00	5.60	7.60
10			25	31.37	77.2	0.13	5.40	8.30
10			32	26.80	79.1	0.20	5.20	9.20
10			40	21.77	80.3	0.33	5.00	10.30
10			50	17.74	82.3	0.47	4.70	11.50
10			63	15.87	86.6	0.73	4.30	13.00
10			80	12.13	89.3	1.07	3.70	14.80
10			100	7.03	90.9	1.67	3.00	16.80
10			125	2.56	93.5	2.54	1.80	18.80
10			160	-3.50	95.5	3.81	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			200	-8.37	96.5	5.48	0.00	22.80
11	6,058	6,063						
11			20	35.65	73.8	0.00	5.60	7.60
11			25	32.23	77.2	0.12	5.40	8.30
11			32	27.66	79.1	0.18	5.20	9.20
11			40	22.64	80.3	0.30	5.00	10.30
11			50	18.62	82.3	0.42	4.70	11.50
11			63	16.78	86.6	0.67	4.30	13.00
11			80	13.08	89.3	0.97	3.70	14.80
11			100	8.03	90.9	1.52	3.00	16.80
11			125	3.64	93.5	2.30	1.80	18.80
11			160	-2.31	95.5	3.46	0.00	21.10
11			200	-7.02	96.5	4.97	0.00	22.80
12	7,139	7,142						
12			20	34.22	73.8	0.00	5.60	7.60
12			25	30.78	77.2	0.14	5.40	8.30
12			32	26.21	79.1	0.21	5.20	9.20
12			40	21.17	80.3	0.36	5.00	10.30
12			50	17.12	82.3	0.50	4.70	11.50
12			63	15.24	86.6	0.79	4.30	13.00
12			80	11.48	89.3	1.14	3.70	14.80
12			100	6.34	90.9	1.79	3.00	16.80
12			125	1.81	93.5	2.71	1.80	18.80
12			160	-4.35	95.5	4.07	0.00	21.10
12			200	-9.33	96.5	5.86	0.00	22.80
13	6,310	6,315						
13			20	35.29	73.8	0.00	5.60	7.60
13			25	31.87	77.2	0.13	5.40	8.30
13			32	27.30	79.1	0.19	5.20	9.20
13			40	22.28	80.3	0.32	5.00	10.30
13			50	18.25	82.3	0.44	4.70	11.50
13			63	16.40	86.6	0.69	4.30	13.00
13			80	12.68	89.3	1.01	3.70	14.80
13			100	7.61	90.9	1.58	3.00	16.80
13			125	3.19	93.5	2.40	1.80	18.80
13			160	-2.81	95.5	3.60	0.00	21.10
13			200	-7.58	96.5	5.18	0.00	22.80
14	4,973	4,978						
14			20	37.36	73.8	0.00	5.60	7.60
14			25	33.96	77.2	0.10	5.40	8.30
14			32	29.41	79.1	0.15	5.20	9.20
14			40	24.41	80.3	0.25	5.00	10.30
14			50	20.41	82.3	0.35	4.70	11.50
14			63	18.61	86.6	0.55	4.30	13.00
14			80	14.96	89.3	0.80	3.70	14.80
14			100	10.01	90.9	1.24	3.00	16.80
14			125	5.77	93.5	1.89	1.80	18.80
14			160	0.02	95.5	2.84	0.00	21.10
14			200	-4.42	96.5	4.08	0.00	22.80
15	6,846	6,849						
15			20	34.59	73.8	0.00	5.60	7.60
15			25	31.15	77.2	0.14	5.40	8.30
15			32	26.58	79.1	0.21	5.20	9.20
15			40	21.54	80.3	0.34	5.00	10.30
15			50	17.51	82.3	0.48	4.70	11.50
15			63	15.63	86.6	0.75	4.30	13.00
15			80	11.89	89.3	1.10	3.70	14.80
15			100	6.77	90.9	1.71	3.00	16.80
15			125	2.28	93.5	2.60	1.80	18.80
15			160	-3.82	95.5	3.90	0.00	21.10
15			200	-8.73	96.5	5.62	0.00	22.80
16	6,014	6,018						
16			20	35.71	73.8	0.00	5.60	7.60
16			25	32.29	77.2	0.12	5.40	8.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			32	27.73	79.1	0.18	5.20	9.20
16			40	22.71	80.3	0.30	5.00	10.30
16			50	18.69	82.3	0.42	4.70	11.50
16			63	16.85	86.6	0.66	4.30	13.00
16			80	13.15	89.3	0.96	3.70	14.80
16			100	8.11	90.9	1.50	3.00	16.80
16			125	3.72	93.5	2.29	1.80	18.80
16			160	-2.22	95.5	3.43	0.00	21.10
16			200	-6.92	96.5	4.94	0.00	22.80
17	5,342	5,348						
17			20	36.74	73.8	0.00	5.60	7.60
17			25	33.33	77.2	0.11	5.40	8.30
17			32	28.78	79.1	0.16	5.20	9.20
17			40	23.77	80.3	0.27	5.00	10.30
17			50	19.76	82.3	0.37	4.70	11.50
17			63	17.95	86.6	0.59	4.30	13.00
17			80	14.28	89.3	0.86	3.70	14.80
17			100	9.30	90.9	1.34	3.00	16.80
17			125	5.00	93.5	2.03	1.80	18.80
17			160	-0.81	95.5	3.05	0.00	21.10
17			200	-5.35	96.5	4.39	0.00	22.80
18	5,072	5,078						
18			20	37.19	73.8	0.00	5.60	7.60
18			25	33.78	77.2	0.10	5.40	8.30
18			32	29.23	79.1	0.15	5.20	9.20
18			40	24.23	80.3	0.25	5.00	10.30
18			50	20.23	82.3	0.36	4.70	11.50
18			63	18.43	86.6	0.56	4.30	13.00
18			80	14.77	89.3	0.81	3.70	14.80
18			100	9.82	90.9	1.27	3.00	16.80
18			125	5.56	93.5	1.93	1.80	18.80
18			160	-0.21	95.5	2.89	0.00	21.10
18			200	-4.68	96.5	4.16	0.00	22.80
19	6,765	6,769						
19			20	34.69	73.8	0.00	5.60	7.60
19			25	31.25	77.2	0.14	5.40	8.30
19			32	26.69	79.1	0.20	5.20	9.20
19			40	21.65	80.3	0.34	5.00	10.30
19			50	17.62	82.3	0.47	4.70	11.50
19			63	15.75	86.6	0.74	4.30	13.00
19			80	12.01	89.3	1.08	3.70	14.80
19			100	6.90	90.9	1.69	3.00	16.80
19			125	2.42	93.5	2.57	1.80	18.80
19			160	-3.67	95.5	3.86	0.00	21.10
19			200	-8.56	96.5	5.55	0.00	22.80
2	5,727	5,732						
2			20	36.13	73.8	0.00	5.60	7.60
2			25	32.72	77.2	0.11	5.40	8.30
2			32	28.16	79.1	0.17	5.20	9.20
2			40	23.15	80.3	0.29	5.00	10.30
2			50	19.13	82.3	0.40	4.70	11.50
2			63	17.30	86.6	0.63	4.30	13.00
2			80	13.62	89.3	0.92	3.70	14.80
2			100	8.60	90.9	1.43	3.00	16.80
2			125	4.26	93.5	2.18	1.80	18.80
2			160	-1.63	95.5	3.27	0.00	21.10
2			200	-6.27	96.5	4.70	0.00	22.80
20	6,303	6,307						
20			20	35.30	73.8	0.00	5.60	7.60
20			25	31.88	77.2	0.13	5.40	8.30
20			32	27.31	79.1	0.19	5.20	9.20
20			40	22.29	80.3	0.32	5.00	10.30
20			50	18.26	82.3	0.44	4.70	11.50
20			63	16.41	86.6	0.69	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			80	12.69	89.3	1.01	3.70	14.80
20			100	7.63	90.9	1.58	3.00	16.80
20			125	3.21	93.5	2.40	1.80	18.80
20			160	-2.79	95.5	3.60	0.00	21.10
20			200	-7.57	96.5	5.17	0.00	22.80
21	4,803	4,811						
21			20	37.66	73.8	0.00	5.60	7.60
21			25	34.26	77.2	0.10	5.40	8.30
21			32	29.71	79.1	0.14	5.20	9.20
21			40	24.71	80.3	0.24	5.00	10.30
21			50	20.72	82.3	0.34	4.70	11.50
21			63	18.93	86.6	0.53	4.30	13.00
21			80	15.29	89.3	0.77	3.70	14.80
21			100	10.35	90.9	1.20	3.00	16.80
21			125	6.13	93.5	1.83	1.80	18.80
21			160	0.41	95.5	2.74	0.00	21.10
21			200	-3.99	96.5	3.95	0.00	22.80
22	4,287	4,294						
22			20	38.64	73.8	0.00	5.60	7.60
22			25	35.26	77.2	0.09	5.40	8.30
22			32	30.71	79.1	0.13	5.20	9.20
22			40	25.73	80.3	0.21	5.00	10.30
22			50	21.74	82.3	0.30	4.70	11.50
22			63	19.97	86.6	0.47	4.30	13.00
22			80	16.36	89.3	0.69	3.70	14.80
22			100	11.47	90.9	1.07	3.00	16.80
22			125	7.31	93.5	1.63	1.80	18.80
22			160	1.70	95.5	2.45	0.00	21.10
22			200	-2.58	96.5	3.52	0.00	22.80
23	3,682	3,688						
23			20	39.96	73.8	0.00	5.60	7.60
23			25	36.59	77.2	0.07	5.40	8.30
23			32	32.05	79.1	0.11	5.20	9.20
23			40	27.08	80.3	0.18	5.00	10.30
23			50	23.10	82.3	0.26	4.70	11.50
23			63	21.36	86.6	0.41	4.30	13.00
23			80	17.77	89.3	0.59	3.70	14.80
23			100	12.94	90.9	0.92	3.00	16.80
23			125	8.86	93.5	1.40	1.80	18.80
23			160	3.36	95.5	2.10	0.00	21.10
23			200	-0.76	96.5	3.02	0.00	22.80
24	5,898	5,903						
24			20	35.88	73.8	0.00	5.60	7.60
24			25	32.46	77.2	0.12	5.40	8.30
24			32	27.90	79.1	0.18	5.20	9.20
24			40	22.88	80.3	0.30	5.00	10.30
24			50	18.87	82.3	0.41	4.70	11.50
24			63	17.03	86.6	0.65	4.30	13.00
24			80	13.33	89.3	0.94	3.70	14.80
24			100	8.30	90.9	1.48	3.00	16.80
24			125	3.94	93.5	2.24	1.80	18.80
24			160	-1.99	95.5	3.36	0.00	21.10
24			200	-6.66	96.5	4.84	0.00	22.80
25	5,464	5,469						
25			20	36.54	73.8	0.00	5.60	7.60
25			25	33.13	77.2	0.11	5.40	8.30
25			32	28.58	79.1	0.16	5.20	9.20
25			40	23.57	80.3	0.27	5.00	10.30
25			50	19.56	82.3	0.38	4.70	11.50
25			63	17.74	86.6	0.60	4.30	13.00
25			80	14.07	89.3	0.88	3.70	14.80
25			100	9.07	90.9	1.37	3.00	16.80
25			125	4.76	93.5	2.08	1.80	18.80
25			160	-1.08	95.5	3.12	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			200	-5.64	96.5	4.48	0.00	22.80
26	5,044	5,050						
26			20	37.23	73.8	0.00	5.60	7.60
26			25	33.83	77.2	0.10	5.40	8.30
26			32	29.28	79.1	0.15	5.20	9.20
26			40	24.28	80.3	0.25	5.00	10.30
26			50	20.28	82.3	0.35	4.70	11.50
26			63	18.48	86.6	0.56	4.30	13.00
26			80	14.83	89.3	0.81	3.70	14.80
26			100	9.87	90.9	1.26	3.00	16.80
26			125	5.61	93.5	1.92	1.80	18.80
26			160	-0.15	95.5	2.88	0.00	21.10
26			200	-4.61	96.5	4.14	0.00	22.80
27	4,591	4,597						
27			20	38.05	73.8	0.00	5.60	7.60
27			25	34.66	77.2	0.09	5.40	8.30
27			32	30.11	79.1	0.14	5.20	9.20
27			40	25.12	80.3	0.23	5.00	10.30
27			50	21.13	82.3	0.32	4.70	11.50
27			63	19.34	86.6	0.51	4.30	13.00
27			80	15.71	89.3	0.74	3.70	14.80
27			100	10.80	90.9	1.15	3.00	16.80
27			125	6.60	93.5	1.75	1.80	18.80
27			160	0.93	95.5	2.62	0.00	21.10
27			200	-3.42	96.5	3.77	0.00	22.80
28	3,957	3,964						
28			20	39.34	73.8	0.00	5.60	7.60
28			25	35.96	77.2	0.08	5.40	8.30
28			32	31.42	79.1	0.12	5.20	9.20
28			40	26.44	80.3	0.20	5.00	10.30
28			50	22.46	82.3	0.28	4.70	11.50
28			63	20.70	86.6	0.44	4.30	13.00
28			80	17.10	89.3	0.63	3.70	14.80
28			100	12.25	90.9	0.99	3.00	16.80
28			125	8.13	93.5	1.51	1.80	18.80
28			160	2.58	95.5	2.26	0.00	21.10
28			200	-1.61	96.5	3.25	0.00	22.80
29	3,301	3,310						
29			20	40.90	73.8	0.00	5.60	7.60
29			25	37.54	77.2	0.07	5.40	8.30
29			32	33.00	79.1	0.10	5.20	9.20
29			40	28.04	80.3	0.17	5.00	10.30
29			50	24.07	82.3	0.23	4.70	11.50
29			63	22.34	86.6	0.36	4.30	13.00
29			80	18.77	89.3	0.53	3.70	14.80
29			100	13.97	90.9	0.83	3.00	16.80
29			125	9.94	93.5	1.26	1.80	18.80
29			160	4.52	95.5	1.89	0.00	21.10
29			200	0.49	96.5	2.71	0.00	22.80
3	5,331	5,336						
3			20	36.76	73.8	0.00	5.60	7.60
3			25	33.35	77.2	0.11	5.40	8.30
3			32	28.80	79.1	0.16	5.20	9.20
3			40	23.79	80.3	0.27	5.00	10.30
3			50	19.78	82.3	0.37	4.70	11.50
3			63	17.97	86.6	0.59	4.30	13.00
3			80	14.30	89.3	0.85	3.70	14.80
3			100	9.32	90.9	1.33	3.00	16.80
3			125	5.03	93.5	2.03	1.80	18.80
3			160	-0.79	95.5	3.04	0.00	21.10
3			200	-5.32	96.5	4.38	0.00	22.80
30	2,838	2,847						
30			20	42.21	73.8	0.00	5.60	7.60
30			25	38.86	77.2	0.06	5.40	8.30

To be continued on next page...

Project:
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
30			32	34.33	79.1	0.09	5.20	9.20
30			40	29.37	80.3	0.14	5.00	10.30
30			50	25.41	82.3	0.20	4.70	11.50
30			63	23.70	86.6	0.31	4.30	13.00
30			80	20.16	89.3	0.46	3.70	14.80
30			100	15.40	90.9	0.71	3.00	16.80
30			125	11.43	93.5	1.08	1.80	18.80
30			160	6.09	95.5	1.62	0.00	21.10
30			200	2.18	96.5	2.33	0.00	22.80
31	2,839	2,847						
31			20	42.21	73.8	0.00	5.60	7.60
31			25	38.85	77.2	0.06	5.40	8.30
31			32	34.33	79.1	0.09	5.20	9.20
31			40	29.37	80.3	0.14	5.00	10.30
31			50	25.41	82.3	0.20	4.70	11.50
31			63	23.70	86.6	0.31	4.30	13.00
31			80	20.16	89.3	0.46	3.70	14.80
31			100	15.40	90.9	0.71	3.00	16.80
31			125	11.43	93.5	1.08	1.80	18.80
31			160	6.09	95.5	1.62	0.00	21.10
31			200	2.18	96.5	2.33	0.00	22.80
32	2,193	2,204						
32			20	44.43	73.8	0.00	5.60	7.60
32			25	41.09	77.2	0.04	5.40	8.30
32			32	36.57	79.1	0.07	5.20	9.20
32			40	31.62	80.3	0.11	5.00	10.30
32			50	27.68	82.3	0.15	4.70	11.50
32			63	25.99	86.6	0.24	4.30	13.00
32			80	22.48	89.3	0.35	3.70	14.80
32			100	17.78	90.9	0.55	3.00	16.80
32			125	13.90	93.5	0.84	1.80	18.80
32			160	8.68	95.5	1.26	0.00	21.10
32			200	4.93	96.5	1.81	0.00	22.80
33	1,835	1,852						
33			20	45.95	73.8	0.00	5.60	7.60
33			25	42.61	77.2	0.04	5.40	8.30
33			32	38.09	79.1	0.06	5.20	9.20
33			40	33.16	80.3	0.09	5.00	10.30
33			50	29.22	82.3	0.13	4.70	11.50
33			63	27.55	86.6	0.20	4.30	13.00
33			80	24.05	89.3	0.30	3.70	14.80
33			100	19.39	90.9	0.46	3.00	16.80
33			125	15.55	93.5	0.70	1.80	18.80
33			160	10.39	95.5	1.06	0.00	21.10
33			200	6.73	96.5	1.52	0.00	22.80
4	5,148	5,154						
4			20	37.06	73.8	0.00	5.60	7.60
4			25	33.65	77.2	0.10	5.40	8.30
4			32	29.10	79.1	0.15	5.20	9.20
4			40	24.10	80.3	0.26	5.00	10.30
4			50	20.10	82.3	0.36	4.70	11.50
4			63	18.29	86.6	0.57	4.30	13.00
4			80	14.63	89.3	0.82	3.70	14.80
4			100	9.67	90.9	1.29	3.00	16.80
4			125	5.40	93.5	1.96	1.80	18.80
4			160	-0.38	95.5	2.94	0.00	21.10
4			200	-4.87	96.5	4.23	0.00	22.80
5	4,676	4,682						
5			20	37.89	73.8	0.00	5.60	7.60
5			25	34.50	77.2	0.09	5.40	8.30
5			32	29.95	79.1	0.14	5.20	9.20
5			40	24.96	80.3	0.23	5.00	10.30
5			50	20.96	82.3	0.33	4.70	11.50
5			63	19.18	86.6	0.52	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			80	15.54	89.3	0.75	3.70	14.80
5			100	10.62	90.9	1.17	3.00	16.80
5			125	6.41	93.5	1.78	1.80	18.80
5			160	0.72	95.5	2.67	0.00	21.10
5			200	-3.65	96.5	3.84	0.00	22.80
6	6,279	6,283						
6			20	35.34	73.8	0.00	5.60	7.60
6			25	31.91	77.2	0.13	5.40	8.30
6			32	27.35	79.1	0.19	5.20	9.20
6			40	22.32	80.3	0.31	5.00	10.30
6			50	18.30	82.3	0.44	4.70	11.50
6			63	16.45	86.6	0.69	4.30	13.00
6			80	12.73	89.3	1.01	3.70	14.80
6			100	7.67	90.9	1.57	3.00	16.80
6			125	3.25	93.5	2.39	1.80	18.80
6			160	-2.74	95.5	3.58	0.00	21.10
6			200	-7.52	96.5	5.15	0.00	22.80
7	5,635	5,639						
7			20	36.28	73.8	0.00	5.60	7.60
7			25	32.86	77.2	0.11	5.40	8.30
7			32	28.31	79.1	0.17	5.20	9.20
7			40	23.29	80.3	0.28	5.00	10.30
7			50	19.28	82.3	0.39	4.70	11.50
7			63	17.46	86.6	0.62	4.30	13.00
7			80	13.77	89.3	0.90	3.70	14.80
7			100	8.77	90.9	1.41	3.00	16.80
7			125	4.43	93.5	2.14	1.80	18.80
7			160	-1.44	95.5	3.21	0.00	21.10
7			200	-6.05	96.5	4.62	0.00	22.80
8	5,135	5,140						
8			20	37.08	73.8	0.00	5.60	7.60
8			25	33.68	77.2	0.10	5.40	8.30
8			32	29.13	79.1	0.15	5.20	9.20
8			40	24.12	80.3	0.26	5.00	10.30
8			50	20.12	82.3	0.36	4.70	11.50
8			63	18.32	86.6	0.57	4.30	13.00
8			80	14.66	89.3	0.82	3.70	14.80
8			100	9.70	90.9	1.28	3.00	16.80
8			125	5.43	93.5	1.95	1.80	18.80
8			160	-0.35	95.5	2.93	0.00	21.10
8			200	-4.83	96.5	4.21	0.00	22.80
9	4,482	4,488						
9			20	38.26	73.8	0.00	5.60	7.60
9			25	34.87	77.2	0.09	5.40	8.30
9			32	30.32	79.1	0.13	5.20	9.20
9			40	25.34	80.3	0.22	5.00	10.30
9			50	21.35	82.3	0.31	4.70	11.50
9			63	19.57	86.6	0.49	4.30	13.00
9			80	15.94	89.3	0.72	3.70	14.80
9			100	11.04	90.9	1.12	3.00	16.80
9			125	6.85	93.5	1.71	1.80	18.80
9			160	1.20	95.5	2.56	0.00	21.10
9			200	-3.12	96.5	3.68	0.00	22.80
Sum								
Sum			20	53.97				
Sum			25	50.59				
Sum			32	46.05				
Sum			40	41.07				
Sum			50	37.09				
Sum			63	35.34				
Sum			80	31.75				
Sum			100	26.90				
Sum			125	22.82				
Sum			160	17.32				
Sum			200	13.24				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: HH Kuusela Noise sensitive point: Finnish normal frequency - User defined (298)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,609	4,614						
1			20	38.02	73.8	0.00	5.60	7.60
1			25	34.63	77.2	0.09	5.40	8.30
1			32	30.08	79.1	0.14	5.20	9.20
1			40	25.09	80.3	0.23	5.00	10.30
1			50	21.10	82.3	0.32	4.70	11.50
1			63	19.31	86.6	0.51	4.30	13.00
1			80	15.68	89.3	0.74	3.70	14.80
1			100	10.77	90.9	1.15	3.00	16.80
1			125	6.57	93.5	1.75	1.80	18.80
1			160	0.89	95.5	2.63	0.00	21.10
1			200	-3.46	96.5	3.78	0.00	22.80
10	2,079	2,091						
10			20	44.89	73.8	0.00	5.60	7.60
10			25	41.55	77.2	0.04	5.40	8.30
10			32	37.03	79.1	0.06	5.20	9.20
10			40	32.09	80.3	0.10	5.00	10.30
10			50	28.15	82.3	0.15	4.70	11.50
10			63	26.46	86.6	0.23	4.30	13.00
10			80	22.96	89.3	0.33	3.70	14.80
10			100	18.27	90.9	0.52	3.00	16.80
10			125	14.40	93.5	0.79	1.80	18.80
10			160	9.20	95.5	1.19	0.00	21.10
10			200	5.48	96.5	1.71	0.00	22.80
11	2,692	2,701						
11			20	42.67	73.8	0.00	5.60	7.60
11			25	39.32	77.2	0.05	5.40	8.30
11			32	34.79	79.1	0.08	5.20	9.20
11			40	29.83	80.3	0.14	5.00	10.30
11			50	25.88	82.3	0.19	4.70	11.50
11			63	24.17	86.6	0.30	4.30	13.00
11			80	20.64	89.3	0.43	3.70	14.80
11			100	15.89	90.9	0.68	3.00	16.80
11			125	11.94	93.5	1.03	1.80	18.80
11			160	6.63	95.5	1.54	0.00	21.10
11			200	2.75	96.5	2.21	0.00	22.80
12	1,610	1,624						
12			20	47.09	73.8	0.00	5.60	7.60
12			25	43.75	77.2	0.03	5.40	8.30
12			32	39.24	79.1	0.05	5.20	9.20
12			40	34.30	80.3	0.08	5.00	10.30
12			50	30.37	82.3	0.11	4.70	11.50
12			63	28.71	86.6	0.18	4.30	13.00
12			80	25.23	89.3	0.26	3.70	14.80
12			100	20.58	90.9	0.41	3.00	16.80
12			125	16.77	93.5	0.62	1.80	18.80
12			160	11.66	95.5	0.93	0.00	21.10
12			200	8.05	96.5	1.33	0.00	22.80
13	2,471	2,481						
13			20	43.41	73.8	0.00	5.60	7.60
13			25	40.06	77.2	0.05	5.40	8.30
13			32	35.53	79.1	0.07	5.20	9.20
13			40	30.58	80.3	0.12	5.00	10.30
13			50	26.63	82.3	0.17	4.70	11.50
13			63	24.93	86.6	0.27	4.30	13.00
13			80	21.41	89.3	0.40	3.70	14.80
13			100	16.69	90.9	0.62	3.00	16.80
13			125	12.76	93.5	0.94	1.80	18.80
13			160	7.49	95.5	1.41	0.00	21.10
13			200	3.67	96.5	2.03	0.00	22.80
14	3,791	3,797						
14			20	39.71	73.8	0.00	5.60	7.60
14			25	36.33	77.2	0.08	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	31.80	79.1	0.11	5.20	9.20
14			40	26.82	80.3	0.19	5.00	10.30
14			50	22.84	82.3	0.27	4.70	11.50
14			63	21.09	86.6	0.42	4.30	13.00
14			80	17.50	89.3	0.61	3.70	14.80
14			100	12.66	90.9	0.95	3.00	16.80
14			125	8.57	93.5	1.44	1.80	18.80
14			160	3.05	95.5	2.16	0.00	21.10
14			200	-1.10	96.5	3.11	0.00	22.80
15	2,027	2,039						
15			20	45.11	73.8	0.00	5.60	7.60
15			25	41.77	77.2	0.04	5.40	8.30
15			32	37.25	79.1	0.06	5.20	9.20
15			40	32.31	80.3	0.10	5.00	10.30
15			50	28.37	82.3	0.14	4.70	11.50
15			63	26.69	86.6	0.22	4.30	13.00
15			80	23.19	89.3	0.33	3.70	14.80
15			100	18.50	90.9	0.51	3.00	16.80
15			125	14.64	93.5	0.77	1.80	18.80
15			160	9.45	95.5	1.16	0.00	21.10
15			200	5.74	96.5	1.67	0.00	22.80
16	2,900	2,908						
16			20	42.03	73.8	0.00	5.60	7.60
16			25	38.67	77.2	0.06	5.40	8.30
16			32	34.14	79.1	0.09	5.20	9.20
16			40	29.18	80.3	0.15	5.00	10.30
16			50	25.22	82.3	0.20	4.70	11.50
16			63	23.51	86.6	0.32	4.30	13.00
16			80	19.96	89.3	0.47	3.70	14.80
16			100	15.20	90.9	0.73	3.00	16.80
16			125	11.22	93.5	1.11	1.80	18.80
16			160	5.87	95.5	1.66	0.00	21.10
16			200	1.94	96.5	2.38	0.00	22.80
17	3,543	3,552						
17			20	40.29	73.8	0.00	5.60	7.60
17			25	36.92	77.2	0.07	5.40	8.30
17			32	32.38	79.1	0.11	5.20	9.20
17			40	27.41	80.3	0.18	5.00	10.30
17			50	23.44	82.3	0.25	4.70	11.50
17			63	21.70	86.6	0.39	4.30	13.00
17			80	18.12	89.3	0.57	3.70	14.80
17			100	13.30	90.9	0.89	3.00	16.80
17			125	9.24	93.5	1.35	1.80	18.80
17			160	3.77	95.5	2.02	0.00	21.10
17			200	-0.32	96.5	2.91	0.00	22.80
18	3,694	3,702						
18			20	39.93	73.8	0.00	5.60	7.60
18			25	36.56	77.2	0.07	5.40	8.30
18			32	32.02	79.1	0.11	5.20	9.20
18			40	27.05	80.3	0.19	5.00	10.30
18			50	23.07	82.3	0.26	4.70	11.50
18			63	21.32	86.6	0.41	4.30	13.00
18			80	17.74	89.3	0.59	3.70	14.80
18			100	12.91	90.9	0.93	3.00	16.80
18			125	8.83	93.5	1.41	1.80	18.80
18			160	3.32	95.5	2.11	0.00	21.10
18			200	-0.80	96.5	3.04	0.00	22.80
19	2,368	2,377						
19			20	43.78	73.8	0.00	5.60	7.60
19			25	40.43	77.2	0.05	5.40	8.30
19			32	35.91	79.1	0.07	5.20	9.20
19			40	30.96	80.3	0.12	5.00	10.30
19			50	27.01	82.3	0.17	4.70	11.50
19			63	25.32	86.6	0.26	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	21.80	89.3	0.38	3.70	14.80
19			100	17.08	90.9	0.59	3.00	16.80
19			125	13.17	93.5	0.90	1.80	18.80
19			160	7.92	95.5	1.36	0.00	21.10
19			200	4.13	96.5	1.95	0.00	22.80
2	3,675	3,681						
2			20	39.98	73.8	0.00	5.60	7.60
2			25	36.61	77.2	0.07	5.40	8.30
2			32	32.07	79.1	0.11	5.20	9.20
2			40	27.10	80.3	0.18	5.00	10.30
2			50	23.12	82.3	0.26	4.70	11.50
2			63	21.38	86.6	0.40	4.30	13.00
2			80	17.79	89.3	0.59	3.70	14.80
2			100	12.96	90.9	0.92	3.00	16.80
2			125	8.88	93.5	1.40	1.80	18.80
2			160	3.38	95.5	2.10	0.00	21.10
2			200	-0.74	96.5	3.02	0.00	22.80
20	2,990	2,998						
20			20	41.76	73.8	0.00	5.60	7.60
20			25	38.40	77.2	0.06	5.40	8.30
20			32	33.87	79.1	0.09	5.20	9.20
20			40	28.91	80.3	0.15	5.00	10.30
20			50	24.95	82.3	0.21	4.70	11.50
20			63	23.23	86.6	0.33	4.30	13.00
20			80	19.68	89.3	0.48	3.70	14.80
20			100	14.91	90.9	0.75	3.00	16.80
20			125	10.92	93.5	1.14	1.80	18.80
20			160	5.55	95.5	1.71	0.00	21.10
20			200	1.60	96.5	2.46	0.00	22.80
21	4,157	4,165						
21			20	38.91	73.8	0.00	5.60	7.60
21			25	35.52	77.2	0.08	5.40	8.30
21			32	30.98	79.1	0.12	5.20	9.20
21			40	26.00	80.3	0.21	5.00	10.30
21			50	22.02	82.3	0.29	4.70	11.50
21			63	20.25	86.6	0.46	4.30	13.00
21			80	16.64	89.3	0.67	3.70	14.80
21			100	11.77	90.9	1.04	3.00	16.80
21			125	7.62	93.5	1.58	1.80	18.80
21			160	2.03	95.5	2.37	0.00	21.10
21			200	-2.21	96.5	3.42	0.00	22.80
22	4,738	4,744						
22			20	37.78	73.8	0.00	5.60	7.60
22			25	34.38	77.2	0.09	5.40	8.30
22			32	29.83	79.1	0.14	5.20	9.20
22			40	24.84	80.3	0.24	5.00	10.30
22			50	20.84	82.3	0.33	4.70	11.50
22			63	19.06	86.6	0.52	4.30	13.00
22			80	15.42	89.3	0.76	3.70	14.80
22			100	10.49	90.9	1.19	3.00	16.80
22			125	6.27	93.5	1.80	1.80	18.80
22			160	0.57	95.5	2.70	0.00	21.10
22			200	-3.81	96.5	3.89	0.00	22.80
23	5,200	5,205						
23			20	36.97	73.8	0.00	5.60	7.60
23			25	33.57	77.2	0.10	5.40	8.30
23			32	29.02	79.1	0.16	5.20	9.20
23			40	24.01	80.3	0.26	5.00	10.30
23			50	20.01	82.3	0.36	4.70	11.50
23			63	18.20	86.6	0.57	4.30	13.00
23			80	14.54	89.3	0.83	3.70	14.80
23			100	9.57	90.9	1.30	3.00	16.80
23			125	5.29	93.5	1.98	1.80	18.80
23			160	-0.50	95.5	2.97	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-5.00	96.5	4.27	0.00	22.80
24	3,670	3,677						
24			20	39.99	73.8	0.00	5.60	7.60
24			25	36.62	77.2	0.07	5.40	8.30
24			32	32.08	79.1	0.11	5.20	9.20
24			40	27.11	80.3	0.18	5.00	10.30
24			50	23.13	82.3	0.26	4.70	11.50
24			63	21.39	86.6	0.40	4.30	13.00
24			80	17.80	89.3	0.59	3.70	14.80
24			100	12.97	90.9	0.92	3.00	16.80
24			125	8.89	93.5	1.40	1.80	18.80
24			160	3.39	95.5	2.10	0.00	21.10
24			200	-0.72	96.5	3.02	0.00	22.80
25	3,718	3,725						
25			20	39.88	73.8	0.00	5.60	7.60
25			25	36.50	77.2	0.07	5.40	8.30
25			32	31.96	79.1	0.11	5.20	9.20
25			40	26.99	80.3	0.19	5.00	10.30
25			50	23.02	82.3	0.26	4.70	11.50
25			63	21.27	86.6	0.41	4.30	13.00
25			80	17.68	89.3	0.60	3.70	14.80
25			100	12.85	90.9	0.93	3.00	16.80
25			125	8.76	93.5	1.42	1.80	18.80
25			160	3.25	95.5	2.12	0.00	21.10
25			200	-0.88	96.5	3.05	0.00	22.80
26	4,266	4,274						
26			20	38.68	73.8	0.00	5.60	7.60
26			25	35.30	77.2	0.09	5.40	8.30
26			32	30.75	79.1	0.13	5.20	9.20
26			40	25.77	80.3	0.21	5.00	10.30
26			50	21.78	82.3	0.30	4.70	11.50
26			63	20.01	86.6	0.47	4.30	13.00
26			80	16.40	89.3	0.68	3.70	14.80
26			100	11.51	90.9	1.07	3.00	16.80
26			125	7.36	93.5	1.62	1.80	18.80
26			160	1.75	95.5	2.44	0.00	21.10
26			200	-2.52	96.5	3.50	0.00	22.80
27	4,748	4,754						
27			20	37.76	73.8	0.00	5.60	7.60
27			25	34.36	77.2	0.10	5.40	8.30
27			32	29.82	79.1	0.14	5.20	9.20
27			40	24.82	80.3	0.24	5.00	10.30
27			50	20.83	82.3	0.33	4.70	11.50
27			63	19.04	86.6	0.52	4.30	13.00
27			80	15.40	89.3	0.76	3.70	14.80
27			100	10.47	90.9	1.19	3.00	16.80
27			125	6.25	93.5	1.81	1.80	18.80
27			160	0.55	95.5	2.71	0.00	21.10
27			200	-3.84	96.5	3.90	0.00	22.80
28	5,276	5,281						
28			20	36.85	73.8	0.00	5.60	7.60
28			25	33.44	77.2	0.11	5.40	8.30
28			32	28.89	79.1	0.16	5.20	9.20
28			40	23.88	80.3	0.26	5.00	10.30
28			50	19.88	82.3	0.37	4.70	11.50
28			63	18.07	86.6	0.58	4.30	13.00
28			80	14.40	89.3	0.84	3.70	14.80
28			100	9.43	90.9	1.32	3.00	16.80
28			125	5.14	93.5	2.01	1.80	18.80
28			160	-0.66	95.5	3.01	0.00	21.10
28			200	-5.18	96.5	4.33	0.00	22.80
29	5,844	5,849						
29			20	35.96	73.8	0.00	5.60	7.60
29			25	32.54	77.2	0.12	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			32	27.98	79.1	0.18	5.20	9.20
29			40	22.97	80.3	0.29	5.00	10.30
29			50	18.95	82.3	0.41	4.70	11.50
29			63	17.11	86.6	0.64	4.30	13.00
29			80	13.42	89.3	0.94	3.70	14.80
29			100	8.40	90.9	1.46	3.00	16.80
29			125	4.04	93.5	2.22	1.80	18.80
29			160	-1.88	95.5	3.33	0.00	21.10
29			200	-6.54	96.5	4.80	0.00	22.80
3	4,303	4,309						
3			20	38.61	73.8	0.00	5.60	7.60
3			25	35.23	77.2	0.09	5.40	8.30
3			32	30.68	79.1	0.13	5.20	9.20
3			40	25.70	80.3	0.22	5.00	10.30
3			50	21.71	82.3	0.30	4.70	11.50
3			63	19.94	86.6	0.47	4.30	13.00
3			80	16.32	89.3	0.69	3.70	14.80
3			100	11.43	90.9	1.08	3.00	16.80
3			125	7.27	93.5	1.64	1.80	18.80
3			160	1.66	95.5	2.46	0.00	21.10
3			200	-2.62	96.5	3.53	0.00	22.80
30	6,030	6,034						
30			20	35.69	73.8	0.00	5.60	7.60
30			25	32.27	77.2	0.12	5.40	8.30
30			32	27.71	79.1	0.18	5.20	9.20
30			40	22.69	80.3	0.30	5.00	10.30
30			50	18.67	82.3	0.42	4.70	11.50
30			63	16.82	86.6	0.66	4.30	13.00
30			80	13.12	89.3	0.97	3.70	14.80
30			100	8.08	90.9	1.51	3.00	16.80
30			125	3.70	93.5	2.29	1.80	18.80
30			160	-2.25	95.5	3.44	0.00	21.10
30			200	-6.96	96.5	4.95	0.00	22.80
31	6,363	6,366						
31			20	35.22	73.8	0.00	5.60	7.60
31			25	31.80	77.2	0.13	5.40	8.30
31			32	27.23	79.1	0.19	5.20	9.20
31			40	22.20	80.3	0.32	5.00	10.30
31			50	18.18	82.3	0.45	4.70	11.50
31			63	16.32	86.6	0.70	4.30	13.00
31			80	12.60	89.3	1.02	3.70	14.80
31			100	7.53	90.9	1.59	3.00	16.80
31			125	3.10	93.5	2.42	1.80	18.80
31			160	-2.91	95.5	3.63	0.00	21.10
31			200	-7.70	96.5	5.22	0.00	22.80
32	6,642	6,645						
32			20	34.85	73.8	0.00	5.60	7.60
32			25	31.42	77.2	0.13	5.40	8.30
32			32	26.85	79.1	0.20	5.20	9.20
32			40	21.82	80.3	0.33	5.00	10.30
32			50	17.78	82.3	0.47	4.70	11.50
32			63	15.92	86.6	0.73	4.30	13.00
32			80	12.19	89.3	1.06	3.70	14.80
32			100	7.09	90.9	1.66	3.00	16.80
32			125	2.62	93.5	2.53	1.80	18.80
32			160	-3.44	95.5	3.79	0.00	21.10
32			200	-8.30	96.5	5.45	0.00	22.80
33	6,908	6,912						
33			20	34.51	73.8	0.00	5.60	7.60
33			25	31.07	77.2	0.14	5.40	8.30
33			32	26.50	79.1	0.21	5.20	9.20
33			40	21.46	80.3	0.35	5.00	10.30
33			50	17.42	82.3	0.48	4.70	11.50
33			63	15.55	86.6	0.76	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			80	11.80	89.3	1.11	3.70	14.80
33			100	6.68	90.9	1.73	3.00	16.80
33			125	2.18	93.5	2.63	1.80	18.80
33			160	-3.93	95.5	3.94	0.00	21.10
33			200	-8.86	96.5	5.67	0.00	22.80
4	4,069	4,075						
4			20	39.10	73.8	0.00	5.60	7.60
4			25	35.72	77.2	0.08	5.40	8.30
4			32	31.17	79.1	0.12	5.20	9.20
4			40	26.19	80.3	0.20	5.00	10.30
4			50	22.21	82.3	0.29	4.70	11.50
4			63	20.45	86.6	0.45	4.30	13.00
4			80	16.84	89.3	0.65	3.70	14.80
4			100	11.98	90.9	1.02	3.00	16.80
4			125	7.85	93.5	1.55	1.80	18.80
4			160	2.27	95.5	2.32	0.00	21.10
4			200	-1.94	96.5	3.34	0.00	22.80
5	4,311	4,317						
5			20	38.60	73.8	0.00	5.60	7.60
5			25	35.21	77.2	0.09	5.40	8.30
5			32	30.67	79.1	0.13	5.20	9.20
5			40	25.68	80.3	0.22	5.00	10.30
5			50	21.69	82.3	0.30	4.70	11.50
5			63	19.92	86.6	0.47	4.30	13.00
5			80	16.31	89.3	0.69	3.70	14.80
5			100	11.42	90.9	1.08	3.00	16.80
5			125	7.26	93.5	1.64	1.80	18.80
5			160	1.64	95.5	2.46	0.00	21.10
5			200	-2.64	96.5	3.54	0.00	22.80
6	2,642	2,651						
6			20	42.83	73.8	0.00	5.60	7.60
6			25	39.48	77.2	0.05	5.40	8.30
6			32	34.95	79.1	0.08	5.20	9.20
6			40	30.00	80.3	0.13	5.00	10.30
6			50	26.05	82.3	0.19	4.70	11.50
6			63	24.34	86.6	0.29	4.30	13.00
6			80	20.81	89.3	0.42	3.70	14.80
6			100	16.07	90.9	0.66	3.00	16.80
6			125	12.12	93.5	1.01	1.80	18.80
6			160	6.82	95.5	1.51	0.00	21.10
6			200	2.96	96.5	2.17	0.00	22.80
7	3,199	3,206						
7			20	41.18	73.8	0.00	5.60	7.60
7			25	37.82	77.2	0.06	5.40	8.30
7			32	33.28	79.1	0.10	5.20	9.20
7			40	28.32	80.3	0.16	5.00	10.30
7			50	24.36	82.3	0.22	4.70	11.50
7			63	22.63	86.6	0.35	4.30	13.00
7			80	19.07	89.3	0.51	3.70	14.80
7			100	14.28	90.9	0.80	3.00	16.80
7			125	10.26	93.5	1.22	1.80	18.80
7			160	4.85	95.5	1.83	0.00	21.10
7			200	0.85	96.5	2.63	0.00	22.80
8	3,756	3,763						
8			20	39.79	73.8	0.00	5.60	7.60
8			25	36.42	77.2	0.08	5.40	8.30
8			32	31.88	79.1	0.11	5.20	9.20
8			40	26.90	80.3	0.19	5.00	10.30
8			50	22.93	82.3	0.26	4.70	11.50
8			63	21.18	86.6	0.41	4.30	13.00
8			80	17.59	89.3	0.60	3.70	14.80
8			100	12.75	90.9	0.94	3.00	16.80
8			125	8.66	93.5	1.43	1.80	18.80
8			160	3.15	95.5	2.14	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	-1.00	96.5	3.09	0.00	22.80
9	4,314	4,320						
9			20	38.59	73.8	0.00	5.60	7.60
9			25	35.20	77.2	0.09	5.40	8.30
9			32	30.66	79.1	0.13	5.20	9.20
9			40	25.67	80.3	0.22	5.00	10.30
9			50	21.69	82.3	0.30	4.70	11.50
9			63	19.92	86.6	0.48	4.30	13.00
9			80	16.30	89.3	0.69	3.70	14.80
9			100	11.41	90.9	1.08	3.00	16.80
9			125	7.25	93.5	1.64	1.80	18.80
9			160	1.63	95.5	2.46	0.00	21.10
9			200	-2.65	96.5	3.54	0.00	22.80
Sum								
Sum			20	56.03				
Sum			25	52.67				
Sum			32	48.14				
Sum			40	43.18				
Sum			50	39.21				
Sum			63	37.49				
Sum			80	33.94				
Sum			100	29.16				
Sum			125	25.17				
Sum			160	19.81				
Sum			200	15.88				

Noise sensitive area: HH Lammaslahti 2 Noise sensitive point: Finnish normal frequency - User defined (283)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,982	5,985						
1			20	35.76	73.8	0.00	5.60	7.60
1			25	32.34	77.2	0.12	5.40	8.30
1			32	27.78	79.1	0.18	5.20	9.20
1			40	22.76	80.3	0.30	5.00	10.30
1			50	18.74	82.3	0.42	4.70	11.50
1			63	16.90	86.6	0.66	4.30	13.00
1			80	13.20	89.3	0.96	3.70	14.80
1			100	8.16	90.9	1.50	3.00	16.80
1			125	3.78	93.5	2.27	1.80	18.80
1			160	-2.15	95.5	3.41	0.00	21.10
1			200	-6.85	96.5	4.91	0.00	22.80
10	3,140	3,146						
10			20	41.34	73.8	0.00	5.60	7.60
10			25	37.98	77.2	0.06	5.40	8.30
10			32	33.45	79.1	0.09	5.20	9.20
10			40	28.49	80.3	0.16	5.00	10.30
10			50	24.52	82.3	0.22	4.70	11.50
10			63	22.80	86.6	0.35	4.30	13.00
10			80	19.24	89.3	0.50	3.70	14.80
10			100	14.46	90.9	0.79	3.00	16.80
10			125	10.45	93.5	1.20	1.80	18.80
10			160	5.05	95.5	1.79	0.00	21.10
10			200	1.06	96.5	2.58	0.00	22.80
11	3,319	3,326						
11			20	40.86	73.8	0.00	5.60	7.60
11			25	37.50	77.2	0.07	5.40	8.30
11			32	32.96	79.1	0.10	5.20	9.20
11			40	28.00	80.3	0.17	5.00	10.30
11			50	24.03	82.3	0.23	4.70	11.50
11			63	22.30	86.6	0.37	4.30	13.00
11			80	18.73	89.3	0.53	3.70	14.80
11			100	13.93	90.9	0.83	3.00	16.80

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	9.90	93.5	1.26	1.80	18.80
11			160	4.47	95.5	1.90	0.00	21.10
11			200	0.43	96.5	2.73	0.00	22.80
12	2,703	2,711						
12			20	42.64	73.8	0.00	5.60	7.60
12			25	39.28	77.2	0.05	5.40	8.30
12			32	34.76	79.1	0.08	5.20	9.20
12			40	29.80	80.3	0.14	5.00	10.30
12			50	25.85	82.3	0.19	4.70	11.50
12			63	24.14	86.6	0.30	4.30	13.00
12			80	20.61	89.3	0.43	3.70	14.80
12			100	15.86	90.9	0.68	3.00	16.80
12			125	11.91	93.5	1.03	1.80	18.80
12			160	6.59	95.5	1.55	0.00	21.10
12			200	2.72	96.5	2.22	0.00	22.80
13	2,718	2,725						
13			20	42.59	73.8	0.00	5.60	7.60
13			25	39.24	77.2	0.05	5.40	8.30
13			32	34.71	79.1	0.08	5.20	9.20
13			40	29.76	80.3	0.14	5.00	10.30
13			50	25.80	82.3	0.19	4.70	11.50
13			63	24.09	86.6	0.30	4.30	13.00
13			80	20.56	89.3	0.44	3.70	14.80
13			100	15.81	90.9	0.68	3.00	16.80
13			125	11.86	93.5	1.04	1.80	18.80
13			160	6.54	95.5	1.55	0.00	21.10
13			200	2.66	96.5	2.23	0.00	22.80
14	4,026	4,032						
14			20	39.19	73.8	0.00	5.60	7.60
14			25	35.81	77.2	0.08	5.40	8.30
14			32	31.27	79.1	0.12	5.20	9.20
14			40	26.29	80.3	0.20	5.00	10.30
14			50	22.31	82.3	0.28	4.70	11.50
14			63	20.55	86.6	0.44	4.30	13.00
14			80	16.95	89.3	0.65	3.70	14.80
14			100	12.08	90.9	1.01	3.00	16.80
14			125	7.96	93.5	1.53	1.80	18.80
14			160	2.39	95.5	2.30	0.00	21.10
14			200	-1.82	96.5	3.31	0.00	22.80
15	2,283	2,292						
15			20	44.10	73.8	0.00	5.60	7.60
15			25	40.75	77.2	0.05	5.40	8.30
15			32	36.23	79.1	0.07	5.20	9.20
15			40	31.28	80.3	0.11	5.00	10.30
15			50	27.34	82.3	0.16	4.70	11.50
15			63	25.64	86.6	0.25	4.30	13.00
15			80	22.13	89.3	0.37	3.70	14.80
15			100	17.42	90.9	0.57	3.00	16.80
15			125	13.53	93.5	0.87	1.80	18.80
15			160	8.29	95.5	1.31	0.00	21.10
15			200	4.52	96.5	1.88	0.00	22.80
16	2,525	2,533						
16			20	43.23	73.8	0.00	5.60	7.60
16			25	39.88	77.2	0.05	5.40	8.30
16			32	35.35	79.1	0.08	5.20	9.20
16			40	30.40	80.3	0.13	5.00	10.30
16			50	26.45	82.3	0.18	4.70	11.50
16			63	24.75	86.6	0.28	4.30	13.00
16			80	21.22	89.3	0.41	3.70	14.80
16			100	16.49	90.9	0.63	3.00	16.80
16			125	12.56	93.5	0.96	1.80	18.80
16			160	7.28	95.5	1.44	0.00	21.10
16			200	3.45	96.5	2.08	0.00	22.80
17	3,010	3,019						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	41.70	73.8	0.00	5.60	7.60
17			25	38.34	77.2	0.06	5.40	8.30
17			32	33.81	79.1	0.09	5.20	9.20
17			40	28.85	80.3	0.15	5.00	10.30
17			50	24.89	82.3	0.21	4.70	11.50
17			63	23.17	86.6	0.33	4.30	13.00
17			80	19.62	89.3	0.48	3.70	14.80
17			100	14.85	90.9	0.75	3.00	16.80
17			125	10.86	93.5	1.15	1.80	18.80
17			160	5.48	95.5	1.72	0.00	21.10
17			200	1.53	96.5	2.48	0.00	22.80
18	3,488	3,495						
18			20	40.43	73.8	0.00	5.60	7.60
18			25	37.06	77.2	0.07	5.40	8.30
18			32	32.53	79.1	0.10	5.20	9.20
18			40	27.56	80.3	0.17	5.00	10.30
18			50	23.59	82.3	0.24	4.70	11.50
18			63	21.85	86.6	0.38	4.30	13.00
18			80	18.27	89.3	0.56	3.70	14.80
18			100	13.46	90.9	0.87	3.00	16.80
18			125	9.40	93.5	1.33	1.80	18.80
18			160	3.94	95.5	1.99	0.00	21.10
18			200	-0.14	96.5	2.87	0.00	22.80
19	1,866	1,876						
19			20	45.83	73.8	0.00	5.60	7.60
19			25	42.50	77.2	0.04	5.40	8.30
19			32	37.98	79.1	0.06	5.20	9.20
19			40	33.04	80.3	0.09	5.00	10.30
19			50	29.10	82.3	0.13	4.70	11.50
19			63	27.43	86.6	0.21	4.30	13.00
19			80	23.93	89.3	0.30	3.70	14.80
19			100	19.27	90.9	0.47	3.00	16.80
19			125	15.42	93.5	0.71	1.80	18.80
19			160	10.26	95.5	1.07	0.00	21.10
19			200	6.60	96.5	1.54	0.00	22.80
2	4,931	4,935						
2			20	37.43	73.8	0.00	5.60	7.60
2			25	34.04	77.2	0.10	5.40	8.30
2			32	29.49	79.1	0.15	5.20	9.20
2			40	24.49	80.3	0.25	5.00	10.30
2			50	20.49	82.3	0.35	4.70	11.50
2			63	18.69	86.6	0.54	4.30	13.00
2			80	15.04	89.3	0.79	3.70	14.80
2			100	10.10	90.9	1.23	3.00	16.80
2			125	5.86	93.5	1.88	1.80	18.80
2			160	0.12	95.5	2.81	0.00	21.10
2			200	-4.31	96.5	4.05	0.00	22.80
20	1,926	1,937						
20			20	45.56	73.8	0.00	5.60	7.60
20			25	42.22	77.2	0.04	5.40	8.30
20			32	37.70	79.1	0.06	5.20	9.20
20			40	32.76	80.3	0.10	5.00	10.30
20			50	28.82	82.3	0.14	4.70	11.50
20			63	27.15	86.6	0.21	4.30	13.00
20			80	23.65	89.3	0.31	3.70	14.80
20			100	18.97	90.9	0.48	3.00	16.80
20			125	15.12	93.5	0.74	1.80	18.80
20			160	9.95	95.5	1.10	0.00	21.10
20			200	6.27	96.5	1.59	0.00	22.80
21	3,347	3,356						
21			20	40.78	73.8	0.00	5.60	7.60
21			25	37.42	77.2	0.07	5.40	8.30
21			32	32.88	79.1	0.10	5.20	9.20
21			40	27.91	80.3	0.17	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	23.95	82.3	0.23	4.70	11.50
21			63	22.21	86.6	0.37	4.30	13.00
21			80	18.65	89.3	0.54	3.70	14.80
21			100	13.84	90.9	0.84	3.00	16.80
21			125	9.81	93.5	1.28	1.80	18.80
21			160	4.37	95.5	1.91	0.00	21.10
21			200	0.33	96.5	2.75	0.00	22.80
22	3,767	3,773						
22			20	39.77	73.8	0.00	5.60	7.60
22			25	36.39	77.2	0.08	5.40	8.30
22			32	31.85	79.1	0.11	5.20	9.20
22			40	26.88	80.3	0.19	5.00	10.30
22			50	22.90	82.3	0.26	4.70	11.50
22			63	21.15	86.6	0.42	4.30	13.00
22			80	17.56	89.3	0.60	3.70	14.80
22			100	12.72	90.9	0.94	3.00	16.80
22			125	8.63	93.5	1.43	1.80	18.80
22			160	3.12	95.5	2.15	0.00	21.10
22			200	-1.03	96.5	3.09	0.00	22.80
23	4,405	4,409						
23			20	38.41	73.8	0.00	5.60	7.60
23			25	35.02	77.2	0.09	5.40	8.30
23			32	30.48	79.1	0.13	5.20	9.20
23			40	25.49	80.3	0.22	5.00	10.30
23			50	21.50	82.3	0.31	4.70	11.50
23			63	19.73	86.6	0.49	4.30	13.00
23			80	16.11	89.3	0.71	3.70	14.80
23			100	11.21	90.9	1.10	3.00	16.80
23			125	7.04	93.5	1.68	1.80	18.80
23			160	1.40	95.5	2.51	0.00	21.10
23			200	-2.90	96.5	3.62	0.00	22.80
24	2,129	2,140						
24			20	44.69	73.8	0.00	5.60	7.60
24			25	41.35	77.2	0.04	5.40	8.30
24			32	36.83	79.1	0.06	5.20	9.20
24			40	31.89	80.3	0.11	5.00	10.30
24			50	27.94	82.3	0.15	4.70	11.50
24			63	26.26	86.6	0.24	4.30	13.00
24			80	22.75	89.3	0.34	3.70	14.80
24			100	18.06	90.9	0.53	3.00	16.80
24			125	14.18	93.5	0.81	1.80	18.80
24			160	8.97	95.5	1.22	0.00	21.10
24			200	5.24	96.5	1.75	0.00	22.80
25	2,641	2,649						
25			20	42.84	73.8	0.00	5.60	7.60
25			25	39.48	77.2	0.05	5.40	8.30
25			32	34.96	79.1	0.08	5.20	9.20
25			40	30.00	80.3	0.13	5.00	10.30
25			50	26.05	82.3	0.19	4.70	11.50
25			63	24.35	86.6	0.29	4.30	13.00
25			80	20.81	89.3	0.42	3.70	14.80
25			100	16.07	90.9	0.66	3.00	16.80
25			125	12.13	93.5	1.01	1.80	18.80
25			160	6.83	95.5	1.51	0.00	21.10
25			200	2.96	96.5	2.17	0.00	22.80
26	2,979	2,989						
26			20	41.79	73.8	0.00	5.60	7.60
26			25	38.43	77.2	0.06	5.40	8.30
26			32	33.90	79.1	0.09	5.20	9.20
26			40	28.94	80.3	0.15	5.00	10.30
26			50	24.98	82.3	0.21	4.70	11.50
26			63	23.26	86.6	0.33	4.30	13.00
26			80	19.71	89.3	0.48	3.70	14.80
26			100	14.94	90.9	0.75	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
26			125	10.95	93.5	1.14	1.80	18.80
26			160	5.59	95.5	1.70	0.00	21.10
26			200	1.64	96.5	2.45	0.00	22.80
27	3,424	3,431						
27			20	40.59	73.8	0.00	5.60	7.60
27			25	37.22	77.2	0.07	5.40	8.30
27			32	32.69	79.1	0.10	5.20	9.20
27			40	27.72	80.3	0.17	5.00	10.30
27			50	23.75	82.3	0.24	4.70	11.50
27			63	22.01	86.6	0.38	4.30	13.00
27			80	18.44	89.3	0.55	3.70	14.80
27			100	13.63	90.9	0.86	3.00	16.80
27			125	9.59	93.5	1.30	1.80	18.80
27			160	4.14	95.5	1.96	0.00	21.10
27			200	0.08	96.5	2.81	0.00	22.80
28	4,058	4,064						
28			20	39.12	73.8	0.00	5.60	7.60
28			25	35.74	77.2	0.08	5.40	8.30
28			32	31.20	79.1	0.12	5.20	9.20
28			40	26.22	80.3	0.20	5.00	10.30
28			50	22.24	82.3	0.28	4.70	11.50
28			63	20.47	86.6	0.45	4.30	13.00
28			80	16.87	89.3	0.65	3.70	14.80
28			100	12.00	90.9	1.02	3.00	16.80
28			125	7.88	93.5	1.54	1.80	18.80
28			160	2.30	95.5	2.32	0.00	21.10
28			200	-1.91	96.5	3.33	0.00	22.80
29	4,718	4,723						
29			20	37.82	73.8	0.00	5.60	7.60
29			25	34.42	77.2	0.09	5.40	8.30
29			32	29.87	79.1	0.14	5.20	9.20
29			40	24.88	80.3	0.24	5.00	10.30
29			50	20.89	82.3	0.33	4.70	11.50
29			63	19.10	86.6	0.52	4.30	13.00
29			80	15.46	89.3	0.76	3.70	14.80
29			100	10.54	90.9	1.18	3.00	16.80
29			125	6.32	93.5	1.79	1.80	18.80
29			160	0.62	95.5	2.69	0.00	21.10
29			200	-3.76	96.5	3.87	0.00	22.80
3	5,464	5,468						
3			20	36.54	73.8	0.00	5.60	7.60
3			25	33.13	77.2	0.11	5.40	8.30
3			32	28.58	79.1	0.16	5.20	9.20
3			40	23.57	80.3	0.27	5.00	10.30
3			50	19.56	82.3	0.38	4.70	11.50
3			63	17.74	86.6	0.60	4.30	13.00
3			80	14.07	89.3	0.87	3.70	14.80
3			100	9.08	90.9	1.37	3.00	16.80
3			125	4.77	93.5	2.08	1.80	18.80
3			160	-1.07	95.5	3.12	0.00	21.10
3			200	-5.64	96.5	4.48	0.00	22.80
30	5,203	5,207						
30			20	36.97	73.8	0.00	5.60	7.60
30			25	33.56	77.2	0.10	5.40	8.30
30			32	29.01	79.1	0.16	5.20	9.20
30			40	24.01	80.3	0.26	5.00	10.30
30			50	20.00	82.3	0.36	4.70	11.50
30			63	18.20	86.6	0.57	4.30	13.00
30			80	14.54	89.3	0.83	3.70	14.80
30			100	9.57	90.9	1.30	3.00	16.80
30			125	5.29	93.5	1.98	1.80	18.80
30			160	-0.50	95.5	2.97	0.00	21.10
30			200	-5.00	96.5	4.27	0.00	22.80
31	5,208	5,212						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			20	36.96	73.8	0.00	5.60	7.60
31			25	33.56	77.2	0.10	5.40	8.30
31			32	29.00	79.1	0.16	5.20	9.20
31			40	24.00	80.3	0.26	5.00	10.30
31			50	20.00	82.3	0.36	4.70	11.50
31			63	18.19	86.6	0.57	4.30	13.00
31			80	14.53	89.3	0.83	3.70	14.80
31			100	9.56	90.9	1.30	3.00	16.80
31			125	5.28	93.5	1.98	1.80	18.80
31			160	-0.51	95.5	2.97	0.00	21.10
31			200	-5.01	96.5	4.27	0.00	22.80
32	5,837	5,841						
32			20	35.97	73.8	0.00	5.60	7.60
32			25	32.55	77.2	0.12	5.40	8.30
32			32	28.00	79.1	0.18	5.20	9.20
32			40	22.98	80.3	0.29	5.00	10.30
32			50	18.96	82.3	0.41	4.70	11.50
32			63	17.13	86.6	0.64	4.30	13.00
32			80	13.44	89.3	0.93	3.70	14.80
32			100	8.41	90.9	1.46	3.00	16.80
32			125	4.05	93.5	2.22	1.80	18.80
32			160	-1.86	95.5	3.33	0.00	21.10
32			200	-6.52	96.5	4.79	0.00	22.80
33	6,358	6,362						
33			20	35.23	73.8	0.00	5.60	7.60
33			25	31.80	77.2	0.13	5.40	8.30
33			32	27.24	79.1	0.19	5.20	9.20
33			40	22.21	80.3	0.32	5.00	10.30
33			50	18.18	82.3	0.45	4.70	11.50
33			63	16.33	86.6	0.70	4.30	13.00
33			80	12.61	89.3	1.02	3.70	14.80
33			100	7.54	90.9	1.59	3.00	16.80
33			125	3.11	93.5	2.42	1.80	18.80
33			160	-2.90	95.5	3.63	0.00	21.10
33			200	-7.69	96.5	5.22	0.00	22.80
4	4,975	4,979						
4			20	37.36	73.8	0.00	5.60	7.60
4			25	33.96	77.2	0.10	5.40	8.30
4			32	29.41	79.1	0.15	5.20	9.20
4			40	24.41	80.3	0.25	5.00	10.30
4			50	20.41	82.3	0.35	4.70	11.50
4			63	18.61	86.6	0.55	4.30	13.00
4			80	14.96	89.3	0.80	3.70	14.80
4			100	10.01	90.9	1.24	3.00	16.80
4			125	5.77	93.5	1.89	1.80	18.80
4			160	0.02	95.5	2.84	0.00	21.10
4			200	-4.43	96.5	4.08	0.00	22.80
5	4,852	4,857						
5			20	37.57	73.8	0.00	5.60	7.60
5			25	34.18	77.2	0.10	5.40	8.30
5			32	29.63	79.1	0.15	5.20	9.20
5			40	24.63	80.3	0.24	5.00	10.30
5			50	20.63	82.3	0.34	4.70	11.50
5			63	18.84	86.6	0.53	4.30	13.00
5			80	15.20	89.3	0.78	3.70	14.80
5			100	10.26	90.9	1.21	3.00	16.80
5			125	6.03	93.5	1.85	1.80	18.80
5			160	0.31	95.5	2.77	0.00	21.10
5			200	-4.11	96.5	3.98	0.00	22.80
6	3,839	3,844						
6			20	39.60	73.8	0.00	5.60	7.60
6			25	36.23	77.2	0.08	5.40	8.30
6			32	31.69	79.1	0.12	5.20	9.20
6			40	26.71	80.3	0.19	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			50	22.73	82.3	0.27	4.70	11.50
6			63	20.98	86.6	0.42	4.30	13.00
6			80	17.39	89.3	0.62	3.70	14.80
6			100	12.54	90.9	0.96	3.00	16.80
6			125	8.44	93.5	1.46	1.80	18.80
6			160	2.91	95.5	2.19	0.00	21.10
6			200	-1.25	96.5	3.15	0.00	22.80
7	3,916	3,921						
7			20	39.43	73.8	0.00	5.60	7.60
7			25	36.05	77.2	0.08	5.40	8.30
7			32	31.51	79.1	0.12	5.20	9.20
7			40	26.53	80.3	0.20	5.00	10.30
7			50	22.56	82.3	0.27	4.70	11.50
7			63	20.80	86.6	0.43	4.30	13.00
7			80	17.20	89.3	0.63	3.70	14.80
7			100	12.35	90.9	0.98	3.00	16.80
7			125	8.24	93.5	1.49	1.80	18.80
7			160	2.70	95.5	2.24	0.00	21.10
7			200	-1.48	96.5	3.22	0.00	22.80
8	4,355	4,360						
8			20	38.51	73.8	0.00	5.60	7.60
8			25	35.12	77.2	0.09	5.40	8.30
8			32	30.58	79.1	0.13	5.20	9.20
8			40	25.59	80.3	0.22	5.00	10.30
8			50	21.61	82.3	0.31	4.70	11.50
8			63	19.83	86.6	0.48	4.30	13.00
8			80	16.21	89.3	0.70	3.70	14.80
8			100	11.32	90.9	1.09	3.00	16.80
8			125	7.15	93.5	1.66	1.80	18.80
8			160	1.53	95.5	2.49	0.00	21.10
8			200	-2.76	96.5	3.58	0.00	22.80
9	4,494	4,499						
9			20	38.24	73.8	0.00	5.60	7.60
9			25	34.85	77.2	0.09	5.40	8.30
9			32	30.30	79.1	0.13	5.20	9.20
9			40	25.31	80.3	0.22	5.00	10.30
9			50	21.32	82.3	0.31	4.70	11.50
9			63	19.54	86.6	0.49	4.30	13.00
9			80	15.92	89.3	0.72	3.70	14.80
9			100	11.01	90.9	1.12	3.00	16.80
9			125	6.83	93.5	1.71	1.80	18.80
9			160	1.17	95.5	2.56	0.00	21.10
9			200	-3.15	96.5	3.69	0.00	22.80
Sum								
Sum			20	56.12				
Sum			25	52.76				
Sum			32	48.23				
Sum			40	43.26				
Sum			50	39.30				
Sum			63	37.58				
Sum			80	34.02				
Sum			100	29.25				
Sum			125	25.25				
Sum			160	19.88				
Sum			200	15.95				

Noise sensitive area: HH Lehtoharju 2 Noise sensitive point: Finnish normal frequency - User defined (293)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	7,018	7,019						
1			20	34.37	73.8	0.00	5.60	7.60
1			25	30.93	77.2	0.14	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			32	26.36	79.1	0.21	5.20	9.20
1			40	21.32	80.3	0.35	5.00	10.30
1			50	17.28	82.3	0.49	4.70	11.50
1			63	15.40	86.6	0.77	4.30	13.00
1			80	11.65	89.3	1.12	3.70	14.80
1			100	6.52	90.9	1.75	3.00	16.80
1			125	2.01	93.5	2.67	1.80	18.80
1			160	-4.13	95.5	4.00	0.00	21.10
1			200	-9.08	96.5	5.76	0.00	22.80
10	4,591	4,593						
10			20	38.06	73.8	0.00	5.60	7.60
10			25	34.67	77.2	0.09	5.40	8.30
10			32	30.12	79.1	0.14	5.20	9.20
10			40	25.13	80.3	0.23	5.00	10.30
10			50	21.14	82.3	0.32	4.70	11.50
10			63	19.35	86.6	0.51	4.30	13.00
10			80	15.72	89.3	0.73	3.70	14.80
10			100	10.81	90.9	1.15	3.00	16.80
10			125	6.61	93.5	1.75	1.80	18.80
10			160	0.94	95.5	2.62	0.00	21.10
10			200	-3.41	96.5	3.77	0.00	22.80
11	4,510	4,514						
11			20	38.21	73.8	0.00	5.60	7.60
11			25	34.82	77.2	0.09	5.40	8.30
11			32	30.27	79.1	0.14	5.20	9.20
11			40	25.28	80.3	0.23	5.00	10.30
11			50	21.29	82.3	0.32	4.70	11.50
11			63	19.51	86.6	0.50	4.30	13.00
11			80	15.89	89.3	0.72	3.70	14.80
11			100	10.98	90.9	1.13	3.00	16.80
11			125	6.79	93.5	1.72	1.80	18.80
11			160	1.14	95.5	2.57	0.00	21.10
11			200	-3.19	96.5	3.70	0.00	22.80
12	4,333	4,336						
12			20	38.56	73.8	0.00	5.60	7.60
12			25	35.17	77.2	0.09	5.40	8.30
12			32	30.63	79.1	0.13	5.20	9.20
12			40	25.64	80.3	0.22	5.00	10.30
12			50	21.65	82.3	0.30	4.70	11.50
12			63	19.88	86.6	0.48	4.30	13.00
12			80	16.26	89.3	0.69	3.70	14.80
12			100	11.37	90.9	1.08	3.00	16.80
12			125	7.21	93.5	1.65	1.80	18.80
12			160	1.59	95.5	2.47	0.00	21.10
12			200	-2.70	96.5	3.56	0.00	22.80
13	3,966	3,969						
13			20	39.33	73.8	0.00	5.60	7.60
13			25	35.95	77.2	0.08	5.40	8.30
13			32	31.41	79.1	0.12	5.20	9.20
13			40	26.43	80.3	0.20	5.00	10.30
13			50	22.45	82.3	0.28	4.70	11.50
13			63	20.69	86.6	0.44	4.30	13.00
13			80	17.09	89.3	0.64	3.70	14.80
13			100	12.23	90.9	0.99	3.00	16.80
13			125	8.12	93.5	1.51	1.80	18.80
13			160	2.56	95.5	2.26	0.00	21.10
13			200	-1.63	96.5	3.25	0.00	22.80
14	4,779	4,782						
14			20	37.71	73.8	0.00	5.60	7.60
14			25	34.31	77.2	0.10	5.40	8.30
14			32	29.76	79.1	0.14	5.20	9.20
14			40	24.77	80.3	0.24	5.00	10.30
14			50	20.77	82.3	0.33	4.70	11.50
14			63	18.98	86.6	0.53	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			80	15.34	89.3	0.77	3.70	14.80
14			100	10.41	90.9	1.20	3.00	16.80
14			125	6.19	93.5	1.82	1.80	18.80
14			160	0.48	95.5	2.73	0.00	21.10
14			200	-3.91	96.5	3.92	0.00	22.80
15	3,774	3,777						
15			20	39.76	73.8	0.00	5.60	7.60
15			25	36.38	77.2	0.08	5.40	8.30
15			32	31.84	79.1	0.11	5.20	9.20
15			40	26.87	80.3	0.19	5.00	10.30
15			50	22.89	82.3	0.26	4.70	11.50
15			63	21.14	86.6	0.42	4.30	13.00
15			80	17.55	89.3	0.60	3.70	14.80
15			100	12.71	90.9	0.94	3.00	16.80
15			125	8.62	93.5	1.44	1.80	18.80
15			160	3.10	95.5	2.15	0.00	21.10
15			200	-1.04	96.5	3.10	0.00	22.80
16	3,523	3,526						
16			20	40.35	73.8	0.00	5.60	7.60
16			25	36.98	77.2	0.07	5.40	8.30
16			32	32.45	79.1	0.11	5.20	9.20
16			40	27.48	80.3	0.18	5.00	10.30
16			50	23.51	82.3	0.25	4.70	11.50
16			63	21.77	86.6	0.39	4.30	13.00
16			80	18.19	89.3	0.56	3.70	14.80
16			100	13.37	90.9	0.88	3.00	16.80
16			125	9.31	93.5	1.34	1.80	18.80
16			160	3.84	95.5	2.01	0.00	21.10
16			200	-0.24	96.5	2.89	0.00	22.80
17	3,644	3,649						
17			20	40.06	73.8	0.00	5.60	7.60
17			25	36.68	77.2	0.07	5.40	8.30
17			32	32.15	79.1	0.11	5.20	9.20
17			40	27.17	80.3	0.18	5.00	10.30
17			50	23.20	82.3	0.26	4.70	11.50
17			63	21.45	86.6	0.40	4.30	13.00
17			80	17.87	89.3	0.58	3.70	14.80
17			100	13.04	90.9	0.91	3.00	16.80
17			125	8.97	93.5	1.39	1.80	18.80
17			160	3.48	95.5	2.08	0.00	21.10
17			200	-0.64	96.5	2.99	0.00	22.80
18	4,140	4,145						
18			20	38.95	73.8	0.00	5.60	7.60
18			25	35.57	77.2	0.08	5.40	8.30
18			32	31.03	79.1	0.12	5.20	9.20
18			40	26.04	80.3	0.21	5.00	10.30
18			50	22.06	82.3	0.29	4.70	11.50
18			63	20.29	86.6	0.46	4.30	13.00
18			80	16.69	89.3	0.66	3.70	14.80
18			100	11.81	90.9	1.04	3.00	16.80
18			125	7.68	93.5	1.57	1.80	18.80
18			160	2.09	95.5	2.36	0.00	21.10
18			200	-2.15	96.5	3.40	0.00	22.80
19	3,246	3,250						
19			20	41.06	73.8	0.00	5.60	7.60
19			25	37.70	77.2	0.06	5.40	8.30
19			32	33.16	79.1	0.10	5.20	9.20
19			40	28.20	80.3	0.16	5.00	10.30
19			50	24.23	82.3	0.23	4.70	11.50
19			63	22.50	86.6	0.36	4.30	13.00
19			80	18.94	89.3	0.52	3.70	14.80
19			100	14.15	90.9	0.81	3.00	16.80
19			125	10.13	93.5	1.23	1.80	18.80
19			160	4.71	95.5	1.85	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			200	0.70	96.5	2.66	0.00	22.80
2	6,048	6,050						
2			20	35.66	73.8	0.00	5.60	7.60
2			25	32.24	77.2	0.12	5.40	8.30
2			32	27.68	79.1	0.18	5.20	9.20
2			40	22.66	80.3	0.30	5.00	10.30
2			50	18.64	82.3	0.42	4.70	11.50
2			63	16.80	86.6	0.67	4.30	13.00
2			80	13.10	89.3	0.97	3.70	14.80
2			100	8.05	90.9	1.51	3.00	16.80
2			125	3.67	93.5	2.30	1.80	18.80
2			160	-2.28	95.5	3.45	0.00	21.10
2			200	-7.00	96.5	4.96	0.00	22.80
20	2,876	2,881						
20			20	42.11	73.8	0.00	5.60	7.60
20			25	38.75	77.2	0.06	5.40	8.30
20			32	34.22	79.1	0.09	5.20	9.20
20			40	29.27	80.3	0.14	5.00	10.30
20			50	25.31	82.3	0.20	4.70	11.50
20			63	23.59	86.6	0.32	4.30	13.00
20			80	20.05	89.3	0.46	3.70	14.80
20			100	15.29	90.9	0.72	3.00	16.80
20			125	11.32	93.5	1.09	1.80	18.80
20			160	5.97	95.5	1.64	0.00	21.10
20			200	2.05	96.5	2.36	0.00	22.80
21	3,626	3,632						
21			20	40.10	73.8	0.00	5.60	7.60
21			25	36.73	77.2	0.07	5.40	8.30
21			32	32.19	79.1	0.11	5.20	9.20
21			40	27.22	80.3	0.18	5.00	10.30
21			50	23.24	82.3	0.25	4.70	11.50
21			63	21.50	86.6	0.40	4.30	13.00
21			80	17.92	89.3	0.58	3.70	14.80
21			100	13.09	90.9	0.91	3.00	16.80
21			125	9.02	93.5	1.38	1.80	18.80
21			160	3.53	95.5	2.07	0.00	21.10
21			200	-0.58	96.5	2.98	0.00	22.80
22	3,754	3,758						
22			20	39.80	73.8	0.00	5.60	7.60
22			25	36.43	77.2	0.08	5.40	8.30
22			32	31.89	79.1	0.11	5.20	9.20
22			40	26.91	80.3	0.19	5.00	10.30
22			50	22.94	82.3	0.26	4.70	11.50
22			63	21.19	86.6	0.41	4.30	13.00
22			80	17.60	89.3	0.60	3.70	14.80
22			100	12.76	90.9	0.94	3.00	16.80
22			125	8.67	93.5	1.43	1.80	18.80
22			160	3.16	95.5	2.14	0.00	21.10
22			200	-0.98	96.5	3.08	0.00	22.80
23	4,339	4,342						
23			20	38.55	73.8	0.00	5.60	7.60
23			25	35.16	77.2	0.09	5.40	8.30
23			32	30.62	79.1	0.13	5.20	9.20
23			40	25.63	80.3	0.22	5.00	10.30
23			50	21.64	82.3	0.30	4.70	11.50
23			63	19.87	86.6	0.48	4.30	13.00
23			80	16.25	89.3	0.69	3.70	14.80
23			100	11.36	90.9	1.09	3.00	16.80
23			125	7.20	93.5	1.65	1.80	18.80
23			160	1.57	95.5	2.48	0.00	21.10
23			200	-2.71	96.5	3.56	0.00	22.80
24	2,503	2,509						
24			20	43.31	73.8	0.00	5.60	7.60
24			25	39.96	77.2	0.05	5.40	8.30

To be continued on next page...

Project:
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wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			32	35.43	79.1	0.08	5.20	9.20
24			40	30.48	80.3	0.13	5.00	10.30
24			50	26.53	82.3	0.18	4.70	11.50
24			63	24.83	86.6	0.28	4.30	13.00
24			80	21.31	89.3	0.40	3.70	14.80
24			100	16.58	90.9	0.63	3.00	16.80
24			125	12.65	93.5	0.95	1.80	18.80
24			160	7.38	95.5	1.43	0.00	21.10
24			200	3.55	96.5	2.06	0.00	22.80
25	3,063	3,068						
25			20	41.56	73.8	0.00	5.60	7.60
25			25	38.20	77.2	0.06	5.40	8.30
25			32	33.67	79.1	0.09	5.20	9.20
25			40	28.71	80.3	0.15	5.00	10.30
25			50	24.75	82.3	0.21	4.70	11.50
25			63	23.03	86.6	0.34	4.30	13.00
25			80	19.47	89.3	0.49	3.70	14.80
25			100	14.70	90.9	0.77	3.00	16.80
25			125	10.70	93.5	1.17	1.80	18.80
25			160	5.32	95.5	1.75	0.00	21.10
25			200	1.35	96.5	2.52	0.00	22.80
26	3,030	3,037						
26			20	41.65	73.8	0.00	5.60	7.60
26			25	38.29	77.2	0.06	5.40	8.30
26			32	33.76	79.1	0.09	5.20	9.20
26			40	28.80	80.3	0.15	5.00	10.30
26			50	24.84	82.3	0.21	4.70	11.50
26			63	23.12	86.6	0.33	4.30	13.00
26			80	19.57	89.3	0.49	3.70	14.80
26			100	14.79	90.9	0.76	3.00	16.80
26			125	10.80	93.5	1.15	1.80	18.80
26			160	5.42	95.5	1.73	0.00	21.10
26			200	1.46	96.5	2.49	0.00	22.80
27	3,235	3,240						
27			20	41.09	73.8	0.00	5.60	7.60
27			25	37.72	77.2	0.06	5.40	8.30
27			32	33.19	79.1	0.10	5.20	9.20
27			40	28.23	80.3	0.16	5.00	10.30
27			50	24.26	82.3	0.23	4.70	11.50
27			63	22.53	86.6	0.36	4.30	13.00
27			80	18.97	89.3	0.52	3.70	14.80
27			100	14.18	90.9	0.81	3.00	16.80
27			125	10.16	93.5	1.23	1.80	18.80
27			160	4.74	95.5	1.85	0.00	21.10
27			200	0.73	96.5	2.66	0.00	22.80
28	3,741	3,745						
28			20	39.83	73.8	0.00	5.60	7.60
28			25	36.46	77.2	0.07	5.40	8.30
28			32	31.92	79.1	0.11	5.20	9.20
28			40	26.94	80.3	0.19	5.00	10.30
28			50	22.97	82.3	0.26	4.70	11.50
28			63	21.22	86.6	0.41	4.30	13.00
28			80	17.63	89.3	0.60	3.70	14.80
28			100	12.79	90.9	0.94	3.00	16.80
28			125	8.71	93.5	1.42	1.80	18.80
28			160	3.20	95.5	2.13	0.00	21.10
28			200	-0.94	96.5	3.07	0.00	22.80
29	4,304	4,308						
29			20	38.61	73.8	0.00	5.60	7.60
29			25	35.23	77.2	0.09	5.40	8.30
29			32	30.68	79.1	0.13	5.20	9.20
29			40	25.70	80.3	0.22	5.00	10.30
29			50	21.71	82.3	0.30	4.70	11.50
29			63	19.94	86.6	0.47	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			80	16.32	89.3	0.69	3.70	14.80
29			100	11.44	90.9	1.08	3.00	16.80
29			125	7.28	93.5	1.64	1.80	18.80
29			160	1.66	95.5	2.46	0.00	21.10
29			200	-2.62	96.5	3.53	0.00	22.80
3	6,449	6,451						
3			20	35.11	73.8	0.00	5.60	7.60
3			25	31.68	77.2	0.13	5.40	8.30
3			32	27.11	79.1	0.19	5.20	9.20
3			40	22.08	80.3	0.32	5.00	10.30
3			50	18.06	82.3	0.45	4.70	11.50
3			63	16.20	86.6	0.71	4.30	13.00
3			80	12.48	89.3	1.03	3.70	14.80
3			100	7.39	90.9	1.61	3.00	16.80
3			125	2.96	93.5	2.45	1.80	18.80
3			160	-3.07	95.5	3.68	0.00	21.10
3			200	-7.88	96.5	5.29	0.00	22.80
30	4,932	4,934						
30			20	37.44	73.8	0.00	5.60	7.60
30			25	34.04	77.2	0.10	5.40	8.30
30			32	29.49	79.1	0.15	5.20	9.20
30			40	24.49	80.3	0.25	5.00	10.30
30			50	20.49	82.3	0.35	4.70	11.50
30			63	18.69	86.6	0.54	4.30	13.00
30			80	15.05	89.3	0.79	3.70	14.80
30			100	10.10	90.9	1.23	3.00	16.80
30			125	5.86	93.5	1.88	1.80	18.80
30			160	0.12	95.5	2.81	0.00	21.10
30			200	-4.31	96.5	4.05	0.00	22.80
31	4,671	4,673						
31			20	37.91	73.8	0.00	5.60	7.60
31			25	34.51	77.2	0.09	5.40	8.30
31			32	29.97	79.1	0.14	5.20	9.20
31			40	24.97	80.3	0.23	5.00	10.30
31			50	20.98	82.3	0.33	4.70	11.50
31			63	19.19	86.6	0.51	4.30	13.00
31			80	15.56	89.3	0.75	3.70	14.80
31			100	10.64	90.9	1.17	3.00	16.80
31			125	6.43	93.5	1.78	1.80	18.80
31			160	0.74	95.5	2.66	0.00	21.10
31			200	-3.62	96.5	3.83	0.00	22.80
32	5,474	5,477						
32			20	36.53	73.8	0.00	5.60	7.60
32			25	33.12	77.2	0.11	5.40	8.30
32			32	28.57	79.1	0.16	5.20	9.20
32			40	23.56	80.3	0.27	5.00	10.30
32			50	19.55	82.3	0.38	4.70	11.50
32			63	17.73	86.6	0.60	4.30	13.00
32			80	14.05	89.3	0.88	3.70	14.80
32			100	9.06	90.9	1.37	3.00	16.80
32			125	4.75	93.5	2.08	1.80	18.80
32			160	-1.09	95.5	3.12	0.00	21.10
32			200	-5.66	96.5	4.49	0.00	22.80
33	6,113	6,116						
33			20	35.57	73.8	0.00	5.60	7.60
33			25	32.15	77.2	0.12	5.40	8.30
33			32	27.59	79.1	0.18	5.20	9.20
33			40	22.57	80.3	0.31	5.00	10.30
33			50	18.54	82.3	0.43	4.70	11.50
33			63	16.70	86.6	0.67	4.30	13.00
33			80	12.99	89.3	0.98	3.70	14.80
33			100	7.94	90.9	1.53	3.00	16.80
33			125	3.55	93.5	2.32	1.80	18.80
33			160	-2.41	95.5	3.49	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			200	-7.14	96.5	5.01	0.00	22.80
4	5,897	5,900						
4			20	35.88	73.8	0.00	5.60	7.60
4			25	32.47	77.2	0.12	5.40	8.30
4			32	27.91	79.1	0.18	5.20	9.20
4			40	22.89	80.3	0.29	5.00	10.30
4			50	18.87	82.3	0.41	4.70	11.50
4			63	17.03	86.6	0.65	4.30	13.00
4			80	13.34	89.3	0.94	3.70	14.80
4			100	8.31	90.9	1.47	3.00	16.80
4			125	3.94	93.5	2.24	1.80	18.80
4			160	-1.98	95.5	3.36	0.00	21.10
4			200	-6.65	96.5	4.84	0.00	22.80
5	5,590	5,592						
5			20	36.35	73.8	0.00	5.60	7.60
5			25	32.94	77.2	0.11	5.40	8.30
5			32	28.38	79.1	0.17	5.20	9.20
5			40	23.37	80.3	0.28	5.00	10.30
5			50	19.36	82.3	0.39	4.70	11.50
5			63	17.53	86.6	0.62	4.30	13.00
5			80	13.85	89.3	0.89	3.70	14.80
5			100	8.85	90.9	1.40	3.00	16.80
5			125	4.52	93.5	2.13	1.80	18.80
5			160	-1.34	95.5	3.19	0.00	21.10
5			200	-5.94	96.5	4.59	0.00	22.80
6	5,146	5,149						
6			20	37.07	73.8	0.00	5.60	7.60
6			25	33.66	77.2	0.10	5.40	8.30
6			32	29.11	79.1	0.15	5.20	9.20
6			40	24.11	80.3	0.26	5.00	10.30
6			50	20.11	82.3	0.36	4.70	11.50
6			63	18.30	86.6	0.57	4.30	13.00
6			80	14.64	89.3	0.82	3.70	14.80
6			100	9.68	90.9	1.29	3.00	16.80
6			125	5.41	93.5	1.96	1.80	18.80
6			160	-0.37	95.5	2.93	0.00	21.10
6			200	-4.86	96.5	4.22	0.00	22.80
7	4,970	4,972						
7			20	37.37	73.8	0.00	5.60	7.60
7			25	33.97	77.2	0.10	5.40	8.30
7			32	29.42	79.1	0.15	5.20	9.20
7			40	24.42	80.3	0.25	5.00	10.30
7			50	20.42	82.3	0.35	4.70	11.50
7			63	18.62	86.6	0.55	4.30	13.00
7			80	14.97	89.3	0.80	3.70	14.80
7			100	10.03	90.9	1.24	3.00	16.80
7			125	5.78	93.5	1.89	1.80	18.80
7			160	0.03	95.5	2.83	0.00	21.10
7			200	-4.41	96.5	4.08	0.00	22.80
8	5,234	5,237						
8			20	36.92	73.8	0.00	5.60	7.60
8			25	33.51	77.2	0.10	5.40	8.30
8			32	28.96	79.1	0.16	5.20	9.20
8			40	23.96	80.3	0.26	5.00	10.30
8			50	19.95	82.3	0.37	4.70	11.50
8			63	18.14	86.6	0.58	4.30	13.00
8			80	14.48	89.3	0.84	3.70	14.80
8			100	9.51	90.9	1.31	3.00	16.80
8			125	5.23	93.5	1.99	1.80	18.80
8			160	-0.57	95.5	2.98	0.00	21.10
8			200	-5.08	96.5	4.29	0.00	22.80
9	5,091	5,094						
9			20	37.16	73.8	0.00	5.60	7.60
9			25	33.76	77.2	0.10	5.40	8.30

To be continued on next page...

Project:
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Licensed user:
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DE-28211 Bremen
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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			32	29.21	79.1	0.15	5.20	9.20
9			40	24.20	80.3	0.25	5.00	10.30
9			50	20.20	82.3	0.36	4.70	11.50
9			63	18.40	86.6	0.56	4.30	13.00
9			80	14.74	89.3	0.81	3.70	14.80
9			100	9.79	90.9	1.27	3.00	16.80
9			125	5.52	93.5	1.94	1.80	18.80
9			160	-0.24	95.5	2.90	0.00	21.10
9			200	-4.72	96.5	4.18	0.00	22.80
Sum								
Sum			20	54.27				
Sum			25	50.89				
Sum			32	46.35				
Sum			40	41.37				
Sum			50	37.39				
Sum			63	35.64				
Sum			80	32.04				
Sum			100	27.19				
Sum			125	23.08				
Sum			160	17.55				
Sum			200	13.40				

Noise sensitive area: HH Leinolanlahti Noise sensitive point: Finnish normal frequency - User defined (297)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,883	4,888						
1			20	37.52	73.8	0.00	5.60	7.60
1			25	34.12	77.2	0.10	5.40	8.30
1			32	29.57	79.1	0.15	5.20	9.20
1			40	24.57	80.3	0.24	5.00	10.30
1			50	20.58	82.3	0.34	4.70	11.50
1			63	18.78	86.6	0.54	4.30	13.00
1			80	15.14	89.3	0.78	3.70	14.80
1			100	10.20	90.9	1.22	3.00	16.80
1			125	5.96	93.5	1.86	1.80	18.80
1			160	0.23	95.5	2.79	0.00	21.10
1			200	-4.19	96.5	4.01	0.00	22.80
10	6,285	6,289						
10			20	35.33	73.8	0.00	5.60	7.60
10			25	31.90	77.2	0.13	5.40	8.30
10			32	27.34	79.1	0.19	5.20	9.20
10			40	22.31	80.3	0.31	5.00	10.30
10			50	18.29	82.3	0.44	4.70	11.50
10			63	16.44	86.6	0.69	4.30	13.00
10			80	12.72	89.3	1.01	3.70	14.80
10			100	7.66	90.9	1.57	3.00	16.80
10			125	3.24	93.5	2.39	1.80	18.80
10			160	-2.76	95.5	3.58	0.00	21.10
10			200	-7.53	96.5	5.16	0.00	22.80
11	5,674	5,678						
11			20	36.22	73.8	0.00	5.60	7.60
11			25	32.80	77.2	0.11	5.40	8.30
11			32	28.25	79.1	0.17	5.20	9.20
11			40	23.23	80.3	0.28	5.00	10.30
11			50	19.22	82.3	0.40	4.70	11.50
11			63	17.39	86.6	0.62	4.30	13.00
11			80	13.71	89.3	0.91	3.70	14.80
11			100	8.70	90.9	1.42	3.00	16.80
11			125	4.36	93.5	2.16	1.80	18.80
11			160	-1.52	95.5	3.24	0.00	21.10
11			200	-6.14	96.5	4.66	0.00	22.80
12	6,784	6,787						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			20	34.67	73.8	0.00	5.60	7.60
12			25	31.23	77.2	0.14	5.40	8.30
12			32	26.66	79.1	0.20	5.20	9.20
12			40	21.63	80.3	0.34	5.00	10.30
12			50	17.59	82.3	0.48	4.70	11.50
12			63	15.72	86.6	0.75	4.30	13.00
12			80	11.98	89.3	1.09	3.70	14.80
12			100	6.87	90.9	1.70	3.00	16.80
12			125	2.39	93.5	2.58	1.80	18.80
12			160	-3.70	95.5	3.87	0.00	21.10
12			200	-8.60	96.5	5.57	0.00	22.80
13	5,993	5,998						
13			20	35.74	73.8	0.00	5.60	7.60
13			25	32.32	77.2	0.12	5.40	8.30
13			32	27.76	79.1	0.18	5.20	9.20
13			40	22.74	80.3	0.30	5.00	10.30
13			50	18.72	82.3	0.42	4.70	11.50
13			63	16.88	86.6	0.66	4.30	13.00
13			80	13.18	89.3	0.96	3.70	14.80
13			100	8.14	90.9	1.50	3.00	16.80
13			125	3.76	93.5	2.28	1.80	18.80
13			160	-2.18	95.5	3.42	0.00	21.10
13			200	-6.88	96.5	4.92	0.00	22.80
14	4,573	4,579						
14			20	38.08	73.8	0.00	5.60	7.60
14			25	34.69	77.2	0.09	5.40	8.30
14			32	30.15	79.1	0.14	5.20	9.20
14			40	25.16	80.3	0.23	5.00	10.30
14			50	21.16	82.3	0.32	4.70	11.50
14			63	19.38	86.6	0.50	4.30	13.00
14			80	15.75	89.3	0.73	3.70	14.80
14			100	10.84	90.9	1.14	3.00	16.80
14			125	6.64	93.5	1.74	1.80	18.80
14			160	0.97	95.5	2.61	0.00	21.10
14			200	-3.37	96.5	3.75	0.00	22.80
15	6,551	6,555						
15			20	34.97	73.8	0.00	5.60	7.60
15			25	31.54	77.2	0.13	5.40	8.30
15			32	26.97	79.1	0.20	5.20	9.20
15			40	21.94	80.3	0.33	5.00	10.30
15			50	17.91	82.3	0.46	4.70	11.50
15			63	16.05	86.6	0.72	4.30	13.00
15			80	12.32	89.3	1.05	3.70	14.80
15			100	7.23	90.9	1.64	3.00	16.80
15			125	2.78	93.5	2.49	1.80	18.80
15			160	-3.27	95.5	3.74	0.00	21.10
15			200	-8.11	96.5	5.37	0.00	22.80
16	5,761	5,766						
16			20	36.08	73.8	0.00	5.60	7.60
16			25	32.67	77.2	0.12	5.40	8.30
16			32	28.11	79.1	0.17	5.20	9.20
16			40	23.09	80.3	0.29	5.00	10.30
16			50	19.08	82.3	0.40	4.70	11.50
16			63	17.25	86.6	0.63	4.30	13.00
16			80	13.56	89.3	0.92	3.70	14.80
16			100	8.54	90.9	1.44	3.00	16.80
16			125	4.19	93.5	2.19	1.80	18.80
16			160	-1.70	95.5	3.29	0.00	21.10
16			200	-6.34	96.5	4.73	0.00	22.80
17	5,105	5,111						
17			20	37.13	73.8	0.00	5.60	7.60
17			25	33.73	77.2	0.10	5.40	8.30
17			32	29.18	79.1	0.15	5.20	9.20
17			40	24.17	80.3	0.26	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			50	20.17	82.3	0.36	4.70	11.50
17			63	18.37	86.6	0.56	4.30	13.00
17			80	14.71	89.3	0.82	3.70	14.80
17			100	9.75	90.9	1.28	3.00	16.80
17			125	5.49	93.5	1.94	1.80	18.80
17			160	-0.28	95.5	2.91	0.00	21.10
17			200	-4.76	96.5	4.19	0.00	22.80
18	4,771	4,777						
18			20	37.72	73.8	0.00	5.60	7.60
18			25	34.32	77.2	0.10	5.40	8.30
18			32	29.77	79.1	0.14	5.20	9.20
18			40	24.78	80.3	0.24	5.00	10.30
18			50	20.78	82.3	0.33	4.70	11.50
18			63	18.99	86.6	0.53	4.30	13.00
18			80	15.35	89.3	0.76	3.70	14.80
18			100	10.42	90.9	1.19	3.00	16.80
18			125	6.20	93.5	1.82	1.80	18.80
18			160	0.49	95.5	2.72	0.00	21.10
18			200	-3.90	96.5	3.92	0.00	22.80
19	6,534	6,538						
19			20	34.99	73.8	0.00	5.60	7.60
19			25	31.56	77.2	0.13	5.40	8.30
19			32	27.00	79.1	0.20	5.20	9.20
19			40	21.96	80.3	0.33	5.00	10.30
19			50	17.93	82.3	0.46	4.70	11.50
19			63	16.07	86.6	0.72	4.30	13.00
19			80	12.35	89.3	1.05	3.70	14.80
19			100	7.26	90.9	1.63	3.00	16.80
19			125	2.81	93.5	2.48	1.80	18.80
19			160	-3.23	95.5	3.73	0.00	21.10
19			200	-8.07	96.5	5.36	0.00	22.80
2	5,153	5,157						
2			20	37.05	73.8	0.00	5.60	7.60
2			25	33.65	77.2	0.10	5.40	8.30
2			32	29.10	79.1	0.15	5.20	9.20
2			40	24.09	80.3	0.26	5.00	10.30
2			50	20.09	82.3	0.36	4.70	11.50
2			63	18.28	86.6	0.57	4.30	13.00
2			80	14.63	89.3	0.83	3.70	14.80
2			100	9.66	90.9	1.29	3.00	16.80
2			125	5.39	93.5	1.96	1.80	18.80
2			160	-0.39	95.5	2.94	0.00	21.10
2			200	-4.88	96.5	4.23	0.00	22.80
20	6,129	6,133						
20			20	35.55	73.8	0.00	5.60	7.60
20			25	32.12	77.2	0.12	5.40	8.30
20			32	27.56	79.1	0.18	5.20	9.20
20			40	22.54	80.3	0.31	5.00	10.30
20			50	18.52	82.3	0.43	4.70	11.50
20			63	16.67	86.6	0.67	4.30	13.00
20			80	12.97	89.3	0.98	3.70	14.80
20			100	7.91	90.9	1.53	3.00	16.80
20			125	3.52	93.5	2.33	1.80	18.80
20			160	-2.45	95.5	3.50	0.00	21.10
20			200	-7.18	96.5	5.03	0.00	22.80
21	4,623	4,631						
21			20	37.99	73.8	0.00	5.60	7.60
21			25	34.59	77.2	0.09	5.40	8.30
21			32	30.05	79.1	0.14	5.20	9.20
21			40	25.06	80.3	0.23	5.00	10.30
21			50	21.06	82.3	0.32	4.70	11.50
21			63	19.28	86.6	0.51	4.30	13.00
21			80	15.65	89.3	0.74	3.70	14.80
21			100	10.73	90.9	1.16	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			125	6.53	93.5	1.76	1.80	18.80
21			160	0.85	95.5	2.64	0.00	21.10
21			200	-3.51	96.5	3.80	0.00	22.80
22	4,165	4,172						
22			20	38.89	73.8	0.00	5.60	7.60
22			25	35.51	77.2	0.08	5.40	8.30
22			32	30.97	79.1	0.13	5.20	9.20
22			40	25.99	80.3	0.21	5.00	10.30
22			50	22.00	82.3	0.29	4.70	11.50
22			63	20.23	86.6	0.46	4.30	13.00
22			80	16.63	89.3	0.67	3.70	14.80
22			100	11.75	90.9	1.04	3.00	16.80
22			125	7.61	93.5	1.59	1.80	18.80
22			160	2.02	95.5	2.38	0.00	21.10
22			200	-2.23	96.5	3.42	0.00	22.80
23	3,528	3,536						
23			20	40.33	73.8	0.00	5.60	7.60
23			25	36.96	77.2	0.07	5.40	8.30
23			32	32.42	79.1	0.11	5.20	9.20
23			40	27.45	80.3	0.18	5.00	10.30
23			50	23.48	82.3	0.25	4.70	11.50
23			63	21.74	86.6	0.39	4.30	13.00
23			80	18.17	89.3	0.57	3.70	14.80
23			100	13.35	90.9	0.88	3.00	16.80
23			125	9.29	93.5	1.34	1.80	18.80
23			160	3.82	95.5	2.02	0.00	21.10
23			200	-0.27	96.5	2.90	0.00	22.80
24	5,803	5,808						
24			20	36.02	73.8	0.00	5.60	7.60
24			25	32.60	77.2	0.12	5.40	8.30
24			32	28.05	79.1	0.17	5.20	9.20
24			40	23.03	80.3	0.29	5.00	10.30
24			50	19.01	82.3	0.41	4.70	11.50
24			63	17.18	86.6	0.64	4.30	13.00
24			80	13.49	89.3	0.93	3.70	14.80
24			100	8.47	90.9	1.45	3.00	16.80
24			125	4.11	93.5	2.21	1.80	18.80
24			160	-1.79	95.5	3.31	0.00	21.10
24			200	-6.44	96.5	4.76	0.00	22.80
25	5,315	5,321						
25			20	36.78	73.8	0.00	5.60	7.60
25			25	33.37	77.2	0.11	5.40	8.30
25			32	28.82	79.1	0.16	5.20	9.20
25			40	23.81	80.3	0.27	5.00	10.30
25			50	19.81	82.3	0.37	4.70	11.50
25			63	18.00	86.6	0.59	4.30	13.00
25			80	14.33	89.3	0.85	3.70	14.80
25			100	9.35	90.9	1.33	3.00	16.80
25			125	5.06	93.5	2.02	1.80	18.80
25			160	-0.75	95.5	3.03	0.00	21.10
25			200	-5.28	96.5	4.36	0.00	22.80
26	4,957	4,964						
26			20	37.38	73.8	0.00	5.60	7.60
26			25	33.98	77.2	0.10	5.40	8.30
26			32	29.44	79.1	0.15	5.20	9.20
26			40	24.44	80.3	0.25	5.00	10.30
26			50	20.44	82.3	0.35	4.70	11.50
26			63	18.64	86.6	0.55	4.30	13.00
26			80	14.99	89.3	0.79	3.70	14.80
26			100	10.04	90.9	1.24	3.00	16.80
26			125	5.80	93.5	1.89	1.80	18.80
26			160	0.05	95.5	2.83	0.00	21.10
26			200	-4.39	96.5	4.07	0.00	22.80
27	4,548	4,555						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			20	38.13	73.8	0.00	5.60	7.60
27			25	34.74	77.2	0.09	5.40	8.30
27			32	30.19	79.1	0.14	5.20	9.20
27			40	25.20	80.3	0.23	5.00	10.30
27			50	21.21	82.3	0.32	4.70	11.50
27			63	19.43	86.6	0.50	4.30	13.00
27			80	15.80	89.3	0.73	3.70	14.80
27			100	10.89	90.9	1.14	3.00	16.80
27			125	6.70	93.5	1.73	1.80	18.80
27			160	1.04	95.5	2.60	0.00	21.10
27			200	-3.30	96.5	3.73	0.00	22.80
28	3,939	3,946						
28			20	39.38	73.8	0.00	5.60	7.60
28			25	36.00	77.2	0.08	5.40	8.30
28			32	31.46	79.1	0.12	5.20	9.20
28			40	26.48	80.3	0.20	5.00	10.30
28			50	22.50	82.3	0.28	4.70	11.50
28			63	20.74	86.6	0.43	4.30	13.00
28			80	17.15	89.3	0.63	3.70	14.80
28			100	12.29	90.9	0.99	3.00	16.80
28			125	8.18	93.5	1.50	1.80	18.80
28			160	2.63	95.5	2.25	0.00	21.10
28			200	-1.56	96.5	3.24	0.00	22.80
29	3,317	3,326						
29			20	40.86	73.8	0.00	5.60	7.60
29			25	37.49	77.2	0.07	5.40	8.30
29			32	32.96	79.1	0.10	5.20	9.20
29			40	28.00	80.3	0.17	5.00	10.30
29			50	24.03	82.3	0.23	4.70	11.50
29			63	22.30	86.6	0.37	4.30	13.00
29			80	18.73	89.3	0.53	3.70	14.80
29			100	13.93	90.9	0.83	3.00	16.80
29			125	9.90	93.5	1.26	1.80	18.80
29			160	4.47	95.5	1.90	0.00	21.10
29			200	0.43	96.5	2.73	0.00	22.80
3	4,704	4,710						
3			20	37.84	73.8	0.00	5.60	7.60
3			25	34.45	77.2	0.09	5.40	8.30
3			32	29.90	79.1	0.14	5.20	9.20
3			40	24.90	80.3	0.24	5.00	10.30
3			50	20.91	82.3	0.33	4.70	11.50
3			63	19.12	86.6	0.52	4.30	13.00
3			80	15.49	89.3	0.75	3.70	14.80
3			100	10.56	90.9	1.18	3.00	16.80
3			125	6.35	93.5	1.79	1.80	18.80
3			160	0.66	95.5	2.68	0.00	21.10
3			200	-3.72	96.5	3.86	0.00	22.80
30	2,743	2,752						
30			20	42.51	73.8	0.00	5.60	7.60
30			25	39.15	77.2	0.06	5.40	8.30
30			32	34.62	79.1	0.08	5.20	9.20
30			40	29.67	80.3	0.14	5.00	10.30
30			50	25.71	82.3	0.19	4.70	11.50
30			63	24.00	86.6	0.30	4.30	13.00
30			80	20.47	89.3	0.44	3.70	14.80
30			100	15.72	90.9	0.69	3.00	16.80
30			125	11.76	93.5	1.05	1.80	18.80
30			160	6.44	95.5	1.57	0.00	21.10
30			200	2.55	96.5	2.26	0.00	22.80
31	2,938	2,947						
31			20	41.91	73.8	0.00	5.60	7.60
31			25	38.55	77.2	0.06	5.40	8.30
31			32	34.03	79.1	0.09	5.20	9.20
31			40	29.07	80.3	0.15	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			50	25.11	82.3	0.21	4.70	11.50
31			63	23.39	86.6	0.32	4.30	13.00
31			80	19.84	89.3	0.47	3.70	14.80
31			100	15.08	90.9	0.74	3.00	16.80
31			125	11.09	93.5	1.12	1.80	18.80
31			160	5.73	95.5	1.68	0.00	21.10
31			200	1.80	96.5	2.42	0.00	22.80
32	2,142	2,153						
32			20	44.64	73.8	0.00	5.60	7.60
32			25	41.30	77.2	0.04	5.40	8.30
32			32	36.77	79.1	0.06	5.20	9.20
32			40	31.83	80.3	0.11	5.00	10.30
32			50	27.89	82.3	0.15	4.70	11.50
32			63	26.20	86.6	0.24	4.30	13.00
32			80	22.69	89.3	0.34	3.70	14.80
32			100	18.00	90.9	0.54	3.00	16.80
32			125	14.12	93.5	0.82	1.80	18.80
32			160	8.91	95.5	1.23	0.00	21.10
32			200	5.17	96.5	1.77	0.00	22.80
33	1,574	1,593						
33			20	47.25	73.8	0.00	5.60	7.60
33			25	43.92	77.2	0.03	5.40	8.30
33			32	39.41	79.1	0.05	5.20	9.20
33			40	34.47	80.3	0.08	5.00	10.30
33			50	30.54	82.3	0.11	4.70	11.50
33			63	28.88	86.6	0.18	4.30	13.00
33			80	25.40	89.3	0.25	3.70	14.80
33			100	20.76	90.9	0.40	3.00	16.80
33			125	16.95	93.5	0.61	1.80	18.80
33			160	11.85	95.5	0.91	0.00	21.10
33			200	8.25	96.5	1.31	0.00	22.80
4	4,586	4,592						
4			20	38.06	73.8	0.00	5.60	7.60
4			25	34.67	77.2	0.09	5.40	8.30
4			32	30.12	79.1	0.14	5.20	9.20
4			40	25.13	80.3	0.23	5.00	10.30
4			50	21.14	82.3	0.32	4.70	11.50
4			63	19.35	86.6	0.51	4.30	13.00
4			80	15.73	89.3	0.73	3.70	14.80
4			100	10.81	90.9	1.15	3.00	16.80
4			125	6.61	93.5	1.74	1.80	18.80
4			160	0.94	95.5	2.62	0.00	21.10
4			200	-3.41	96.5	3.77	0.00	22.80
5	4,160	4,166						
5			20	38.90	73.8	0.00	5.60	7.60
5			25	35.52	77.2	0.08	5.40	8.30
5			32	30.98	79.1	0.12	5.20	9.20
5			40	26.00	80.3	0.21	5.00	10.30
5			50	22.01	82.3	0.29	4.70	11.50
5			63	20.25	86.6	0.46	4.30	13.00
5			80	16.64	89.3	0.67	3.70	14.80
5			100	11.76	90.9	1.04	3.00	16.80
5			125	7.62	93.5	1.58	1.80	18.80
5			160	2.03	95.5	2.37	0.00	21.10
5			200	-2.21	96.5	3.42	0.00	22.80
6	5,817	5,822						
6			20	36.00	73.8	0.00	5.60	7.60
6			25	32.58	77.2	0.12	5.40	8.30
6			32	28.02	79.1	0.17	5.20	9.20
6			40	23.01	80.3	0.29	5.00	10.30
6			50	18.99	82.3	0.41	4.70	11.50
6			63	17.16	86.6	0.64	4.30	13.00
6			80	13.47	89.3	0.93	3.70	14.80
6			100	8.44	90.9	1.46	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			125	4.09	93.5	2.21	1.80	18.80
6			160	-1.82	95.5	3.32	0.00	21.10
6			200	-6.47	96.5	4.77	0.00	22.80
7	5,193	5,198						
7			20	36.98	73.8	0.00	5.60	7.60
7			25	33.58	77.2	0.10	5.40	8.30
7			32	29.03	79.1	0.16	5.20	9.20
7			40	24.02	80.3	0.26	5.00	10.30
7			50	20.02	82.3	0.36	4.70	11.50
7			63	18.21	86.6	0.57	4.30	13.00
7			80	14.55	89.3	0.83	3.70	14.80
7			100	9.58	90.9	1.30	3.00	16.80
7			125	5.31	93.5	1.98	1.80	18.80
7			160	-0.48	95.5	2.96	0.00	21.10
7			200	-4.98	96.5	4.26	0.00	22.80
8	4,663	4,668						
8			20	37.92	73.8	0.00	5.60	7.60
8			25	34.52	77.2	0.09	5.40	8.30
8			32	29.98	79.1	0.14	5.20	9.20
8			40	24.98	80.3	0.23	5.00	10.30
8			50	20.99	82.3	0.33	4.70	11.50
8			63	19.20	86.6	0.51	4.30	13.00
8			80	15.57	89.3	0.75	3.70	14.80
8			100	10.65	90.9	1.17	3.00	16.80
8			125	6.44	93.5	1.77	1.80	18.80
8			160	0.76	95.5	2.66	0.00	21.10
8			200	-3.61	96.5	3.83	0.00	22.80
9	4,053	4,059						
9			20	39.13	73.8	0.00	5.60	7.60
9			25	35.75	77.2	0.08	5.40	8.30
9			32	31.21	79.1	0.12	5.20	9.20
9			40	26.23	80.3	0.20	5.00	10.30
9			50	22.25	82.3	0.28	4.70	11.50
9			63	20.49	86.6	0.45	4.30	13.00
9			80	16.88	89.3	0.65	3.70	14.80
9			100	12.02	90.9	1.01	3.00	16.80
9			125	7.89	93.5	1.54	1.80	18.80
9			160	2.32	95.5	2.31	0.00	21.10
9			200	-1.90	96.5	3.33	0.00	22.80
Sum								
Sum			20	54.50				
Sum			25	51.13				
Sum			32	46.59				
Sum			40	41.62				
Sum			50	37.65				
Sum			63	35.90				
Sum			80	32.32				
Sum			100	27.50				
Sum			125	23.45				
Sum			160	18.00				
Sum			200	13.97				

Noise sensitive area: HH Mustalahti 1 Noise sensitive point: Finnish normal frequency - User defined (280)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,903	6,906						
1			20	34.52	73.8	0.00	5.60	7.60
1			25	31.08	77.2	0.14	5.40	8.30
1			32	26.51	79.1	0.21	5.20	9.20
1			40	21.47	80.3	0.35	5.00	10.30
1			50	17.43	82.3	0.48	4.70	11.50
1			63	15.56	86.6	0.76	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			80	11.81	89.3	1.10	3.70	14.80
1			100	6.69	90.9	1.73	3.00	16.80
1			125	2.19	93.5	2.62	1.80	18.80
1			160	-3.92	95.5	3.94	0.00	21.10
1			200	-8.85	96.5	5.66	0.00	22.80
10	4,154	4,159						
10			20	38.92	73.8	0.00	5.60	7.60
10			25	35.54	77.2	0.08	5.40	8.30
10			32	31.00	79.1	0.12	5.20	9.20
10			40	26.01	80.3	0.21	5.00	10.30
10			50	22.03	82.3	0.29	4.70	11.50
10			63	20.26	86.6	0.46	4.30	13.00
10			80	16.66	89.3	0.67	3.70	14.80
10			100	11.78	90.9	1.04	3.00	16.80
10			125	7.64	93.5	1.58	1.80	18.80
10			160	2.05	95.5	2.37	0.00	21.10
10			200	-2.19	96.5	3.41	0.00	22.80
11	4,255	4,260						
11			20	38.71	73.8	0.00	5.60	7.60
11			25	35.33	77.2	0.09	5.40	8.30
11			32	30.78	79.1	0.13	5.20	9.20
11			40	25.80	80.3	0.21	5.00	10.30
11			50	21.81	82.3	0.30	4.70	11.50
11			63	20.04	86.6	0.47	4.30	13.00
11			80	16.43	89.3	0.68	3.70	14.80
11			100	11.55	90.9	1.06	3.00	16.80
11			125	7.39	93.5	1.62	1.80	18.80
11			160	1.78	95.5	2.43	0.00	21.10
11			200	-2.48	96.5	3.49	0.00	22.80
12	3,757	3,762						
12			20	39.79	73.8	0.00	5.60	7.60
12			25	36.42	77.2	0.08	5.40	8.30
12			32	31.88	79.1	0.11	5.20	9.20
12			40	26.90	80.3	0.19	5.00	10.30
12			50	22.93	82.3	0.26	4.70	11.50
12			63	21.18	86.6	0.41	4.30	13.00
12			80	17.59	89.3	0.60	3.70	14.80
12			100	12.75	90.9	0.94	3.00	16.80
12			125	8.66	93.5	1.43	1.80	18.80
12			160	3.15	95.5	2.14	0.00	21.10
12			200	-0.99	96.5	3.09	0.00	22.80
13	3,657	3,663						
13			20	40.02	73.8	0.00	5.60	7.60
13			25	36.65	77.2	0.07	5.40	8.30
13			32	32.11	79.1	0.11	5.20	9.20
13			40	27.14	80.3	0.18	5.00	10.30
13			50	23.17	82.3	0.26	4.70	11.50
13			63	21.42	86.6	0.40	4.30	13.00
13			80	17.84	89.3	0.59	3.70	14.80
13			100	13.01	90.9	0.92	3.00	16.80
13			125	8.93	93.5	1.39	1.80	18.80
13			160	3.44	95.5	2.09	0.00	21.10
13			200	-0.68	96.5	3.00	0.00	22.80
14	4,817	4,821						
14			20	37.64	73.8	0.00	5.60	7.60
14			25	34.24	77.2	0.10	5.40	8.30
14			32	29.69	79.1	0.14	5.20	9.20
14			40	24.70	80.3	0.24	5.00	10.30
14			50	20.70	82.3	0.34	4.70	11.50
14			63	18.91	86.6	0.53	4.30	13.00
14			80	15.27	89.3	0.77	3.70	14.80
14			100	10.33	90.9	1.21	3.00	16.80
14			125	6.11	93.5	1.83	1.80	18.80
14			160	0.39	95.5	2.75	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			200	-4.02	96.5	3.95	0.00	22.80
15	3,291	3,297						
15			20	40.94	73.8	0.00	5.60	7.60
15			25	37.57	77.2	0.07	5.40	8.30
15			32	33.04	79.1	0.10	5.20	9.20
15			40	28.07	80.3	0.16	5.00	10.30
15			50	24.11	82.3	0.23	4.70	11.50
15			63	22.37	86.6	0.36	4.30	13.00
15			80	18.81	89.3	0.53	3.70	14.80
15			100	14.01	90.9	0.82	3.00	16.80
15			125	9.98	93.5	1.25	1.80	18.80
15			160	4.56	95.5	1.88	0.00	21.10
15			200	0.53	96.5	2.70	0.00	22.80
16	3,362	3,368						
16			20	40.75	73.8	0.00	5.60	7.60
16			25	37.39	77.2	0.07	5.40	8.30
16			32	32.85	79.1	0.10	5.20	9.20
16			40	27.88	80.3	0.17	5.00	10.30
16			50	23.92	82.3	0.24	4.70	11.50
16			63	22.18	86.6	0.37	4.30	13.00
16			80	18.61	89.3	0.54	3.70	14.80
16			100	13.81	90.9	0.84	3.00	16.80
16			125	9.77	93.5	1.28	1.80	18.80
16			160	4.33	95.5	1.92	0.00	21.10
16			200	0.29	96.5	2.76	0.00	22.80
17	3,718	3,725						
17			20	39.88	73.8	0.00	5.60	7.60
17			25	36.50	77.2	0.07	5.40	8.30
17			32	31.97	79.1	0.11	5.20	9.20
17			40	26.99	80.3	0.19	5.00	10.30
17			50	23.02	82.3	0.26	4.70	11.50
17			63	21.27	86.6	0.41	4.30	13.00
17			80	17.68	89.3	0.60	3.70	14.80
17			100	12.85	90.9	0.93	3.00	16.80
17			125	8.76	93.5	1.42	1.80	18.80
17			160	3.25	95.5	2.12	0.00	21.10
17			200	-0.88	96.5	3.05	0.00	22.80
18	4,222	4,229						
18			20	38.78	73.8	0.00	5.60	7.60
18			25	35.39	77.2	0.08	5.40	8.30
18			32	30.85	79.1	0.13	5.20	9.20
18			40	25.86	80.3	0.21	5.00	10.30
18			50	21.88	82.3	0.30	4.70	11.50
18			63	20.11	86.6	0.47	4.30	13.00
18			80	16.50	89.3	0.68	3.70	14.80
18			100	11.62	90.9	1.06	3.00	16.80
18			125	7.47	93.5	1.61	1.80	18.80
18			160	1.87	95.5	2.41	0.00	21.10
18			200	-2.39	96.5	3.47	0.00	22.80
19	2,820	2,827						
19			20	42.27	73.8	0.00	5.60	7.60
19			25	38.92	77.2	0.06	5.40	8.30
19			32	34.39	79.1	0.08	5.20	9.20
19			40	29.43	80.3	0.14	5.00	10.30
19			50	25.48	82.3	0.20	4.70	11.50
19			63	23.76	86.6	0.31	4.30	13.00
19			80	20.22	89.3	0.45	3.70	14.80
19			100	15.47	90.9	0.71	3.00	16.80
19			125	11.50	93.5	1.07	1.80	18.80
19			160	6.16	95.5	1.61	0.00	21.10
19			200	2.26	96.5	2.32	0.00	22.80
2	5,868	5,871						
2			20	35.93	73.8	0.00	5.60	7.60
2			25	32.51	77.2	0.12	5.40	8.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			32	27.95	79.1	0.18	5.20	9.20
2			40	22.93	80.3	0.29	5.00	10.30
2			50	18.91	82.3	0.41	4.70	11.50
2			63	17.08	86.6	0.65	4.30	13.00
2			80	13.39	89.3	0.94	3.70	14.80
2			100	8.36	90.9	1.47	3.00	16.80
2			125	3.99	93.5	2.23	1.80	18.80
2			160	-1.92	95.5	3.35	0.00	21.10
2			200	-6.59	96.5	4.81	0.00	22.80
20	2,704	2,711						
20			20	42.64	73.8	0.00	5.60	7.60
20			25	39.28	77.2	0.05	5.40	8.30
20			32	34.76	79.1	0.08	5.20	9.20
20			40	29.80	80.3	0.14	5.00	10.30
20			50	25.85	82.3	0.19	4.70	11.50
20			63	24.14	86.6	0.30	4.30	13.00
20			80	20.60	89.3	0.43	3.70	14.80
20			100	15.86	90.9	0.68	3.00	16.80
20			125	11.91	93.5	1.03	1.80	18.80
20			160	6.59	95.5	1.55	0.00	21.10
20			200	2.71	96.5	2.22	0.00	22.80
21	3,914	3,922						
21			20	39.43	73.8	0.00	5.60	7.60
21			25	36.05	77.2	0.08	5.40	8.30
21			32	31.51	79.1	0.12	5.20	9.20
21			40	26.53	80.3	0.20	5.00	10.30
21			50	22.55	82.3	0.27	4.70	11.50
21			63	20.80	86.6	0.43	4.30	13.00
21			80	17.20	89.3	0.63	3.70	14.80
21			100	12.35	90.9	0.98	3.00	16.80
21			125	8.24	93.5	1.49	1.80	18.80
21			160	2.69	95.5	2.24	0.00	21.10
21			200	-1.49	96.5	3.22	0.00	22.80
22	4,219	4,225						
22			20	38.78	73.8	0.00	5.60	7.60
22			25	35.40	77.2	0.08	5.40	8.30
22			32	30.86	79.1	0.13	5.20	9.20
22			40	25.87	80.3	0.21	5.00	10.30
22			50	21.89	82.3	0.30	4.70	11.50
22			63	20.12	86.6	0.46	4.30	13.00
22			80	16.51	89.3	0.68	3.70	14.80
22			100	11.63	90.9	1.06	3.00	16.80
22			125	7.48	93.5	1.61	1.80	18.80
22			160	1.87	95.5	2.41	0.00	21.10
22			200	-2.38	96.5	3.46	0.00	22.80
23	4,855	4,859						
23			20	37.57	73.8	0.00	5.60	7.60
23			25	34.17	77.2	0.10	5.40	8.30
23			32	29.62	79.1	0.15	5.20	9.20
23			40	24.63	80.3	0.24	5.00	10.30
23			50	20.63	82.3	0.34	4.70	11.50
23			63	18.83	86.6	0.53	4.30	13.00
23			80	15.19	89.3	0.78	3.70	14.80
23			100	10.25	90.9	1.21	3.00	16.80
23			125	6.02	93.5	1.85	1.80	18.80
23			160	0.30	95.5	2.77	0.00	21.10
23			200	-4.12	96.5	3.98	0.00	22.80
24	2,652	2,661						
24			20	42.80	73.8	0.00	5.60	7.60
24			25	39.44	77.2	0.05	5.40	8.30
24			32	34.92	79.1	0.08	5.20	9.20
24			40	29.97	80.3	0.13	5.00	10.30
24			50	26.01	82.3	0.19	4.70	11.50
24			63	24.31	86.6	0.29	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			80	20.77	89.3	0.43	3.70	14.80
24			100	16.03	90.9	0.67	3.00	16.80
24			125	12.09	93.5	1.01	1.80	18.80
24			160	6.78	95.5	1.52	0.00	21.10
24			200	2.92	96.5	2.18	0.00	22.80
25	3,233	3,240						
25			20	41.09	73.8	0.00	5.60	7.60
25			25	37.72	77.2	0.06	5.40	8.30
25			32	33.19	79.1	0.10	5.20	9.20
25			40	28.23	80.3	0.16	5.00	10.30
25			50	24.26	82.3	0.23	4.70	11.50
25			63	22.53	86.6	0.36	4.30	13.00
25			80	18.97	89.3	0.52	3.70	14.80
25			100	14.18	90.9	0.81	3.00	16.80
25			125	10.16	93.5	1.23	1.80	18.80
25			160	4.74	95.5	1.85	0.00	21.10
25			200	0.73	96.5	2.66	0.00	22.80
26	3,421	3,430						
26			20	40.59	73.8	0.00	5.60	7.60
26			25	37.23	77.2	0.07	5.40	8.30
26			32	32.69	79.1	0.10	5.20	9.20
26			40	27.72	80.3	0.17	5.00	10.30
26			50	23.75	82.3	0.24	4.70	11.50
26			63	22.02	86.6	0.38	4.30	13.00
26			80	18.45	89.3	0.55	3.70	14.80
26			100	13.64	90.9	0.86	3.00	16.80
26			125	9.59	93.5	1.30	1.80	18.80
26			160	4.14	95.5	1.96	0.00	21.10
26			200	0.08	96.5	2.81	0.00	22.80
27	3,778	3,785						
27			20	39.74	73.8	0.00	5.60	7.60
27			25	36.36	77.2	0.08	5.40	8.30
27			32	31.83	79.1	0.11	5.20	9.20
27			40	26.85	80.3	0.19	5.00	10.30
27			50	22.87	82.3	0.26	4.70	11.50
27			63	21.12	86.6	0.42	4.30	13.00
27			80	17.53	89.3	0.61	3.70	14.80
27			100	12.69	90.9	0.95	3.00	16.80
27			125	8.60	93.5	1.44	1.80	18.80
27			160	3.08	95.5	2.16	0.00	21.10
27			200	-1.06	96.5	3.10	0.00	22.80
28	4,379	4,384						
28			20	38.46	73.8	0.00	5.60	7.60
28			25	35.07	77.2	0.09	5.40	8.30
28			32	30.53	79.1	0.13	5.20	9.20
28			40	25.54	80.3	0.22	5.00	10.30
28			50	21.55	82.3	0.31	4.70	11.50
28			63	19.78	86.6	0.48	4.30	13.00
28			80	16.16	89.3	0.70	3.70	14.80
28			100	11.27	90.9	1.10	3.00	16.80
28			125	7.10	93.5	1.67	1.80	18.80
28			160	1.46	95.5	2.50	0.00	21.10
28			200	-2.83	96.5	3.60	0.00	22.80
29	5,013	5,018						
29			20	37.29	73.8	0.00	5.60	7.60
29			25	33.89	77.2	0.10	5.40	8.30
29			32	29.34	79.1	0.15	5.20	9.20
29			40	24.34	80.3	0.25	5.00	10.30
29			50	20.34	82.3	0.35	4.70	11.50
29			63	18.54	86.6	0.55	4.30	13.00
29			80	14.89	89.3	0.80	3.70	14.80
29			100	9.94	90.9	1.25	3.00	16.80
29			125	5.68	93.5	1.91	1.80	18.80
29			160	-0.07	95.5	2.86	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			200	-4.52	96.5	4.11	0.00	22.80
3	6,363	6,366						
3			20	35.22	73.8	0.00	5.60	7.60
3			25	31.79	77.2	0.13	5.40	8.30
3			32	27.23	79.1	0.19	5.20	9.20
3			40	22.20	80.3	0.32	5.00	10.30
3			50	18.18	82.3	0.45	4.70	11.50
3			63	16.32	86.6	0.70	4.30	13.00
3			80	12.60	89.3	1.02	3.70	14.80
3			100	7.53	90.9	1.59	3.00	16.80
3			125	3.10	93.5	2.42	1.80	18.80
3			160	-2.91	95.5	3.63	0.00	21.10
3			200	-7.70	96.5	5.22	0.00	22.80
30	5,578	5,581						
30			20	36.37	73.8	0.00	5.60	7.60
30			25	32.95	77.2	0.11	5.40	8.30
30			32	28.40	79.1	0.17	5.20	9.20
30			40	23.39	80.3	0.28	5.00	10.30
30			50	19.37	82.3	0.39	4.70	11.50
30			63	17.55	86.6	0.61	4.30	13.00
30			80	13.87	89.3	0.89	3.70	14.80
30			100	8.87	90.9	1.40	3.00	16.80
30			125	4.54	93.5	2.12	1.80	18.80
30			160	-1.32	95.5	3.18	0.00	21.10
30			200	-5.91	96.5	4.58	0.00	22.80
31	5,454	5,458						
31			20	36.56	73.8	0.00	5.60	7.60
31			25	33.15	77.2	0.11	5.40	8.30
31			32	28.60	79.1	0.16	5.20	9.20
31			40	23.59	80.3	0.27	5.00	10.30
31			50	19.58	82.3	0.38	4.70	11.50
31			63	17.76	86.6	0.60	4.30	13.00
31			80	14.09	89.3	0.87	3.70	14.80
31			100	9.10	90.9	1.36	3.00	16.80
31			125	4.79	93.5	2.07	1.80	18.80
31			160	-1.05	95.5	3.11	0.00	21.10
31			200	-5.62	96.5	4.48	0.00	22.80
32	6,180	6,184						
32			20	35.48	73.8	0.00	5.60	7.60
32			25	32.05	77.2	0.12	5.40	8.30
32			32	27.49	79.1	0.19	5.20	9.20
32			40	22.47	80.3	0.31	5.00	10.30
32			50	18.44	82.3	0.43	4.70	11.50
32			63	16.59	86.6	0.68	4.30	13.00
32			80	12.89	89.3	0.99	3.70	14.80
32			100	7.83	90.9	1.55	3.00	16.80
32			125	3.43	93.5	2.35	1.80	18.80
32			160	-2.55	95.5	3.52	0.00	21.10
32			200	-7.30	96.5	5.07	0.00	22.80
33	6,765	6,769						
33			20	34.69	73.8	0.00	5.60	7.60
33			25	31.25	77.2	0.14	5.40	8.30
33			32	26.69	79.1	0.20	5.20	9.20
33			40	21.65	80.3	0.34	5.00	10.30
33			50	17.62	82.3	0.47	4.70	11.50
33			63	15.75	86.6	0.74	4.30	13.00
33			80	12.01	89.3	1.08	3.70	14.80
33			100	6.90	90.9	1.69	3.00	16.80
33			125	2.42	93.5	2.57	1.80	18.80
33			160	-3.67	95.5	3.86	0.00	21.10
33			200	-8.56	96.5	5.55	0.00	22.80
4	5,846	5,850						
4			20	35.96	73.8	0.00	5.60	7.60
4			25	32.54	77.2	0.12	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	27.98	79.1	0.18	5.20	9.20
4			40	22.96	80.3	0.29	5.00	10.30
4			50	18.95	82.3	0.41	4.70	11.50
4			63	17.11	86.6	0.64	4.30	13.00
4			80	13.42	89.3	0.94	3.70	14.80
4			100	8.40	90.9	1.46	3.00	16.80
4			125	4.03	93.5	2.22	1.80	18.80
4			160	-1.88	95.5	3.33	0.00	21.10
4			200	-6.54	96.5	4.80	0.00	22.80
5	5,654	5,657						
5			20	36.25	73.8	0.00	5.60	7.60
5			25	32.83	77.2	0.11	5.40	8.30
5			32	28.28	79.1	0.17	5.20	9.20
5			40	23.26	80.3	0.28	5.00	10.30
5			50	19.25	82.3	0.40	4.70	11.50
5			63	17.43	86.6	0.62	4.30	13.00
5			80	13.74	89.3	0.91	3.70	14.80
5			100	8.73	90.9	1.41	3.00	16.80
5			125	4.40	93.5	2.15	1.80	18.80
5			160	-1.48	95.5	3.22	0.00	21.10
5			200	-6.09	96.5	4.64	0.00	22.80
6	4,821	4,826						
6			20	37.63	73.8	0.00	5.60	7.60
6			25	34.23	77.2	0.10	5.40	8.30
6			32	29.68	79.1	0.14	5.20	9.20
6			40	24.69	80.3	0.24	5.00	10.30
6			50	20.69	82.3	0.34	4.70	11.50
6			63	18.90	86.6	0.53	4.30	13.00
6			80	15.26	89.3	0.77	3.70	14.80
6			100	10.32	90.9	1.21	3.00	16.80
6			125	6.10	93.5	1.83	1.80	18.80
6			160	0.38	95.5	2.75	0.00	21.10
6			200	-4.03	96.5	3.96	0.00	22.80
7	4,816	4,821						
7			20	37.64	73.8	0.00	5.60	7.60
7			25	34.24	77.2	0.10	5.40	8.30
7			32	29.69	79.1	0.14	5.20	9.20
7			40	24.70	80.3	0.24	5.00	10.30
7			50	20.70	82.3	0.34	4.70	11.50
7			63	18.91	86.6	0.53	4.30	13.00
7			80	15.27	89.3	0.77	3.70	14.80
7			100	10.33	90.9	1.21	3.00	16.80
7			125	6.11	93.5	1.83	1.80	18.80
7			160	0.39	95.5	2.75	0.00	21.10
7			200	-4.02	96.5	3.95	0.00	22.80
8	5,201	5,205						
8			20	36.97	73.8	0.00	5.60	7.60
8			25	33.57	77.2	0.10	5.40	8.30
8			32	29.02	79.1	0.16	5.20	9.20
8			40	24.01	80.3	0.26	5.00	10.30
8			50	20.01	82.3	0.36	4.70	11.50
8			63	18.20	86.6	0.57	4.30	13.00
8			80	14.54	89.3	0.83	3.70	14.80
8			100	9.57	90.9	1.30	3.00	16.80
8			125	5.29	93.5	1.98	1.80	18.80
8			160	-0.49	95.5	2.97	0.00	21.10
8			200	-5.00	96.5	4.27	0.00	22.80
9	5,233	5,237						
9			20	36.92	73.8	0.00	5.60	7.60
9			25	33.51	77.2	0.10	5.40	8.30
9			32	28.96	79.1	0.16	5.20	9.20
9			40	23.96	80.3	0.26	5.00	10.30
9			50	19.95	82.3	0.37	4.70	11.50
9			63	18.14	86.6	0.58	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	14.48	89.3	0.84	3.70	14.80
9			100	9.51	90.9	1.31	3.00	16.80
9			125	5.23	93.5	1.99	1.80	18.80
9			160	-0.57	95.5	2.99	0.00	21.10
9			200	-5.08	96.5	4.29	0.00	22.80
Sum								
Sum			20	54.14				
Sum			25	50.76				
Sum			32	46.22				
Sum			40	41.24				
Sum			50	37.26				
Sum			63	35.51				
Sum			80	31.91				
Sum			100	27.05				
Sum			125	22.94				
Sum			160	17.40				
Sum			200	13.25				

Noise sensitive area: HH Mustalahti 6 Noise sensitive point: Finnish normal frequency - User defined (282)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,377	6,380						
1			20	35.20	73.8	0.00	5.60	7.60
1			25	31.78	77.2	0.13	5.40	8.30
1			32	27.21	79.1	0.19	5.20	9.20
1			40	22.19	80.3	0.32	5.00	10.30
1			50	18.16	82.3	0.45	4.70	11.50
1			63	16.30	86.6	0.70	4.30	13.00
1			80	12.58	89.3	1.02	3.70	14.80
1			100	7.51	90.9	1.59	3.00	16.80
1			125	3.08	93.5	2.42	1.80	18.80
1			160	-2.93	95.5	3.64	0.00	21.10
1			200	-7.73	96.5	5.23	0.00	22.80
10	3,640	3,645						
10			20	40.07	73.8	0.00	5.60	7.60
10			25	36.69	77.2	0.07	5.40	8.30
10			32	32.16	79.1	0.11	5.20	9.20
10			40	27.18	80.3	0.18	5.00	10.30
10			50	23.21	82.3	0.26	4.70	11.50
10			63	21.46	86.6	0.40	4.30	13.00
10			80	17.88	89.3	0.58	3.70	14.80
10			100	13.05	90.9	0.91	3.00	16.80
10			125	8.98	93.5	1.39	1.80	18.80
10			160	3.49	95.5	2.08	0.00	21.10
10			200	-0.62	96.5	2.99	0.00	22.80
11	3,729	3,735						
11			20	39.85	73.8	0.00	5.60	7.60
11			25	36.48	77.2	0.07	5.40	8.30
11			32	31.94	79.1	0.11	5.20	9.20
11			40	26.97	80.3	0.19	5.00	10.30
11			50	22.99	82.3	0.26	4.70	11.50
11			63	21.24	86.6	0.41	4.30	13.00
11			80	17.66	89.3	0.60	3.70	14.80
11			100	12.82	90.9	0.93	3.00	16.80
11			125	8.73	93.5	1.42	1.80	18.80
11			160	3.23	95.5	2.13	0.00	21.10
11			200	-0.91	96.5	3.06	0.00	22.80
12	3,260	3,266						
12			20	41.02	73.8	0.00	5.60	7.60
12			25	37.65	77.2	0.07	5.40	8.30
12			32	33.12	79.1	0.10	5.20	9.20
12			40	28.16	80.3	0.16	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	24.19	82.3	0.23	4.70	11.50
12			63	22.46	86.6	0.36	4.30	13.00
12			80	18.90	89.3	0.52	3.70	14.80
12			100	14.10	90.9	0.82	3.00	16.80
12			125	10.08	93.5	1.24	1.80	18.80
12			160	4.66	95.5	1.86	0.00	21.10
12			200	0.64	96.5	2.68	0.00	22.80
13	3,133	3,139						
13			20	41.36	73.8	0.00	5.60	7.60
13			25	38.00	77.2	0.06	5.40	8.30
13			32	33.47	79.1	0.09	5.20	9.20
13			40	28.51	80.3	0.16	5.00	10.30
13			50	24.54	82.3	0.22	4.70	11.50
13			63	22.82	86.6	0.35	4.30	13.00
13			80	19.26	89.3	0.50	3.70	14.80
13			100	14.48	90.9	0.78	3.00	16.80
13			125	10.47	93.5	1.19	1.80	18.80
13			160	5.07	95.5	1.79	0.00	21.10
13			200	1.09	96.5	2.57	0.00	22.80
14	4,297	4,302						
14			20	38.63	73.8	0.00	5.60	7.60
14			25	35.24	77.2	0.09	5.40	8.30
14			32	30.70	79.1	0.13	5.20	9.20
14			40	25.71	80.3	0.22	5.00	10.30
14			50	21.73	82.3	0.30	4.70	11.50
14			63	19.95	86.6	0.47	4.30	13.00
14			80	16.34	89.3	0.69	3.70	14.80
14			100	11.45	90.9	1.08	3.00	16.80
14			125	7.29	93.5	1.63	1.80	18.80
14			160	1.68	95.5	2.45	0.00	21.10
14			200	-2.60	96.5	3.53	0.00	22.80
15	2,778	2,785						
15			20	42.40	73.8	0.00	5.60	7.60
15			25	39.05	77.2	0.06	5.40	8.30
15			32	34.52	79.1	0.08	5.20	9.20
15			40	29.57	80.3	0.14	5.00	10.30
15			50	25.61	82.3	0.19	4.70	11.50
15			63	23.90	86.6	0.31	4.30	13.00
15			80	20.36	89.3	0.45	3.70	14.80
15			100	15.61	90.9	0.70	3.00	16.80
15			125	11.65	93.5	1.06	1.80	18.80
15			160	6.32	95.5	1.59	0.00	21.10
15			200	2.42	96.5	2.28	0.00	22.80
16	2,836	2,843						
16			20	42.22	73.8	0.00	5.60	7.60
16			25	38.87	77.2	0.06	5.40	8.30
16			32	34.34	79.1	0.09	5.20	9.20
16			40	29.38	80.3	0.14	5.00	10.30
16			50	25.43	82.3	0.20	4.70	11.50
16			63	23.71	86.6	0.31	4.30	13.00
16			80	20.17	89.3	0.45	3.70	14.80
16			100	15.41	90.9	0.71	3.00	16.80
16			125	11.44	93.5	1.08	1.80	18.80
16			160	6.10	95.5	1.62	0.00	21.10
16			200	2.19	96.5	2.33	0.00	22.80
17	3,206	3,214						
17			20	41.16	73.8	0.00	5.60	7.60
17			25	37.80	77.2	0.06	5.40	8.30
17			32	33.26	79.1	0.10	5.20	9.20
17			40	28.30	80.3	0.16	5.00	10.30
17			50	24.33	82.3	0.22	4.70	11.50
17			63	22.61	86.6	0.35	4.30	13.00
17			80	19.05	89.3	0.51	3.70	14.80
17			100	14.26	90.9	0.80	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	10.24	93.5	1.22	1.80	18.80
17			160	4.83	95.5	1.83	0.00	21.10
17			200	0.82	96.5	2.64	0.00	22.80
18	3,709	3,715						
18			20	39.90	73.8	0.00	5.60	7.60
18			25	36.53	77.2	0.07	5.40	8.30
18			32	31.99	79.1	0.11	5.20	9.20
18			40	27.01	80.3	0.19	5.00	10.30
18			50	23.04	82.3	0.26	4.70	11.50
18			63	21.29	86.6	0.41	4.30	13.00
18			80	17.71	89.3	0.59	3.70	14.80
18			100	12.87	90.9	0.93	3.00	16.80
18			125	8.79	93.5	1.41	1.80	18.80
18			160	3.28	95.5	2.12	0.00	21.10
18			200	-0.85	96.5	3.05	0.00	22.80
19	2,299	2,307						
19			20	44.04	73.8	0.00	5.60	7.60
19			25	40.69	77.2	0.05	5.40	8.30
19			32	36.17	79.1	0.07	5.20	9.20
19			40	31.22	80.3	0.12	5.00	10.30
19			50	27.28	82.3	0.16	4.70	11.50
19			63	25.59	86.6	0.25	4.30	13.00
19			80	22.07	89.3	0.37	3.70	14.80
19			100	17.36	90.9	0.58	3.00	16.80
19			125	13.46	93.5	0.88	1.80	18.80
19			160	8.22	95.5	1.31	0.00	21.10
19			200	4.45	96.5	1.89	0.00	22.80
2	5,342	5,346						
2			20	36.74	73.8	0.00	5.60	7.60
2			25	33.33	77.2	0.11	5.40	8.30
2			32	28.78	79.1	0.16	5.20	9.20
2			40	23.77	80.3	0.27	5.00	10.30
2			50	19.77	82.3	0.37	4.70	11.50
2			63	17.95	86.6	0.59	4.30	13.00
2			80	14.28	89.3	0.86	3.70	14.80
2			100	9.30	90.9	1.34	3.00	16.80
2			125	5.01	93.5	2.03	1.80	18.80
2			160	-0.81	95.5	3.05	0.00	21.10
2			200	-5.34	96.5	4.38	0.00	22.80
20	2,180	2,189						
20			20	44.49	73.8	0.00	5.60	7.60
20			25	41.15	77.2	0.04	5.40	8.30
20			32	36.63	79.1	0.07	5.20	9.20
20			40	31.68	80.3	0.11	5.00	10.30
20			50	27.74	82.3	0.15	4.70	11.50
20			63	26.05	86.6	0.24	4.30	13.00
20			80	22.54	89.3	0.35	3.70	14.80
20			100	17.85	90.9	0.55	3.00	16.80
20			125	13.96	93.5	0.83	1.80	18.80
20			160	8.75	95.5	1.25	0.00	21.10
20			200	5.00	96.5	1.80	0.00	22.80
21	3,429	3,438						
21			20	40.57	73.8	0.00	5.60	7.60
21			25	37.20	77.2	0.07	5.40	8.30
21			32	32.67	79.1	0.10	5.20	9.20
21			40	27.70	80.3	0.17	5.00	10.30
21			50	23.73	82.3	0.24	4.70	11.50
21			63	22.00	86.6	0.38	4.30	13.00
21			80	18.42	89.3	0.55	3.70	14.80
21			100	13.61	90.9	0.86	3.00	16.80
21			125	9.57	93.5	1.31	1.80	18.80
21			160	4.11	95.5	1.96	0.00	21.10
21			200	0.05	96.5	2.82	0.00	22.80
22	3,764	3,770						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	39.77	73.8	0.00	5.60	7.60
22			25	36.40	77.2	0.08	5.40	8.30
22			32	31.86	79.1	0.11	5.20	9.20
22			40	26.88	80.3	0.19	5.00	10.30
22			50	22.91	82.3	0.26	4.70	11.50
22			63	21.16	86.6	0.41	4.30	13.00
22			80	17.57	89.3	0.60	3.70	14.80
22			100	12.73	90.9	0.94	3.00	16.80
22			125	8.64	93.5	1.43	1.80	18.80
22			160	3.12	95.5	2.15	0.00	21.10
22			200	-1.02	96.5	3.09	0.00	22.80
23	4,404	4,408						
23			20	38.41	73.8	0.00	5.60	7.60
23			25	35.03	77.2	0.09	5.40	8.30
23			32	30.48	79.1	0.13	5.20	9.20
23			40	25.49	80.3	0.22	5.00	10.30
23			50	21.51	82.3	0.31	4.70	11.50
23			63	19.73	86.6	0.48	4.30	13.00
23			80	16.11	89.3	0.71	3.70	14.80
23			100	11.21	90.9	1.10	3.00	16.80
23			125	7.04	93.5	1.68	1.80	18.80
23			160	1.40	95.5	2.51	0.00	21.10
23			200	-2.90	96.5	3.61	0.00	22.80
24	2,166	2,176						
24			20	44.55	73.8	0.00	5.60	7.60
24			25	41.20	77.2	0.04	5.40	8.30
24			32	36.68	79.1	0.07	5.20	9.20
24			40	31.74	80.3	0.11	5.00	10.30
24			50	27.79	82.3	0.15	4.70	11.50
24			63	26.11	86.6	0.24	4.30	13.00
24			80	22.60	89.3	0.35	3.70	14.80
24			100	17.90	90.9	0.54	3.00	16.80
24			125	14.02	93.5	0.83	1.80	18.80
24			160	8.81	95.5	1.24	0.00	21.10
24			200	5.06	96.5	1.78	0.00	22.80
25	2,738	2,746						
25			20	42.53	73.8	0.00	5.60	7.60
25			25	39.17	77.2	0.05	5.40	8.30
25			32	34.64	79.1	0.08	5.20	9.20
25			40	29.69	80.3	0.14	5.00	10.30
25			50	25.73	82.3	0.19	4.70	11.50
25			63	24.02	86.6	0.30	4.30	13.00
25			80	20.49	89.3	0.44	3.70	14.80
25			100	15.74	90.9	0.69	3.00	16.80
25			125	11.78	93.5	1.04	1.80	18.80
25			160	6.46	95.5	1.57	0.00	21.10
25			200	2.57	96.5	2.25	0.00	22.80
26	2,963	2,972						
26			20	41.84	73.8	0.00	5.60	7.60
26			25	38.48	77.2	0.06	5.40	8.30
26			32	33.95	79.1	0.09	5.20	9.20
26			40	28.99	80.3	0.15	5.00	10.30
26			50	25.03	82.3	0.21	4.70	11.50
26			63	23.31	86.6	0.33	4.30	13.00
26			80	19.76	89.3	0.48	3.70	14.80
26			100	15.00	90.9	0.74	3.00	16.80
26			125	11.01	93.5	1.13	1.80	18.80
26			160	5.64	95.5	1.69	0.00	21.10
26			200	1.70	96.5	2.44	0.00	22.80
27	3,347	3,355						
27			20	40.79	73.8	0.00	5.60	7.60
27			25	37.42	77.2	0.07	5.40	8.30
27			32	32.89	79.1	0.10	5.20	9.20
27			40	27.92	80.3	0.17	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			50	23.95	82.3	0.23	4.70	11.50
27			63	22.22	86.6	0.37	4.30	13.00
27			80	18.65	89.3	0.54	3.70	14.80
27			100	13.85	90.9	0.84	3.00	16.80
27			125	9.81	93.5	1.27	1.80	18.80
27			160	4.37	95.5	1.91	0.00	21.10
27			200	0.34	96.5	2.75	0.00	22.80
28	3,964	3,969						
28			20	39.33	73.8	0.00	5.60	7.60
28			25	35.95	77.2	0.08	5.40	8.30
28			32	31.41	79.1	0.12	5.20	9.20
28			40	26.43	80.3	0.20	5.00	10.30
28			50	22.45	82.3	0.28	4.70	11.50
28			63	20.69	86.6	0.44	4.30	13.00
28			80	17.09	89.3	0.64	3.70	14.80
28			100	12.23	90.9	0.99	3.00	16.80
28			125	8.12	93.5	1.51	1.80	18.80
28			160	2.56	95.5	2.26	0.00	21.10
28			200	-1.63	96.5	3.25	0.00	22.80
29	4,609	4,614						
29			20	38.02	73.8	0.00	5.60	7.60
29			25	34.63	77.2	0.09	5.40	8.30
29			32	30.08	79.1	0.14	5.20	9.20
29			40	25.09	80.3	0.23	5.00	10.30
29			50	21.09	82.3	0.32	4.70	11.50
29			63	19.31	86.6	0.51	4.30	13.00
29			80	15.68	89.3	0.74	3.70	14.80
29			100	10.76	90.9	1.15	3.00	16.80
29			125	6.56	93.5	1.75	1.80	18.80
29			160	0.89	95.5	2.63	0.00	21.10
29			200	-3.47	96.5	3.78	0.00	22.80
3	5,837	5,840						
3			20	35.97	73.8	0.00	5.60	7.60
3			25	32.55	77.2	0.12	5.40	8.30
3			32	28.00	79.1	0.18	5.20	9.20
3			40	22.98	80.3	0.29	5.00	10.30
3			50	18.96	82.3	0.41	4.70	11.50
3			63	17.13	86.6	0.64	4.30	13.00
3			80	13.44	89.3	0.93	3.70	14.80
3			100	8.41	90.9	1.46	3.00	16.80
3			125	4.05	93.5	2.22	1.80	18.80
3			160	-1.86	95.5	3.33	0.00	21.10
3			200	-6.52	96.5	4.79	0.00	22.80
30	5,152	5,155						
30			20	37.05	73.8	0.00	5.60	7.60
30			25	33.65	77.2	0.10	5.40	8.30
30			32	29.10	79.1	0.15	5.20	9.20
30			40	24.10	80.3	0.26	5.00	10.30
30			50	20.09	82.3	0.36	4.70	11.50
30			63	18.29	86.6	0.57	4.30	13.00
30			80	14.63	89.3	0.82	3.70	14.80
30			100	9.67	90.9	1.29	3.00	16.80
30			125	5.40	93.5	1.96	1.80	18.80
30			160	-0.38	95.5	2.94	0.00	21.10
30			200	-4.87	96.5	4.23	0.00	22.80
31	5,069	5,073						
31			20	37.19	73.8	0.00	5.60	7.60
31			25	33.79	77.2	0.10	5.40	8.30
31			32	29.24	79.1	0.15	5.20	9.20
31			40	24.24	80.3	0.25	5.00	10.30
31			50	20.24	82.3	0.36	4.70	11.50
31			63	18.44	86.6	0.56	4.30	13.00
31			80	14.78	89.3	0.81	3.70	14.80
31			100	9.83	90.9	1.27	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			125	5.57	93.5	1.93	1.80	18.80
31			160	-0.20	95.5	2.89	0.00	21.10
31			200	-4.67	96.5	4.16	0.00	22.80
32	5,766	5,770						
32			20	36.08	73.8	0.00	5.60	7.60
32			25	32.66	77.2	0.12	5.40	8.30
32			32	28.10	79.1	0.17	5.20	9.20
32			40	23.09	80.3	0.29	5.00	10.30
32			50	19.07	82.3	0.40	4.70	11.50
32			63	17.24	86.6	0.63	4.30	13.00
32			80	13.55	89.3	0.92	3.70	14.80
32			100	8.53	90.9	1.44	3.00	16.80
32			125	4.18	93.5	2.19	1.80	18.80
32			160	-1.71	95.5	3.29	0.00	21.10
32			200	-6.35	96.5	4.73	0.00	22.80
33	6,333	6,336						
33			20	35.26	73.8	0.00	5.60	7.60
33			25	31.84	77.2	0.13	5.40	8.30
33			32	27.27	79.1	0.19	5.20	9.20
33			40	22.25	80.3	0.32	5.00	10.30
33			50	18.22	82.3	0.44	4.70	11.50
33			63	16.37	86.6	0.70	4.30	13.00
33			80	12.65	89.3	1.01	3.70	14.80
33			100	7.58	90.9	1.58	3.00	16.80
33			125	3.16	93.5	2.41	1.80	18.80
33			160	-2.85	95.5	3.61	0.00	21.10
33			200	-7.63	96.5	5.20	0.00	22.80
4	5,321	5,324						
4			20	36.77	73.8	0.00	5.60	7.60
4			25	33.37	77.2	0.11	5.40	8.30
4			32	28.81	79.1	0.16	5.20	9.20
4			40	23.81	80.3	0.27	5.00	10.30
4			50	19.80	82.3	0.37	4.70	11.50
4			63	17.99	86.6	0.59	4.30	13.00
4			80	14.32	89.3	0.85	3.70	14.80
4			100	9.34	90.9	1.33	3.00	16.80
4			125	5.05	93.5	2.02	1.80	18.80
4			160	-0.76	95.5	3.03	0.00	21.10
4			200	-5.29	96.5	4.37	0.00	22.80
5	5,134	5,138						
5			20	37.08	73.8	0.00	5.60	7.60
5			25	33.68	77.2	0.10	5.40	8.30
5			32	29.13	79.1	0.15	5.20	9.20
5			40	24.13	80.3	0.26	5.00	10.30
5			50	20.13	82.3	0.36	4.70	11.50
5			63	18.32	86.6	0.57	4.30	13.00
5			80	14.66	89.3	0.82	3.70	14.80
5			100	9.70	90.9	1.28	3.00	16.80
5			125	5.43	93.5	1.95	1.80	18.80
5			160	-0.34	95.5	2.93	0.00	21.10
5			200	-4.83	96.5	4.21	0.00	22.80
6	4,300	4,305						
6			20	38.62	73.8	0.00	5.60	7.60
6			25	35.23	77.2	0.09	5.40	8.30
6			32	30.69	79.1	0.13	5.20	9.20
6			40	25.71	80.3	0.22	5.00	10.30
6			50	21.72	82.3	0.30	4.70	11.50
6			63	19.95	86.6	0.47	4.30	13.00
6			80	16.33	89.3	0.69	3.70	14.80
6			100	11.44	90.9	1.08	3.00	16.80
6			125	7.29	93.5	1.64	1.80	18.80
6			160	1.67	95.5	2.45	0.00	21.10
6			200	-2.61	96.5	3.53	0.00	22.80
7	4,290	4,295						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			20	38.64	73.8	0.00	5.60	7.60
7			25	35.26	77.2	0.09	5.40	8.30
7			32	30.71	79.1	0.13	5.20	9.20
7			40	25.73	80.3	0.21	5.00	10.30
7			50	21.74	82.3	0.30	4.70	11.50
7			63	19.97	86.6	0.47	4.30	13.00
7			80	16.35	89.3	0.69	3.70	14.80
7			100	11.47	90.9	1.07	3.00	16.80
7			125	7.31	93.5	1.63	1.80	18.80
7			160	1.69	95.5	2.45	0.00	21.10
7			200	-2.58	96.5	3.52	0.00	22.80
8	4,677	4,681						
8			20	37.89	73.8	0.00	5.60	7.60
8			25	34.50	77.2	0.09	5.40	8.30
8			32	29.95	79.1	0.14	5.20	9.20
8			40	24.96	80.3	0.23	5.00	10.30
8			50	20.97	82.3	0.33	4.70	11.50
8			63	19.18	86.6	0.51	4.30	13.00
8			80	15.54	89.3	0.75	3.70	14.80
8			100	10.62	90.9	1.17	3.00	16.80
8			125	6.41	93.5	1.78	1.80	18.80
8			160	0.73	95.5	2.67	0.00	21.10
8			200	-3.64	96.5	3.84	0.00	22.80
9	4,721	4,725						
9			20	37.81	73.8	0.00	5.60	7.60
9			25	34.42	77.2	0.09	5.40	8.30
9			32	29.87	79.1	0.14	5.20	9.20
9			40	24.88	80.3	0.24	5.00	10.30
9			50	20.88	82.3	0.33	4.70	11.50
9			63	19.09	86.6	0.52	4.30	13.00
9			80	15.46	89.3	0.76	3.70	14.80
9			100	10.53	90.9	1.18	3.00	16.80
9			125	6.32	93.5	1.80	1.80	18.80
9			160	0.62	95.5	2.69	0.00	21.10
9			200	-3.76	96.5	3.87	0.00	22.80
Sum								
Sum			20	55.40				
Sum			25	52.03				
Sum			32	47.50				
Sum			40	42.53				
Sum			50	38.56				
Sum			63	36.82				
Sum			80	33.25				
Sum			100	28.45				
Sum			125	24.41				
Sum			160	18.99				
Sum			200	14.97				

Noise sensitive area: HH Pajaniemi 1 Noise sensitive point: Finnish normal frequency - User defined (289)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,059	2,072						
1			20	44.97	73.8	0.00	5.60	7.60
1			25	41.63	77.2	0.04	5.40	8.30
1			32	37.11	79.1	0.06	5.20	9.20
1			40	32.17	80.3	0.10	5.00	10.30
1			50	28.23	82.3	0.15	4.70	11.50
1			63	26.55	86.6	0.23	4.30	13.00
1			80	23.04	89.3	0.33	3.70	14.80
1			100	18.36	90.9	0.52	3.00	16.80
1			125	14.49	93.5	0.79	1.80	18.80
1			160	9.29	95.5	1.18	0.00	21.10

To be continued on next page...

Project:
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			200	5.58	96.5	1.70	0.00	22.80
10	4,159	4,165						
10			20	38.91	73.8	0.00	5.60	7.60
10			25	35.52	77.2	0.08	5.40	8.30
10			32	30.98	79.1	0.12	5.20	9.20
10			40	26.00	80.3	0.21	5.00	10.30
10			50	22.02	82.3	0.29	4.70	11.50
10			63	20.25	86.6	0.46	4.30	13.00
10			80	16.64	89.3	0.67	3.70	14.80
10			100	11.77	90.9	1.04	3.00	16.80
10			125	7.62	93.5	1.58	1.80	18.80
10			160	2.03	95.5	2.37	0.00	21.10
10			200	-2.21	96.5	3.42	0.00	22.80
11	3,636	3,644						
11			20	40.07	73.8	0.00	5.60	7.60
11			25	36.70	77.2	0.07	5.40	8.30
11			32	32.16	79.1	0.11	5.20	9.20
11			40	27.19	80.3	0.18	5.00	10.30
11			50	23.21	82.3	0.26	4.70	11.50
11			63	21.47	86.6	0.40	4.30	13.00
11			80	17.89	89.3	0.58	3.70	14.80
11			100	13.06	90.9	0.91	3.00	16.80
11			125	8.98	93.5	1.38	1.80	18.80
11			160	3.49	95.5	2.08	0.00	21.10
11			200	-0.62	96.5	2.99	0.00	22.80
12	4,731	4,737						
12			20	37.79	73.8	0.00	5.60	7.60
12			25	34.40	77.2	0.09	5.40	8.30
12			32	29.85	79.1	0.14	5.20	9.20
12			40	24.85	80.3	0.24	5.00	10.30
12			50	20.86	82.3	0.33	4.70	11.50
12			63	19.07	86.6	0.52	4.30	13.00
12			80	15.43	89.3	0.76	3.70	14.80
12			100	10.51	90.9	1.18	3.00	16.80
12			125	6.29	93.5	1.80	1.80	18.80
12			160	0.59	95.5	2.70	0.00	21.10
12			200	-3.79	96.5	3.88	0.00	22.80
13	4,143	4,149						
13			20	38.94	73.8	0.00	5.60	7.60
13			25	35.56	77.2	0.08	5.40	8.30
13			32	31.02	79.1	0.12	5.20	9.20
13			40	26.03	80.3	0.21	5.00	10.30
13			50	22.05	82.3	0.29	4.70	11.50
13			63	20.28	86.6	0.46	4.30	13.00
13			80	16.68	89.3	0.66	3.70	14.80
13			100	11.80	90.9	1.04	3.00	16.80
13			125	7.66	93.5	1.58	1.80	18.80
13			160	2.07	95.5	2.37	0.00	21.10
13			200	-2.16	96.5	3.40	0.00	22.80
14	2,667	2,677						
14			20	42.75	73.8	0.00	5.60	7.60
14			25	39.39	77.2	0.05	5.40	8.30
14			32	34.87	79.1	0.08	5.20	9.20
14			40	29.91	80.3	0.13	5.00	10.30
14			50	25.96	82.3	0.19	4.70	11.50
14			63	24.25	86.6	0.29	4.30	13.00
14			80	20.72	89.3	0.43	3.70	14.80
14			100	15.98	90.9	0.67	3.00	16.80
14			125	12.03	93.5	1.02	1.80	18.80
14			160	6.72	95.5	1.53	0.00	21.10
14			200	2.85	96.5	2.20	0.00	22.80
15	4,714	4,720						
15			20	37.82	73.8	0.00	5.60	7.60
15			25	34.43	77.2	0.09	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			32	29.88	79.1	0.14	5.20	9.20
15			40	24.89	80.3	0.24	5.00	10.30
15			50	20.89	82.3	0.33	4.70	11.50
15			63	19.10	86.6	0.52	4.30	13.00
15			80	15.47	89.3	0.76	3.70	14.80
15			100	10.54	90.9	1.18	3.00	16.80
15			125	6.33	93.5	1.79	1.80	18.80
15			160	0.63	95.5	2.69	0.00	21.10
15			200	-3.75	96.5	3.87	0.00	22.80
16	4,161	4,167						
16			20	38.90	73.8	0.00	5.60	7.60
16			25	35.52	77.2	0.08	5.40	8.30
16			32	30.98	79.1	0.13	5.20	9.20
16			40	25.99	80.3	0.21	5.00	10.30
16			50	22.01	82.3	0.29	4.70	11.50
16			63	20.24	86.6	0.46	4.30	13.00
16			80	16.64	89.3	0.67	3.70	14.80
16			100	11.76	90.9	1.04	3.00	16.80
16			125	7.62	93.5	1.58	1.80	18.80
16			160	2.03	95.5	2.38	0.00	21.10
16			200	-2.21	96.5	3.42	0.00	22.80
17	3,673	3,682						
17			20	39.98	73.8	0.00	5.60	7.60
17			25	36.60	77.2	0.07	5.40	8.30
17			32	32.07	79.1	0.11	5.20	9.20
17			40	27.09	80.3	0.18	5.00	10.30
17			50	23.12	82.3	0.26	4.70	11.50
17			63	21.37	86.6	0.41	4.30	13.00
17			80	17.79	89.3	0.59	3.70	14.80
17			100	12.96	90.9	0.92	3.00	16.80
17			125	8.88	93.5	1.40	1.80	18.80
17			160	3.38	95.5	2.10	0.00	21.10
17			200	-0.74	96.5	3.02	0.00	22.80
18	3,181	3,192						
18			20	41.22	73.8	0.00	5.60	7.60
18			25	37.86	77.2	0.06	5.40	8.30
18			32	33.32	79.1	0.10	5.20	9.20
18			40	28.36	80.3	0.16	5.00	10.30
18			50	24.40	82.3	0.22	4.70	11.50
18			63	22.67	86.6	0.35	4.30	13.00
18			80	19.11	89.3	0.51	3.70	14.80
18			100	14.32	90.9	0.80	3.00	16.80
18			125	10.31	93.5	1.21	1.80	18.80
18			160	4.90	95.5	1.82	0.00	21.10
18			200	0.90	96.5	2.62	0.00	22.80
19	4,908	4,913						
19			20	37.47	73.8	0.00	5.60	7.60
19			25	34.07	77.2	0.10	5.40	8.30
19			32	29.53	79.1	0.15	5.20	9.20
19			40	24.53	80.3	0.25	5.00	10.30
19			50	20.53	82.3	0.34	4.70	11.50
19			63	18.73	86.6	0.54	4.30	13.00
19			80	15.09	89.3	0.79	3.70	14.80
19			100	10.14	90.9	1.23	3.00	16.80
19			125	5.91	93.5	1.87	1.80	18.80
19			160	0.17	95.5	2.80	0.00	21.10
19			200	-4.26	96.5	4.03	0.00	22.80
2	2,561	2,571						
2			20	43.10	73.8	0.00	5.60	7.60
2			25	39.75	77.2	0.05	5.40	8.30
2			32	35.22	79.1	0.08	5.20	9.20
2			40	30.27	80.3	0.13	5.00	10.30
2			50	26.32	82.3	0.18	4.70	11.50
2			63	24.61	86.6	0.28	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			80	21.09	89.3	0.41	3.70	14.80
2			100	16.35	90.9	0.64	3.00	16.80
2			125	12.42	93.5	0.98	1.80	18.80
2			160	7.13	95.5	1.47	0.00	21.10
2			200	3.29	96.5	2.11	0.00	22.80
20	4,744	4,749						
20			20	37.77	73.8	0.00	5.60	7.60
20			25	34.37	77.2	0.09	5.40	8.30
20			32	29.83	79.1	0.14	5.20	9.20
20			40	24.83	80.3	0.24	5.00	10.30
20			50	20.84	82.3	0.33	4.70	11.50
20			63	19.05	86.6	0.52	4.30	13.00
20			80	15.41	89.3	0.76	3.70	14.80
20			100	10.48	90.9	1.19	3.00	16.80
20			125	6.26	93.5	1.80	1.80	18.80
20			160	0.56	95.5	2.71	0.00	21.10
20			200	-3.83	96.5	3.89	0.00	22.80
21	3,505	3,516						
21			20	40.38	73.8	0.00	5.60	7.60
21			25	37.01	77.2	0.07	5.40	8.30
21			32	32.47	79.1	0.11	5.20	9.20
21			40	27.50	80.3	0.18	5.00	10.30
21			50	23.53	82.3	0.25	4.70	11.50
21			63	21.79	86.6	0.39	4.30	13.00
21			80	18.22	89.3	0.56	3.70	14.80
21			100	13.40	90.9	0.88	3.00	16.80
21			125	9.34	93.5	1.34	1.80	18.80
21			160	3.88	95.5	2.00	0.00	21.10
21			200	-0.20	96.5	2.88	0.00	22.80
22	3,389	3,398						
22			20	40.68	73.8	0.00	5.60	7.60
22			25	37.31	77.2	0.07	5.40	8.30
22			32	32.77	79.1	0.10	5.20	9.20
22			40	27.81	80.3	0.17	5.00	10.30
22			50	23.84	82.3	0.24	4.70	11.50
22			63	22.10	86.6	0.37	4.30	13.00
22			80	18.53	89.3	0.54	3.70	14.80
22			100	13.73	90.9	0.85	3.00	16.80
22			125	9.68	93.5	1.29	1.80	18.80
22			160	4.24	95.5	1.94	0.00	21.10
22			200	0.19	96.5	2.79	0.00	22.80
23	2,899	2,908						
23			20	42.03	73.8	0.00	5.60	7.60
23			25	38.67	77.2	0.06	5.40	8.30
23			32	34.14	79.1	0.09	5.20	9.20
23			40	29.18	80.3	0.15	5.00	10.30
23			50	25.22	82.3	0.20	4.70	11.50
23			63	23.51	86.6	0.32	4.30	13.00
23			80	19.96	89.3	0.47	3.70	14.80
23			100	15.20	90.9	0.73	3.00	16.80
23			125	11.22	93.5	1.11	1.80	18.80
23			160	5.87	95.5	1.66	0.00	21.10
23			200	1.94	96.5	2.38	0.00	22.80
24	4,739	4,745						
24			20	37.77	73.8	0.00	5.60	7.60
24			25	34.38	77.2	0.09	5.40	8.30
24			32	29.83	79.1	0.14	5.20	9.20
24			40	24.84	80.3	0.24	5.00	10.30
24			50	20.84	82.3	0.33	4.70	11.50
24			63	19.05	86.6	0.52	4.30	13.00
24			80	15.42	89.3	0.76	3.70	14.80
24			100	10.49	90.9	1.19	3.00	16.80
24			125	6.27	93.5	1.80	1.80	18.80
24			160	0.57	95.5	2.70	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			200	-3.82	96.5	3.89	0.00	22.80
25	4,153	4,160						
25			20	38.92	73.8	0.00	5.60	7.60
25			25	35.54	77.2	0.08	5.40	8.30
25			32	30.99	79.1	0.12	5.20	9.20
25			40	26.01	80.3	0.21	5.00	10.30
25			50	22.03	82.3	0.29	4.70	11.50
25			63	20.26	86.6	0.46	4.30	13.00
25			80	16.65	89.3	0.67	3.70	14.80
25			100	11.78	90.9	1.04	3.00	16.80
25			125	7.64	93.5	1.58	1.80	18.80
25			160	2.05	95.5	2.37	0.00	21.10
25			200	-2.19	96.5	3.41	0.00	22.80
26	4,084	4,093						
26			20	39.06	73.8	0.00	5.60	7.60
26			25	35.68	77.2	0.08	5.40	8.30
26			32	31.14	79.1	0.12	5.20	9.20
26			40	26.15	80.3	0.20	5.00	10.30
26			50	22.17	82.3	0.29	4.70	11.50
26			63	20.41	86.6	0.45	4.30	13.00
26			80	16.80	89.3	0.65	3.70	14.80
26			100	11.94	90.9	1.02	3.00	16.80
26			125	7.80	93.5	1.56	1.80	18.80
26			160	2.23	95.5	2.33	0.00	21.10
26			200	-2.00	96.5	3.36	0.00	22.80
27	3,929	3,937						
27			20	39.40	73.8	0.00	5.60	7.60
27			25	36.02	77.2	0.08	5.40	8.30
27			32	31.48	79.1	0.12	5.20	9.20
27			40	26.50	80.3	0.20	5.00	10.30
27			50	22.52	82.3	0.28	4.70	11.50
27			63	20.76	86.6	0.43	4.30	13.00
27			80	17.17	89.3	0.63	3.70	14.80
27			100	12.31	90.9	0.98	3.00	16.80
27			125	8.20	93.5	1.50	1.80	18.80
27			160	2.65	95.5	2.24	0.00	21.10
27			200	-1.53	96.5	3.23	0.00	22.80
28	3,593	3,601						
28			20	40.17	73.8	0.00	5.60	7.60
28			25	36.80	77.2	0.07	5.40	8.30
28			32	32.26	79.1	0.11	5.20	9.20
28			40	27.29	80.3	0.18	5.00	10.30
28			50	23.32	82.3	0.25	4.70	11.50
28			63	21.57	86.6	0.40	4.30	13.00
28			80	17.99	89.3	0.58	3.70	14.80
28			100	13.17	90.9	0.90	3.00	16.80
28			125	9.10	93.5	1.37	1.80	18.80
28			160	3.62	95.5	2.05	0.00	21.10
28			200	-0.48	96.5	2.95	0.00	22.80
29	3,336	3,345						
29			20	40.81	73.8	0.00	5.60	7.60
29			25	37.44	77.2	0.07	5.40	8.30
29			32	32.91	79.1	0.10	5.20	9.20
29			40	27.94	80.3	0.17	5.00	10.30
29			50	23.98	82.3	0.23	4.70	11.50
29			63	22.24	86.6	0.37	4.30	13.00
29			80	18.68	89.3	0.54	3.70	14.80
29			100	13.87	90.9	0.84	3.00	16.80
29			125	9.84	93.5	1.27	1.80	18.80
29			160	4.40	95.5	1.91	0.00	21.10
29			200	0.37	96.5	2.74	0.00	22.80
3	1,998	2,011						
3			20	45.23	73.8	0.00	5.60	7.60
3			25	41.89	77.2	0.04	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			32	37.37	79.1	0.06	5.20	9.20
3			40	32.43	80.3	0.10	5.00	10.30
3			50	28.49	82.3	0.14	4.70	11.50
3			63	26.81	86.6	0.22	4.30	13.00
3			80	23.31	89.3	0.32	3.70	14.80
3			100	18.63	90.9	0.50	3.00	16.80
3			125	14.77	93.5	0.76	1.80	18.80
3			160	9.58	95.5	1.15	0.00	21.10
3			200	5.88	96.5	1.65	0.00	22.80
30	2,749	2,758						
30			20	42.49	73.8	0.00	5.60	7.60
30			25	39.13	77.2	0.06	5.40	8.30
30			32	34.60	79.1	0.08	5.20	9.20
30			40	29.65	80.3	0.14	5.00	10.30
30			50	25.69	82.3	0.19	4.70	11.50
30			63	23.98	86.6	0.30	4.30	13.00
30			80	20.45	89.3	0.44	3.70	14.80
30			100	15.70	90.9	0.69	3.00	16.80
30			125	11.74	93.5	1.05	1.80	18.80
30			160	6.41	95.5	1.57	0.00	21.10
30			200	2.52	96.5	2.26	0.00	22.80
31	3,389	3,397						
31			20	40.68	73.8	0.00	5.60	7.60
31			25	37.31	77.2	0.07	5.40	8.30
31			32	32.78	79.1	0.10	5.20	9.20
31			40	27.81	80.3	0.17	5.00	10.30
31			50	23.84	82.3	0.24	4.70	11.50
31			63	22.11	86.6	0.37	4.30	13.00
31			80	18.54	89.3	0.54	3.70	14.80
31			100	13.73	90.9	0.85	3.00	16.80
31			125	9.69	93.5	1.29	1.80	18.80
31			160	4.24	95.5	1.94	0.00	21.10
31			200	0.19	96.5	2.79	0.00	22.80
32	2,725	2,734						
32			20	42.56	73.8	0.00	5.60	7.60
32			25	39.21	77.2	0.05	5.40	8.30
32			32	34.68	79.1	0.08	5.20	9.20
32			40	29.73	80.3	0.14	5.00	10.30
32			50	25.77	82.3	0.19	4.70	11.50
32			63	24.06	86.6	0.30	4.30	13.00
32			80	20.53	89.3	0.44	3.70	14.80
32			100	15.78	90.9	0.68	3.00	16.80
32			125	11.82	93.5	1.04	1.80	18.80
32			160	6.50	95.5	1.56	0.00	21.10
32			200	2.62	96.5	2.24	0.00	22.80
33	2,272	2,286						
33			20	44.12	73.8	0.00	5.60	7.60
33			25	40.77	77.2	0.05	5.40	8.30
33			32	36.25	79.1	0.07	5.20	9.20
33			40	31.30	80.3	0.11	5.00	10.30
33			50	27.36	82.3	0.16	4.70	11.50
33			63	25.67	86.6	0.25	4.30	13.00
33			80	22.15	89.3	0.37	3.70	14.80
33			100	17.45	90.9	0.57	3.00	16.80
33			125	13.55	93.5	0.87	1.80	18.80
33			160	8.32	95.5	1.30	0.00	21.10
33			200	4.54	96.5	1.87	0.00	22.80
4	2,087	2,100						
4			20	44.85	73.8	0.00	5.60	7.60
4			25	41.51	77.2	0.04	5.40	8.30
4			32	36.99	79.1	0.06	5.20	9.20
4			40	32.05	80.3	0.11	5.00	10.30
4			50	28.11	82.3	0.15	4.70	11.50
4			63	26.42	86.6	0.23	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			80	22.92	89.3	0.34	3.70	14.80
4			100	18.23	90.9	0.53	3.00	16.80
4			125	14.36	93.5	0.80	1.80	18.80
4			160	9.16	95.5	1.20	0.00	21.10
4			200	5.43	96.5	1.72	0.00	22.80
5	1,905	1,919						
5			20	45.64	73.8	0.00	5.60	7.60
5			25	42.30	77.2	0.04	5.40	8.30
5			32	37.78	79.1	0.06	5.20	9.20
5			40	32.84	80.3	0.10	5.00	10.30
5			50	28.90	82.3	0.13	4.70	11.50
5			63	27.23	86.6	0.21	4.30	13.00
5			80	23.73	89.3	0.31	3.70	14.80
5			100	19.06	90.9	0.48	3.00	16.80
5			125	15.21	93.5	0.73	1.80	18.80
5			160	10.04	95.5	1.09	0.00	21.10
5			200	6.36	96.5	1.57	0.00	22.80
6	3,513	3,521						
6			20	40.37	73.8	0.00	5.60	7.60
6			25	37.00	77.2	0.07	5.40	8.30
6			32	32.46	79.1	0.11	5.20	9.20
6			40	27.49	80.3	0.18	5.00	10.30
6			50	23.52	82.3	0.25	4.70	11.50
6			63	21.78	86.6	0.39	4.30	13.00
6			80	18.20	89.3	0.56	3.70	14.80
6			100	13.39	90.9	0.88	3.00	16.80
6			125	9.33	93.5	1.34	1.80	18.80
6			160	3.86	95.5	2.01	0.00	21.10
6			200	-0.22	96.5	2.89	0.00	22.80
7	3,025	3,034						
7			20	41.66	73.8	0.00	5.60	7.60
7			25	38.30	77.2	0.06	5.40	8.30
7			32	33.77	79.1	0.09	5.20	9.20
7			40	28.81	80.3	0.15	5.00	10.30
7			50	24.85	82.3	0.21	4.70	11.50
7			63	23.13	86.6	0.33	4.30	13.00
7			80	19.57	89.3	0.49	3.70	14.80
7			100	14.80	90.9	0.76	3.00	16.80
7			125	10.81	93.5	1.15	1.80	18.80
7			160	5.43	95.5	1.73	0.00	21.10
7			200	1.47	96.5	2.49	0.00	22.80
8	2,470	2,481						
8			20	43.41	73.8	0.00	5.60	7.60
8			25	40.06	77.2	0.05	5.40	8.30
8			32	35.53	79.1	0.07	5.20	9.20
8			40	30.58	80.3	0.12	5.00	10.30
8			50	26.63	82.3	0.17	4.70	11.50
8			63	24.93	86.6	0.27	4.30	13.00
8			80	21.41	89.3	0.40	3.70	14.80
8			100	16.69	90.9	0.62	3.00	16.80
8			125	12.76	93.5	0.94	1.80	18.80
8			160	7.49	95.5	1.41	0.00	21.10
8			200	3.67	96.5	2.03	0.00	22.80
9	2,174	2,186						
9			20	44.51	73.8	0.00	5.60	7.60
9			25	41.16	77.2	0.04	5.40	8.30
9			32	36.64	79.1	0.07	5.20	9.20
9			40	31.70	80.3	0.11	5.00	10.30
9			50	27.75	82.3	0.15	4.70	11.50
9			63	26.07	86.6	0.24	4.30	13.00
9			80	22.56	89.3	0.35	3.70	14.80
9			100	17.86	90.9	0.55	3.00	16.80
9			125	13.98	93.5	0.83	1.80	18.80
9			160	8.76	95.5	1.25	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			200	5.02	96.5	1.79	0.00	22.80
Sum								
Sum			20	56.92				
Sum			25	53.56				
Sum			32	49.03				
Sum			40	44.08				
Sum			50	40.12				
Sum			63	38.40				
Sum			80	34.86				
Sum			100	30.10				
Sum			125	26.13				
Sum			160	20.80				
Sum			200	16.90				

Noise sensitive area: HH Pieni Mäkijärvi Noise sensitive point: Finnish normal frequency - User defined (287)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,419	3,425						
1			20	40.61	73.8	0.00	5.60	7.60
1			25	37.24	77.2	0.07	5.40	8.30
1			32	32.70	79.1	0.10	5.20	9.20
1			40	27.74	80.3	0.17	5.00	10.30
1			50	23.77	82.3	0.24	4.70	11.50
1			63	22.03	86.6	0.38	4.30	13.00
1			80	18.46	89.3	0.55	3.70	14.80
1			100	13.65	90.9	0.86	3.00	16.80
1			125	9.61	93.5	1.30	1.80	18.80
1			160	4.15	95.5	1.95	0.00	21.10
1			200	0.10	96.5	2.81	0.00	22.80
10	4,964	4,969						
10			20	37.37	73.8	0.00	5.60	7.60
10			25	33.98	77.2	0.10	5.40	8.30
10			32	29.43	79.1	0.15	5.20	9.20
10			40	24.43	80.3	0.25	5.00	10.30
10			50	20.43	82.3	0.35	4.70	11.50
10			63	18.63	86.6	0.55	4.30	13.00
10			80	14.98	89.3	0.80	3.70	14.80
10			100	10.03	90.9	1.24	3.00	16.80
10			125	5.79	93.5	1.89	1.80	18.80
10			160	0.04	95.5	2.83	0.00	21.10
10			200	-4.40	96.5	4.07	0.00	22.80
11	4,370	4,376						
11			20	38.48	73.8	0.00	5.60	7.60
11			25	35.09	77.2	0.09	5.40	8.30
11			32	30.55	79.1	0.13	5.20	9.20
11			40	25.56	80.3	0.22	5.00	10.30
11			50	21.57	82.3	0.31	4.70	11.50
11			63	19.80	86.6	0.48	4.30	13.00
11			80	16.18	89.3	0.70	3.70	14.80
11			100	11.29	90.9	1.09	3.00	16.80
11			125	7.12	93.5	1.66	1.80	18.80
11			160	1.49	95.5	2.49	0.00	21.10
11			200	-2.81	96.5	3.59	0.00	22.80
12	5,494	5,498						
12			20	36.50	73.8	0.00	5.60	7.60
12			25	33.09	77.2	0.11	5.40	8.30
12			32	28.53	79.1	0.16	5.20	9.20
12			40	23.52	80.3	0.27	5.00	10.30
12			50	19.51	82.3	0.38	4.70	11.50
12			63	17.69	86.6	0.60	4.30	13.00
12			80	14.02	89.3	0.88	3.70	14.80
12			100	9.02	90.9	1.37	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			125	4.71	93.5	2.09	1.80	18.80
12			160	-1.14	95.5	3.13	0.00	21.10
12			200	-5.71	96.5	4.51	0.00	22.80
13	4,759	4,764						
13			20	37.74	73.8	0.00	5.60	7.60
13			25	34.34	77.2	0.10	5.40	8.30
13			32	29.80	79.1	0.14	5.20	9.20
13			40	24.80	80.3	0.24	5.00	10.30
13			50	20.81	82.3	0.33	4.70	11.50
13			63	19.02	86.6	0.52	4.30	13.00
13			80	15.38	89.3	0.76	3.70	14.80
13			100	10.45	90.9	1.19	3.00	16.80
13			125	6.23	93.5	1.81	1.80	18.80
13			160	0.52	95.5	2.72	0.00	21.10
13			200	-3.87	96.5	3.91	0.00	22.80
14	3,278	3,285						
14			20	40.97	73.8	0.00	5.60	7.60
14			25	37.60	77.2	0.07	5.40	8.30
14			32	33.07	79.1	0.10	5.20	9.20
14			40	28.10	80.3	0.16	5.00	10.30
14			50	24.14	82.3	0.23	4.70	11.50
14			63	22.41	86.6	0.36	4.30	13.00
14			80	18.84	89.3	0.53	3.70	14.80
14			100	14.05	90.9	0.82	3.00	16.80
14			125	10.02	93.5	1.25	1.80	18.80
14			160	4.60	95.5	1.87	0.00	21.10
14			200	0.57	96.5	2.69	0.00	22.80
15	5,333	5,337						
15			20	36.75	73.8	0.00	5.60	7.60
15			25	33.35	77.2	0.11	5.40	8.30
15			32	28.79	79.1	0.16	5.20	9.20
15			40	23.79	80.3	0.27	5.00	10.30
15			50	19.78	82.3	0.37	4.70	11.50
15			63	17.97	86.6	0.59	4.30	13.00
15			80	14.30	89.3	0.85	3.70	14.80
15			100	9.32	90.9	1.33	3.00	16.80
15			125	5.03	93.5	2.03	1.80	18.80
15			160	-0.79	95.5	3.04	0.00	21.10
15			200	-5.32	96.5	4.38	0.00	22.80
16	4,613	4,618						
16			20	38.01	73.8	0.00	5.60	7.60
16			25	34.62	77.2	0.09	5.40	8.30
16			32	30.07	79.1	0.14	5.20	9.20
16			40	25.08	80.3	0.23	5.00	10.30
16			50	21.09	82.3	0.32	4.70	11.50
16			63	19.30	86.6	0.51	4.30	13.00
16			80	15.67	89.3	0.74	3.70	14.80
16			100	10.76	90.9	1.15	3.00	16.80
16			125	6.56	93.5	1.75	1.80	18.80
16			160	0.88	95.5	2.63	0.00	21.10
16			200	-3.47	96.5	3.79	0.00	22.80
17	3,999	4,006						
17			20	39.25	73.8	0.00	5.60	7.60
17			25	35.87	77.2	0.08	5.40	8.30
17			32	31.33	79.1	0.12	5.20	9.20
17			40	26.35	80.3	0.20	5.00	10.30
17			50	22.37	82.3	0.28	4.70	11.50
17			63	20.61	86.6	0.44	4.30	13.00
17			80	17.00	89.3	0.64	3.70	14.80
17			100	12.14	90.9	1.00	3.00	16.80
17			125	8.02	93.5	1.52	1.80	18.80
17			160	2.46	95.5	2.28	0.00	21.10
17			200	-1.74	96.5	3.28	0.00	22.80
18	3,591	3,599						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			20	40.18	73.8	0.00	5.60	7.60
18			25	36.80	77.2	0.07	5.40	8.30
18			32	32.27	79.1	0.11	5.20	9.20
18			40	27.30	80.3	0.18	5.00	10.30
18			50	23.32	82.3	0.25	4.70	11.50
18			63	21.58	86.6	0.40	4.30	13.00
18			80	18.00	89.3	0.58	3.70	14.80
18			100	13.18	90.9	0.90	3.00	16.80
18			125	9.11	93.5	1.37	1.80	18.80
18			160	3.63	95.5	2.05	0.00	21.10
18			200	-0.47	96.5	2.95	0.00	22.80
19	5,394	5,398						
19			20	36.66	73.8	0.00	5.60	7.60
19			25	33.25	77.2	0.11	5.40	8.30
19			32	28.69	79.1	0.16	5.20	9.20
19			40	23.69	80.3	0.27	5.00	10.30
19			50	19.68	82.3	0.38	4.70	11.50
19			63	17.86	86.6	0.59	4.30	13.00
19			80	14.19	89.3	0.86	3.70	14.80
19			100	9.21	90.9	1.35	3.00	16.80
19			125	4.90	93.5	2.05	1.80	18.80
19			160	-0.92	95.5	3.08	0.00	21.10
19			200	-5.47	96.5	4.43	0.00	22.80
2	3,701	3,707						
2			20	39.92	73.8	0.00	5.60	7.60
2			25	36.55	77.2	0.07	5.40	8.30
2			32	32.01	79.1	0.11	5.20	9.20
2			40	27.03	80.3	0.19	5.00	10.30
2			50	23.06	82.3	0.26	4.70	11.50
2			63	21.31	86.6	0.41	4.30	13.00
2			80	17.73	89.3	0.59	3.70	14.80
2			100	12.89	90.9	0.93	3.00	16.80
2			125	8.81	93.5	1.41	1.80	18.80
2			160	3.31	95.5	2.11	0.00	21.10
2			200	-0.82	96.5	3.04	0.00	22.80
20	5,075	5,079						
20			20	37.18	73.8	0.00	5.60	7.60
20			25	33.78	77.2	0.10	5.40	8.30
20			32	29.23	79.1	0.15	5.20	9.20
20			40	24.23	80.3	0.25	5.00	10.30
20			50	20.23	82.3	0.36	4.70	11.50
20			63	18.43	86.6	0.56	4.30	13.00
20			80	14.77	89.3	0.81	3.70	14.80
20			100	9.81	90.9	1.27	3.00	16.80
20			125	5.55	93.5	1.93	1.80	18.80
20			160	-0.21	95.5	2.90	0.00	21.10
20			200	-4.68	96.5	4.16	0.00	22.80
21	3,621	3,631						
21			20	40.10	73.8	0.00	5.60	7.60
21			25	36.73	77.2	0.07	5.40	8.30
21			32	32.19	79.1	0.11	5.20	9.20
21			40	27.22	80.3	0.18	5.00	10.30
21			50	23.25	82.3	0.25	4.70	11.50
21			63	21.50	86.6	0.40	4.30	13.00
21			80	17.92	89.3	0.58	3.70	14.80
21			100	13.09	90.9	0.91	3.00	16.80
21			125	9.02	93.5	1.38	1.80	18.80
21			160	3.53	95.5	2.07	0.00	21.10
21			200	-0.58	96.5	2.98	0.00	22.80
22	3,286	3,294						
22			20	40.95	73.8	0.00	5.60	7.60
22			25	37.58	77.2	0.07	5.40	8.30
22			32	33.05	79.1	0.10	5.20	9.20
22			40	28.08	80.3	0.16	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			50	24.12	82.3	0.23	4.70	11.50
22			63	22.38	86.6	0.36	4.30	13.00
22			80	18.82	89.3	0.53	3.70	14.80
22			100	14.02	90.9	0.82	3.00	16.80
22			125	10.00	93.5	1.25	1.80	18.80
22			160	4.57	95.5	1.88	0.00	21.10
22			200	0.55	96.5	2.70	0.00	22.80
23	2,662	2,670						
23			20	42.77	73.8	0.00	5.60	7.60
23			25	39.42	77.2	0.05	5.40	8.30
23			32	34.89	79.1	0.08	5.20	9.20
23			40	29.93	80.3	0.13	5.00	10.30
23			50	25.98	82.3	0.19	4.70	11.50
23			63	24.27	86.6	0.29	4.30	13.00
23			80	20.74	89.3	0.43	3.70	14.80
23			100	16.00	90.9	0.67	3.00	16.80
23			125	12.05	93.5	1.01	1.80	18.80
23			160	6.75	95.5	1.52	0.00	21.10
23			200	2.88	96.5	2.19	0.00	22.80
24	4,875	4,880						
24			20	37.53	73.8	0.00	5.60	7.60
24			25	34.13	77.2	0.10	5.40	8.30
24			32	29.59	79.1	0.15	5.20	9.20
24			40	24.59	80.3	0.24	5.00	10.30
24			50	20.59	82.3	0.34	4.70	11.50
24			63	18.79	86.6	0.54	4.30	13.00
24			80	15.15	89.3	0.78	3.70	14.80
24			100	10.21	90.9	1.22	3.00	16.80
24			125	5.98	93.5	1.85	1.80	18.80
24			160	0.25	95.5	2.78	0.00	21.10
24			200	-4.17	96.5	4.00	0.00	22.80
25	4,327	4,333						
25			20	38.56	73.8	0.00	5.60	7.60
25			25	35.18	77.2	0.09	5.40	8.30
25			32	30.63	79.1	0.13	5.20	9.20
25			40	25.65	80.3	0.22	5.00	10.30
25			50	21.66	82.3	0.30	4.70	11.50
25			63	19.89	86.6	0.48	4.30	13.00
25			80	16.27	89.3	0.69	3.70	14.80
25			100	11.38	90.9	1.08	3.00	16.80
25			125	7.22	93.5	1.65	1.80	18.80
25			160	1.59	95.5	2.47	0.00	21.10
25			200	-2.69	96.5	3.55	0.00	22.80
26	4,080	4,088						
26			20	39.07	73.8	0.00	5.60	7.60
26			25	35.69	77.2	0.08	5.40	8.30
26			32	31.15	79.1	0.12	5.20	9.20
26			40	26.17	80.3	0.20	5.00	10.30
26			50	22.18	82.3	0.29	4.70	11.50
26			63	20.42	86.6	0.45	4.30	13.00
26			80	16.82	89.3	0.65	3.70	14.80
26			100	11.95	90.9	1.02	3.00	16.80
26			125	7.82	93.5	1.55	1.80	18.80
26			160	2.24	95.5	2.33	0.00	21.10
26			200	-1.98	96.5	3.35	0.00	22.80
27	3,767	3,775						
27			20	39.76	73.8	0.00	5.60	7.60
27			25	36.39	77.2	0.08	5.40	8.30
27			32	31.85	79.1	0.11	5.20	9.20
27			40	26.87	80.3	0.19	5.00	10.30
27			50	22.90	82.3	0.26	4.70	11.50
27			63	21.15	86.6	0.42	4.30	13.00
27			80	17.56	89.3	0.60	3.70	14.80
27			100	12.72	90.9	0.94	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			125	8.63	93.5	1.43	1.80	18.80
27			160	3.11	95.5	2.15	0.00	21.10
27			200	-1.03	96.5	3.10	0.00	22.80
28	3,252	3,260						
28			20	41.04	73.8	0.00	5.60	7.60
28			25	37.67	77.2	0.07	5.40	8.30
28			32	33.14	79.1	0.10	5.20	9.20
28			40	28.17	80.3	0.16	5.00	10.30
28			50	24.21	82.3	0.23	4.70	11.50
28			63	22.48	86.6	0.36	4.30	13.00
28			80	18.91	89.3	0.52	3.70	14.80
28			100	14.12	90.9	0.81	3.00	16.80
28			125	10.10	93.5	1.24	1.80	18.80
28			160	4.68	95.5	1.86	0.00	21.10
28			200	0.66	96.5	2.67	0.00	22.80
29	2,769	2,779						
29			20	42.42	73.8	0.00	5.60	7.60
29			25	39.07	77.2	0.06	5.40	8.30
29			32	34.54	79.1	0.08	5.20	9.20
29			40	29.58	80.3	0.14	5.00	10.30
29			50	25.63	82.3	0.19	4.70	11.50
29			63	23.92	86.6	0.31	4.30	13.00
29			80	20.38	89.3	0.44	3.70	14.80
29			100	15.63	90.9	0.69	3.00	16.80
29			125	11.67	93.5	1.06	1.80	18.80
29			160	6.34	95.5	1.58	0.00	21.10
29			200	2.44	96.5	2.28	0.00	22.80
3	3,236	3,244						
3			20	41.08	73.8	0.00	5.60	7.60
3			25	37.71	77.2	0.06	5.40	8.30
3			32	33.18	79.1	0.10	5.20	9.20
3			40	28.22	80.3	0.16	5.00	10.30
3			50	24.25	82.3	0.23	4.70	11.50
3			63	22.52	86.6	0.36	4.30	13.00
3			80	18.96	89.3	0.52	3.70	14.80
3			100	14.17	90.9	0.81	3.00	16.80
3			125	10.15	93.5	1.23	1.80	18.80
3			160	4.73	95.5	1.85	0.00	21.10
3			200	0.72	96.5	2.66	0.00	22.80
30	2,111	2,121						
30			20	44.77	73.8	0.00	5.60	7.60
30			25	41.43	77.2	0.04	5.40	8.30
30			32	36.90	79.1	0.06	5.20	9.20
30			40	31.96	80.3	0.11	5.00	10.30
30			50	28.02	82.3	0.15	4.70	11.50
30			63	26.34	86.6	0.23	4.30	13.00
30			80	22.83	89.3	0.34	3.70	14.80
30			100	18.14	90.9	0.53	3.00	16.80
30			125	14.26	93.5	0.81	1.80	18.80
30			160	9.06	95.5	1.21	0.00	21.10
30			200	5.33	96.5	1.74	0.00	22.80
31	2,606	2,614						
31			20	42.95	73.8	0.00	5.60	7.60
31			25	39.60	77.2	0.05	5.40	8.30
31			32	35.08	79.1	0.08	5.20	9.20
31			40	30.12	80.3	0.13	5.00	10.30
31			50	26.17	82.3	0.18	4.70	11.50
31			63	24.47	86.6	0.29	4.30	13.00
31			80	20.94	89.3	0.42	3.70	14.80
31			100	16.20	90.9	0.65	3.00	16.80
31			125	12.26	93.5	0.99	1.80	18.80
31			160	6.96	95.5	1.49	0.00	21.10
31			200	3.11	96.5	2.14	0.00	22.80
32	1,772	1,785						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			20	46.27	73.8	0.00	5.60	7.60
32			25	42.93	77.2	0.04	5.40	8.30
32			32	38.41	79.1	0.05	5.20	9.20
32			40	33.48	80.3	0.09	5.00	10.30
32			50	29.54	82.3	0.12	4.70	11.50
32			63	27.87	86.6	0.20	4.30	13.00
32			80	24.38	89.3	0.29	3.70	14.80
32			100	19.72	90.9	0.45	3.00	16.80
32			125	15.89	93.5	0.68	1.80	18.80
32			160	10.75	95.5	1.02	0.00	21.10
32			200	7.10	96.5	1.46	0.00	22.80
33	1,129	1,154						
33			20	50.06	73.8	0.00	5.60	7.60
33			25	46.74	77.2	0.02	5.40	8.30
33			32	42.22	79.1	0.03	5.20	9.20
33			40	37.30	80.3	0.06	5.00	10.30
33			50	33.38	82.3	0.08	4.70	11.50
33			63	31.73	86.6	0.13	4.30	13.00
33			80	28.27	89.3	0.18	3.70	14.80
33			100	23.67	90.9	0.29	3.00	16.80
33			125	19.92	93.5	0.44	1.80	18.80
33			160	14.90	95.5	0.66	0.00	21.10
33			200	11.41	96.5	0.95	0.00	22.80
4	3,144	3,152						
4			20	41.33	73.8	0.00	5.60	7.60
4			25	37.97	77.2	0.06	5.40	8.30
4			32	33.43	79.1	0.09	5.20	9.20
4			40	28.47	80.3	0.16	5.00	10.30
4			50	24.51	82.3	0.22	4.70	11.50
4			63	22.78	86.6	0.35	4.30	13.00
4			80	19.22	89.3	0.50	3.70	14.80
4			100	14.44	90.9	0.79	3.00	16.80
4			125	10.43	93.5	1.20	1.80	18.80
4			160	5.03	95.5	1.80	0.00	21.10
4			200	1.04	96.5	2.58	0.00	22.80
5	2,756	2,765						
5			20	42.47	73.8	0.00	5.60	7.60
5			25	39.11	77.2	0.06	5.40	8.30
5			32	34.58	79.1	0.08	5.20	9.20
5			40	29.63	80.3	0.14	5.00	10.30
5			50	25.67	82.3	0.19	4.70	11.50
5			63	23.96	86.6	0.30	4.30	13.00
5			80	20.42	89.3	0.44	3.70	14.80
5			100	15.68	90.9	0.69	3.00	16.80
5			125	11.72	93.5	1.05	1.80	18.80
5			160	6.39	95.5	1.58	0.00	21.10
5			200	2.50	96.5	2.27	0.00	22.80
6	4,437	4,442						
6			20	38.35	73.8	0.00	5.60	7.60
6			25	34.96	77.2	0.09	5.40	8.30
6			32	30.41	79.1	0.13	5.20	9.20
6			40	25.43	80.3	0.22	5.00	10.30
6			50	21.44	82.3	0.31	4.70	11.50
6			63	19.66	86.6	0.49	4.30	13.00
6			80	16.04	89.3	0.71	3.70	14.80
6			100	11.14	90.9	1.11	3.00	16.80
6			125	6.96	93.5	1.69	1.80	18.80
6			160	1.32	95.5	2.53	0.00	21.10
6			200	-3.00	96.5	3.64	0.00	22.80
7	3,840	3,846						
7			20	39.60	73.8	0.00	5.60	7.60
7			25	36.22	77.2	0.08	5.40	8.30
7			32	31.68	79.1	0.12	5.20	9.20
7			40	26.71	80.3	0.19	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			50	22.73	82.3	0.27	4.70	11.50
7			63	20.98	86.6	0.42	4.30	13.00
7			80	17.38	89.3	0.62	3.70	14.80
7			100	12.54	90.9	0.96	3.00	16.80
7			125	8.44	93.5	1.46	1.80	18.80
7			160	2.91	95.5	2.19	0.00	21.10
7			200	-1.25	96.5	3.15	0.00	22.80
8	3,289	3,296						
8			20	40.94	73.8	0.00	5.60	7.60
8			25	37.57	77.2	0.07	5.40	8.30
8			32	33.04	79.1	0.10	5.20	9.20
8			40	28.07	80.3	0.16	5.00	10.30
8			50	24.11	82.3	0.23	4.70	11.50
8			63	22.38	86.6	0.36	4.30	13.00
8			80	18.81	89.3	0.53	3.70	14.80
8			100	14.01	90.9	0.82	3.00	16.80
8			125	9.99	93.5	1.25	1.80	18.80
8			160	4.56	95.5	1.88	0.00	21.10
8			200	0.54	96.5	2.70	0.00	22.80
9	2,741	2,749						
9			20	42.52	73.8	0.00	5.60	7.60
9			25	39.16	77.2	0.05	5.40	8.30
9			32	34.63	79.1	0.08	5.20	9.20
9			40	29.68	80.3	0.14	5.00	10.30
9			50	25.72	82.3	0.19	4.70	11.50
9			63	24.01	86.6	0.30	4.30	13.00
9			80	20.48	89.3	0.44	3.70	14.80
9			100	15.73	90.9	0.69	3.00	16.80
9			125	11.77	93.5	1.04	1.80	18.80
9			160	6.45	95.5	1.57	0.00	21.10
9			200	2.56	96.5	2.25	0.00	22.80
Sum								
Sum			20	56.83				
Sum			25	53.48				
Sum			32	48.95				
Sum			40	43.99				
Sum			50	40.04				
Sum			63	38.33				
Sum			80	34.79				
Sum			100	30.05				
Sum			125	26.10				
Sum			160	20.79				
Sum			200	16.95				

Noise sensitive area: HH Pohjoispäänsuo Noise sensitive point: Finnish normal frequency - User defined (285)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,800	5,803						
1			20	36.03	73.8	0.00	5.60	7.60
1			25	32.61	77.2	0.12	5.40	8.30
1			32	28.05	79.1	0.17	5.20	9.20
1			40	23.04	80.3	0.29	5.00	10.30
1			50	19.02	82.3	0.41	4.70	11.50
1			63	17.19	86.6	0.64	4.30	13.00
1			80	13.50	89.3	0.93	3.70	14.80
1			100	8.48	90.9	1.45	3.00	16.80
1			125	4.12	93.5	2.21	1.80	18.80
1			160	-1.78	95.5	3.31	0.00	21.10
1			200	-6.43	96.5	4.76	0.00	22.80
10	2,908	2,916						
10			20	42.01	73.8	0.00	5.60	7.60
10			25	38.65	77.2	0.06	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			32	34.12	79.1	0.09	5.20	9.20
10			40	29.16	80.3	0.15	5.00	10.30
10			50	25.20	82.3	0.20	4.70	11.50
10			63	23.48	86.6	0.32	4.30	13.00
10			80	19.94	89.3	0.47	3.70	14.80
10			100	15.18	90.9	0.73	3.00	16.80
10			125	11.20	93.5	1.11	1.80	18.80
10			160	5.84	95.5	1.66	0.00	21.10
10			200	1.91	96.5	2.39	0.00	22.80
11	3,147	3,154						
11			20	41.32	73.8	0.00	5.60	7.60
11			25	37.96	77.2	0.06	5.40	8.30
11			32	33.43	79.1	0.09	5.20	9.20
11			40	28.47	80.3	0.16	5.00	10.30
11			50	24.50	82.3	0.22	4.70	11.50
11			63	22.78	86.6	0.35	4.30	13.00
11			80	19.22	89.3	0.50	3.70	14.80
11			100	14.43	90.9	0.79	3.00	16.80
11			125	10.42	93.5	1.20	1.80	18.80
11			160	5.03	95.5	1.80	0.00	21.10
11			200	1.04	96.5	2.59	0.00	22.80
12	2,435	2,444						
12			20	43.54	73.8	0.00	5.60	7.60
12			25	40.19	77.2	0.05	5.40	8.30
12			32	35.67	79.1	0.07	5.20	9.20
12			40	30.72	80.3	0.12	5.00	10.30
12			50	26.77	82.3	0.17	4.70	11.50
12			63	25.07	86.6	0.27	4.30	13.00
12			80	21.55	89.3	0.39	3.70	14.80
12			100	16.83	90.9	0.61	3.00	16.80
12			125	12.91	93.5	0.93	1.80	18.80
12			160	7.65	95.5	1.39	0.00	21.10
12			200	3.83	96.5	2.00	0.00	22.80
13	2,552	2,560						
13			20	43.13	73.8	0.00	5.60	7.60
13			25	39.78	77.2	0.05	5.40	8.30
13			32	35.26	79.1	0.08	5.20	9.20
13			40	30.31	80.3	0.13	5.00	10.30
13			50	26.36	82.3	0.18	4.70	11.50
13			63	24.65	86.6	0.28	4.30	13.00
13			80	21.12	89.3	0.41	3.70	14.80
13			100	16.39	90.9	0.64	3.00	16.80
13			125	12.46	93.5	0.97	1.80	18.80
13			160	7.18	95.5	1.46	0.00	21.10
13			200	3.34	96.5	2.10	0.00	22.80
14	3,933	3,938						
14			20	39.39	73.8	0.00	5.60	7.60
14			25	36.01	77.2	0.08	5.40	8.30
14			32	31.48	79.1	0.12	5.20	9.20
14			40	26.50	80.3	0.20	5.00	10.30
14			50	22.52	82.3	0.28	4.70	11.50
14			63	20.76	86.6	0.43	4.30	13.00
14			80	17.16	89.3	0.63	3.70	14.80
14			100	12.31	90.9	0.98	3.00	16.80
14			125	8.20	93.5	1.50	1.80	18.80
14			160	2.65	95.5	2.24	0.00	21.10
14			200	-1.54	96.5	3.23	0.00	22.80
15	2,070	2,080						
15			20	44.94	73.8	0.00	5.60	7.60
15			25	41.60	77.2	0.04	5.40	8.30
15			32	37.08	79.1	0.06	5.20	9.20
15			40	32.14	80.3	0.10	5.00	10.30
15			50	28.19	82.3	0.15	4.70	11.50
15			63	26.51	86.6	0.23	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			80	23.01	89.3	0.33	3.70	14.80
15			100	18.32	90.9	0.52	3.00	16.80
15			125	14.45	93.5	0.79	1.80	18.80
15			160	9.25	95.5	1.19	0.00	21.10
15			200	5.53	96.5	1.71	0.00	22.80
16	2,433	2,441						
16			20	43.55	73.8	0.00	5.60	7.60
16			25	40.20	77.2	0.05	5.40	8.30
16			32	35.67	79.1	0.07	5.20	9.20
16			40	30.72	80.3	0.12	5.00	10.30
16			50	26.78	82.3	0.17	4.70	11.50
16			63	25.08	86.6	0.27	4.30	13.00
16			80	21.56	89.3	0.39	3.70	14.80
16			100	16.84	90.9	0.61	3.00	16.80
16			125	12.92	93.5	0.93	1.80	18.80
16			160	7.66	95.5	1.39	0.00	21.10
16			200	3.84	96.5	2.00	0.00	22.80
17	2,977	2,986						
17			20	41.80	73.8	0.00	5.60	7.60
17			25	38.44	77.2	0.06	5.40	8.30
17			32	33.91	79.1	0.09	5.20	9.20
17			40	28.95	80.3	0.15	5.00	10.30
17			50	24.99	82.3	0.21	4.70	11.50
17			63	23.27	86.6	0.33	4.30	13.00
17			80	19.72	89.3	0.48	3.70	14.80
17			100	14.95	90.9	0.75	3.00	16.80
17			125	10.96	93.5	1.13	1.80	18.80
17			160	5.60	95.5	1.70	0.00	21.10
17			200	1.65	96.5	2.45	0.00	22.80
18	3,432	3,439						
18			20	40.57	73.8	0.00	5.60	7.60
18			25	37.20	77.2	0.07	5.40	8.30
18			32	32.67	79.1	0.10	5.20	9.20
18			40	27.70	80.3	0.17	5.00	10.30
18			50	23.73	82.3	0.24	4.70	11.50
18			63	21.99	86.6	0.38	4.30	13.00
18			80	18.42	89.3	0.55	3.70	14.80
18			100	13.61	90.9	0.86	3.00	16.80
18			125	9.56	93.5	1.31	1.80	18.80
18			160	4.11	95.5	1.96	0.00	21.10
18			200	0.05	96.5	2.82	0.00	22.80
19	1,713	1,724						
19			20	46.57	73.8	0.00	5.60	7.60
19			25	43.24	77.2	0.03	5.40	8.30
19			32	38.72	79.1	0.05	5.20	9.20
19			40	33.78	80.3	0.09	5.00	10.30
19			50	29.85	82.3	0.12	4.70	11.50
19			63	28.18	86.6	0.19	4.30	13.00
19			80	24.69	89.3	0.28	3.70	14.80
19			100	20.04	90.9	0.43	3.00	16.80
19			125	16.21	93.5	0.66	1.80	18.80
19			160	11.09	95.5	0.98	0.00	21.10
19			200	7.46	96.5	1.41	0.00	22.80
2	4,744	4,748						
2			20	37.77	73.8	0.00	5.60	7.60
2			25	34.37	77.2	0.09	5.40	8.30
2			32	29.83	79.1	0.14	5.20	9.20
2			40	24.83	80.3	0.24	5.00	10.30
2			50	20.84	82.3	0.33	4.70	11.50
2			63	19.05	86.6	0.52	4.30	13.00
2			80	15.41	89.3	0.76	3.70	14.80
2			100	10.48	90.9	1.19	3.00	16.80
2			125	6.27	93.5	1.80	1.80	18.80
2			160	0.56	95.5	2.71	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			200	-3.82	96.5	3.89	0.00	22.80
20	1,893	1,904						
20			20	45.71	73.8	0.00	5.60	7.60
20			25	42.37	77.2	0.04	5.40	8.30
20			32	37.85	79.1	0.06	5.20	9.20
20			40	32.91	80.3	0.10	5.00	10.30
20			50	28.97	82.3	0.13	4.70	11.50
20			63	27.30	86.6	0.21	4.30	13.00
20			80	23.80	89.3	0.30	3.70	14.80
20			100	19.13	90.9	0.48	3.00	16.80
20			125	15.28	93.5	0.72	1.80	18.80
20			160	10.12	95.5	1.09	0.00	21.10
20			200	6.45	96.5	1.56	0.00	22.80
21	3,373	3,382						
21			20	40.72	73.8	0.00	5.60	7.60
21			25	37.35	77.2	0.07	5.40	8.30
21			32	32.81	79.1	0.10	5.20	9.20
21			40	27.85	80.3	0.17	5.00	10.30
21			50	23.88	82.3	0.24	4.70	11.50
21			63	22.14	86.6	0.37	4.30	13.00
21			80	18.58	89.3	0.54	3.70	14.80
21			100	13.77	90.9	0.85	3.00	16.80
21			125	9.73	93.5	1.29	1.80	18.80
21			160	4.29	95.5	1.93	0.00	21.10
21			200	0.24	96.5	2.77	0.00	22.80
22	3,832	3,838						
22			20	39.62	73.8	0.00	5.60	7.60
22			25	36.24	77.2	0.08	5.40	8.30
22			32	31.70	79.1	0.12	5.20	9.20
22			40	26.73	80.3	0.19	5.00	10.30
22			50	22.75	82.3	0.27	4.70	11.50
22			63	20.99	86.6	0.42	4.30	13.00
22			80	17.40	89.3	0.61	3.70	14.80
22			100	12.56	90.9	0.96	3.00	16.80
22			125	8.46	93.5	1.46	1.80	18.80
22			160	2.93	95.5	2.19	0.00	21.10
22			200	-1.23	96.5	3.15	0.00	22.80
23	4,462	4,466						
23			20	38.30	73.8	0.00	5.60	7.60
23			25	34.91	77.2	0.09	5.40	8.30
23			32	30.37	79.1	0.13	5.20	9.20
23			40	25.38	80.3	0.22	5.00	10.30
23			50	21.39	82.3	0.31	4.70	11.50
23			63	19.61	86.6	0.49	4.30	13.00
23			80	15.99	89.3	0.71	3.70	14.80
23			100	11.08	90.9	1.12	3.00	16.80
23			125	6.90	93.5	1.70	1.80	18.80
23			160	1.25	95.5	2.55	0.00	21.10
23			200	-3.06	96.5	3.66	0.00	22.80
24	2,212	2,223						
24			20	44.36	73.8	0.00	5.60	7.60
24			25	41.02	77.2	0.04	5.40	8.30
24			32	36.50	79.1	0.07	5.20	9.20
24			40	31.55	80.3	0.11	5.00	10.30
24			50	27.61	82.3	0.16	4.70	11.50
24			63	25.92	86.6	0.24	4.30	13.00
24			80	22.41	89.3	0.36	3.70	14.80
24			100	17.71	90.9	0.56	3.00	16.80
24			125	13.82	93.5	0.84	1.80	18.80
24			160	8.60	95.5	1.27	0.00	21.10
24			200	4.84	96.5	1.82	0.00	22.80
25	2,673	2,682						
25			20	42.73	73.8	0.00	5.60	7.60
25			25	39.38	77.2	0.05	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			32	34.85	79.1	0.08	5.20	9.20
25			40	29.90	80.3	0.13	5.00	10.30
25			50	25.94	82.3	0.19	4.70	11.50
25			63	24.24	86.6	0.30	4.30	13.00
25			80	20.70	89.3	0.43	3.70	14.80
25			100	15.96	90.9	0.67	3.00	16.80
25			125	12.01	93.5	1.02	1.80	18.80
25			160	6.70	95.5	1.53	0.00	21.10
25			200	2.83	96.5	2.20	0.00	22.80
26	3,065	3,075						
26			20	41.54	73.8	0.00	5.60	7.60
26			25	38.18	77.2	0.06	5.40	8.30
26			32	33.65	79.1	0.09	5.20	9.20
26			40	28.69	80.3	0.15	5.00	10.30
26			50	24.73	82.3	0.22	4.70	11.50
26			63	23.00	86.6	0.34	4.30	13.00
26			80	19.45	89.3	0.49	3.70	14.80
26			100	14.67	90.9	0.77	3.00	16.80
26			125	10.67	93.5	1.17	1.80	18.80
26			160	5.29	95.5	1.75	0.00	21.10
26			200	1.32	96.5	2.52	0.00	22.80
27	3,533	3,540						
27			20	40.32	73.8	0.00	5.60	7.60
27			25	36.95	77.2	0.07	5.40	8.30
27			32	32.41	79.1	0.11	5.20	9.20
27			40	27.44	80.3	0.18	5.00	10.30
27			50	23.47	82.3	0.25	4.70	11.50
27			63	21.73	86.6	0.39	4.30	13.00
27			80	18.15	89.3	0.57	3.70	14.80
27			100	13.33	90.9	0.89	3.00	16.80
27			125	9.27	93.5	1.35	1.80	18.80
27			160	3.80	95.5	2.02	0.00	21.10
27			200	-0.28	96.5	2.90	0.00	22.80
28	4,169	4,174						
28			20	38.89	73.8	0.00	5.60	7.60
28			25	35.50	77.2	0.08	5.40	8.30
28			32	30.96	79.1	0.13	5.20	9.20
28			40	25.98	80.3	0.21	5.00	10.30
28			50	22.00	82.3	0.29	4.70	11.50
28			63	20.23	86.6	0.46	4.30	13.00
28			80	16.62	89.3	0.67	3.70	14.80
28			100	11.74	90.9	1.04	3.00	16.80
28			125	7.60	93.5	1.59	1.80	18.80
28			160	2.01	95.5	2.38	0.00	21.10
28			200	-2.23	96.5	3.42	0.00	22.80
29	4,828	4,834						
29			20	37.61	73.8	0.00	5.60	7.60
29			25	34.22	77.2	0.10	5.40	8.30
29			32	29.67	79.1	0.15	5.20	9.20
29			40	24.67	80.3	0.24	5.00	10.30
29			50	20.68	82.3	0.34	4.70	11.50
29			63	18.88	86.6	0.53	4.30	13.00
29			80	15.24	89.3	0.77	3.70	14.80
29			100	10.31	90.9	1.21	3.00	16.80
29			125	6.08	93.5	1.84	1.80	18.80
29			160	0.36	95.5	2.76	0.00	21.10
29			200	-4.05	96.5	3.96	0.00	22.80
3	5,297	5,301						
3			20	36.81	73.8	0.00	5.60	7.60
3			25	33.41	77.2	0.11	5.40	8.30
3			32	28.85	79.1	0.16	5.20	9.20
3			40	23.85	80.3	0.27	5.00	10.30
3			50	19.84	82.3	0.37	4.70	11.50
3			63	18.03	86.6	0.58	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	14.36	89.3	0.85	3.70	14.80
3			100	9.39	90.9	1.33	3.00	16.80
3			125	5.10	93.5	2.01	1.80	18.80
3			160	-0.71	95.5	3.02	0.00	21.10
3			200	-5.24	96.5	4.35	0.00	22.80
30	5,280	5,284						
30			20	36.84	73.8	0.00	5.60	7.60
30			25	33.43	77.2	0.11	5.40	8.30
30			32	28.88	79.1	0.16	5.20	9.20
30			40	23.88	80.3	0.26	5.00	10.30
30			50	19.87	82.3	0.37	4.70	11.50
30			63	18.06	86.6	0.58	4.30	13.00
30			80	14.39	89.3	0.85	3.70	14.80
30			100	9.42	90.9	1.32	3.00	16.80
30			125	5.13	93.5	2.01	1.80	18.80
30			160	-0.67	95.5	3.01	0.00	21.10
30			200	-5.19	96.5	4.33	0.00	22.80
31	5,331	5,335						
31			20	36.76	73.8	0.00	5.60	7.60
31			25	33.35	77.2	0.11	5.40	8.30
31			32	28.80	79.1	0.16	5.20	9.20
31			40	23.79	80.3	0.27	5.00	10.30
31			50	19.78	82.3	0.37	4.70	11.50
31			63	17.97	86.6	0.59	4.30	13.00
31			80	14.30	89.3	0.85	3.70	14.80
31			100	9.32	90.9	1.33	3.00	16.80
31			125	5.03	93.5	2.03	1.80	18.80
31			160	-0.78	95.5	3.04	0.00	21.10
31			200	-5.32	96.5	4.37	0.00	22.80
32	5,921	5,924						
32			20	35.85	73.8	0.00	5.60	7.60
32			25	32.43	77.2	0.12	5.40	8.30
32			32	27.87	79.1	0.18	5.20	9.20
32			40	22.85	80.3	0.30	5.00	10.30
32			50	18.83	82.3	0.41	4.70	11.50
32			63	17.00	86.6	0.65	4.30	13.00
32			80	13.30	89.3	0.95	3.70	14.80
32			100	8.27	90.9	1.48	3.00	16.80
32			125	3.90	93.5	2.25	1.80	18.80
32			160	-2.03	95.5	3.38	0.00	21.10
32			200	-6.71	96.5	4.86	0.00	22.80
33	6,414	6,418						
33			20	35.15	73.8	0.00	5.60	7.60
33			25	31.72	77.2	0.13	5.40	8.30
33			32	27.16	79.1	0.19	5.20	9.20
33			40	22.13	80.3	0.32	5.00	10.30
33			50	18.10	82.3	0.45	4.70	11.50
33			63	16.25	86.6	0.71	4.30	13.00
33			80	12.52	89.3	1.03	3.70	14.80
33			100	7.45	90.9	1.60	3.00	16.80
33			125	3.01	93.5	2.44	1.80	18.80
33			160	-3.01	95.5	3.66	0.00	21.10
33			200	-7.81	96.5	5.26	0.00	22.80
4	4,827	4,832						
4			20	37.62	73.8	0.00	5.60	7.60
4			25	34.22	77.2	0.10	5.40	8.30
4			32	29.67	79.1	0.14	5.20	9.20
4			40	24.68	80.3	0.24	5.00	10.30
4			50	20.68	82.3	0.34	4.70	11.50
4			63	18.89	86.6	0.53	4.30	13.00
4			80	15.24	89.3	0.77	3.70	14.80
4			100	10.31	90.9	1.21	3.00	16.80
4			125	6.08	93.5	1.84	1.80	18.80
4			160	0.36	95.5	2.75	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			200	-4.04	96.5	3.96	0.00	22.80
5	4,745	4,749						
5			20	37.77	73.8	0.00	5.60	7.60
5			25	34.37	77.2	0.09	5.40	8.30
5			32	29.82	79.1	0.14	5.20	9.20
5			40	24.83	80.3	0.24	5.00	10.30
5			50	20.83	82.3	0.33	4.70	11.50
5			63	19.04	86.6	0.52	4.30	13.00
5			80	15.41	89.3	0.76	3.70	14.80
5			100	10.48	90.9	1.19	3.00	16.80
5			125	6.26	93.5	1.80	1.80	18.80
5			160	0.56	95.5	2.71	0.00	21.10
5			200	-3.83	96.5	3.89	0.00	22.80
6	3,627	3,633						
6			20	40.09	73.8	0.00	5.60	7.60
6			25	36.72	77.2	0.07	5.40	8.30
6			32	32.19	79.1	0.11	5.20	9.20
6			40	27.21	80.3	0.18	5.00	10.30
6			50	23.24	82.3	0.25	4.70	11.50
6			63	21.49	86.6	0.40	4.30	13.00
6			80	17.91	89.3	0.58	3.70	14.80
6			100	13.09	90.9	0.91	3.00	16.80
6			125	9.01	93.5	1.38	1.80	18.80
6			160	3.52	95.5	2.07	0.00	21.10
6			200	-0.58	96.5	2.98	0.00	22.80
7	3,760	3,766						
7			20	39.78	73.8	0.00	5.60	7.60
7			25	36.41	77.2	0.08	5.40	8.30
7			32	31.87	79.1	0.11	5.20	9.20
7			40	26.89	80.3	0.19	5.00	10.30
7			50	22.92	82.3	0.26	4.70	11.50
7			63	21.17	86.6	0.41	4.30	13.00
7			80	17.58	89.3	0.60	3.70	14.80
7			100	12.74	90.9	0.94	3.00	16.80
7			125	8.65	93.5	1.43	1.80	18.80
7			160	3.14	95.5	2.15	0.00	21.10
7			200	-1.01	96.5	3.09	0.00	22.80
8	4,228	4,233						
8			20	38.77	73.8	0.00	5.60	7.60
8			25	35.38	77.2	0.08	5.40	8.30
8			32	30.84	79.1	0.13	5.20	9.20
8			40	25.86	80.3	0.21	5.00	10.30
8			50	21.87	82.3	0.30	4.70	11.50
8			63	20.10	86.6	0.47	4.30	13.00
8			80	16.49	89.3	0.68	3.70	14.80
8			100	11.61	90.9	1.06	3.00	16.80
8			125	7.46	93.5	1.61	1.80	18.80
8			160	1.85	95.5	2.41	0.00	21.10
8			200	-2.40	96.5	3.47	0.00	22.80
9	4,422	4,427						
9			20	38.38	73.8	0.00	5.60	7.60
9			25	34.99	77.2	0.09	5.40	8.30
9			32	30.45	79.1	0.13	5.20	9.20
9			40	25.46	80.3	0.22	5.00	10.30
9			50	21.47	82.3	0.31	4.70	11.50
9			63	19.69	86.6	0.49	4.30	13.00
9			80	16.07	89.3	0.71	3.70	14.80
9			100	11.17	90.9	1.11	3.00	16.80
9			125	7.00	93.5	1.68	1.80	18.80
9			160	1.35	95.5	2.52	0.00	21.10
9			200	-2.95	96.5	3.63	0.00	22.80
Sum								
Sum			20	56.37				
Sum			25	53.01				

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			32	48.48				
Sum			40	43.52				
Sum			50	39.56				
Sum			63	37.84				
Sum			80	34.30				
Sum			100	29.53				
Sum			125	25.55				
Sum			160	20.20				
Sum			200	16.29				

Noise sensitive area: HH Rampsunniemi Noise sensitive point: Finnish normal frequency - User defined (302)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,382	6,386						
1			20	35.20	73.8	0.00	5.60	7.60
1			25	31.77	77.2	0.13	5.40	8.30
1			32	27.20	79.1	0.19	5.20	9.20
1			40	22.18	80.3	0.32	5.00	10.30
1			50	18.15	82.3	0.45	4.70	11.50
1			63	16.29	86.6	0.70	4.30	13.00
1			80	12.57	89.3	1.02	3.70	14.80
1			100	7.50	90.9	1.60	3.00	16.80
1			125	3.07	93.5	2.43	1.80	18.80
1			160	-2.94	95.5	3.64	0.00	21.10
1			200	-7.74	96.5	5.24	0.00	22.80
10	6,821	6,825						
10			20	34.62	73.8	0.00	5.60	7.60
10			25	31.18	77.2	0.14	5.40	8.30
10			32	26.61	79.1	0.20	5.20	9.20
10			40	21.58	80.3	0.34	5.00	10.30
10			50	17.54	82.3	0.48	4.70	11.50
10			63	15.67	86.6	0.75	4.30	13.00
10			80	11.93	89.3	1.09	3.70	14.80
10			100	6.81	90.9	1.71	3.00	16.80
10			125	2.32	93.5	2.59	1.80	18.80
10			160	-3.77	95.5	3.89	0.00	21.10
10			200	-8.68	96.5	5.60	0.00	22.80
11	6,215	6,220						
11			20	35.42	73.8	0.00	5.60	7.60
11			25	32.00	77.2	0.12	5.40	8.30
11			32	27.44	79.1	0.19	5.20	9.20
11			40	22.41	80.3	0.31	5.00	10.30
11			50	18.39	82.3	0.44	4.70	11.50
11			63	16.54	86.6	0.68	4.30	13.00
11			80	12.83	89.3	1.00	3.70	14.80
11			100	7.77	90.9	1.56	3.00	16.80
11			125	3.36	93.5	2.36	1.80	18.80
11			160	-2.62	95.5	3.55	0.00	21.10
11			200	-7.38	96.5	5.10	0.00	22.80
12	7,191	7,195						
12			20	34.16	73.8	0.00	5.60	7.60
12			25	30.72	77.2	0.14	5.40	8.30
12			32	26.14	79.1	0.22	5.20	9.20
12			40	21.10	80.3	0.36	5.00	10.30
12			50	17.06	82.3	0.50	4.70	11.50
12			63	15.17	86.6	0.79	4.30	13.00
12			80	11.41	89.3	1.15	3.70	14.80
12			100	6.26	90.9	1.80	3.00	16.80
12			125	1.72	93.5	2.73	1.80	18.80
12			160	-4.44	95.5	4.10	0.00	21.10
12			200	-9.44	96.5	5.90	0.00	22.80
13	6,322	6,327						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			20	35.28	73.8	0.00	5.60	7.60
13			25	31.85	77.2	0.13	5.40	8.30
13			32	27.29	79.1	0.19	5.20	9.20
13			40	22.26	80.3	0.32	5.00	10.30
13			50	18.23	82.3	0.44	4.70	11.50
13			63	16.38	86.6	0.70	4.30	13.00
13			80	12.66	89.3	1.01	3.70	14.80
13			100	7.60	90.9	1.58	3.00	16.80
13			125	3.17	93.5	2.40	1.80	18.80
13			160	-2.83	95.5	3.61	0.00	21.10
13			200	-7.61	96.5	5.19	0.00	22.80
14	5,225	5,230						
14			20	36.93	73.8	0.00	5.60	7.60
14			25	33.53	77.2	0.10	5.40	8.30
14			32	28.97	79.1	0.16	5.20	9.20
14			40	23.97	80.3	0.26	5.00	10.30
14			50	19.96	82.3	0.37	4.70	11.50
14			63	18.15	86.6	0.58	4.30	13.00
14			80	14.49	89.3	0.84	3.70	14.80
14			100	9.52	90.9	1.31	3.00	16.80
14			125	5.24	93.5	1.99	1.80	18.80
14			160	-0.55	95.5	2.98	0.00	21.10
14			200	-5.06	96.5	4.29	0.00	22.80
15	6,789	6,793						
15			20	34.66	73.8	0.00	5.60	7.60
15			25	31.22	77.2	0.14	5.40	8.30
15			32	26.65	79.1	0.20	5.20	9.20
15			40	21.62	80.3	0.34	5.00	10.30
15			50	17.58	82.3	0.48	4.70	11.50
15			63	15.71	86.6	0.75	4.30	13.00
15			80	11.97	89.3	1.09	3.70	14.80
15			100	6.86	90.9	1.70	3.00	16.80
15			125	2.38	93.5	2.58	1.80	18.80
15			160	-3.71	95.5	3.87	0.00	21.10
15			200	-8.61	96.5	5.57	0.00	22.80
16	5,915	5,920						
16			20	35.85	73.8	0.00	5.60	7.60
16			25	32.43	77.2	0.12	5.40	8.30
16			32	27.88	79.1	0.18	5.20	9.20
16			40	22.86	80.3	0.30	5.00	10.30
16			50	18.84	82.3	0.41	4.70	11.50
16			63	17.00	86.6	0.65	4.30	13.00
16			80	13.31	89.3	0.95	3.70	14.80
16			100	8.27	90.9	1.48	3.00	16.80
16			125	3.90	93.5	2.25	1.80	18.80
16			160	-2.02	95.5	3.37	0.00	21.10
16			200	-6.70	96.5	4.85	0.00	22.80
17	5,254	5,260						
17			20	36.88	73.8	0.00	5.60	7.60
17			25	33.47	77.2	0.11	5.40	8.30
17			32	28.92	79.1	0.16	5.20	9.20
17			40	23.92	80.3	0.26	5.00	10.30
17			50	19.91	82.3	0.37	4.70	11.50
17			63	18.10	86.6	0.58	4.30	13.00
17			80	14.44	89.3	0.84	3.70	14.80
17			100	9.46	90.9	1.32	3.00	16.80
17			125	5.18	93.5	2.00	1.80	18.80
17			160	-0.62	95.5	3.00	0.00	21.10
17			200	-5.13	96.5	4.31	0.00	22.80
18	5,126	5,132						
18			20	37.09	73.8	0.00	5.60	7.60
18			25	33.69	77.2	0.10	5.40	8.30
18			32	29.14	79.1	0.15	5.20	9.20
18			40	24.14	80.3	0.26	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			50	20.13	82.3	0.36	4.70	11.50
18			63	18.33	86.6	0.56	4.30	13.00
18			80	14.67	89.3	0.82	3.70	14.80
18			100	9.71	90.9	1.28	3.00	16.80
18			125	5.44	93.5	1.95	1.80	18.80
18			160	-0.33	95.5	2.93	0.00	21.10
18			200	-4.82	96.5	4.21	0.00	22.80
19	6,590	6,594						
19			20	34.92	73.8	0.00	5.60	7.60
19			25	31.49	77.2	0.13	5.40	8.30
19			32	26.92	79.1	0.20	5.20	9.20
19			40	21.89	80.3	0.33	5.00	10.30
19			50	17.86	82.3	0.46	4.70	11.50
19			63	15.99	86.6	0.73	4.30	13.00
19			80	12.26	89.3	1.05	3.70	14.80
19			100	7.17	90.9	1.65	3.00	16.80
19			125	2.71	93.5	2.51	1.80	18.80
19			160	-3.34	95.5	3.76	0.00	21.10
19			200	-8.19	96.5	5.41	0.00	22.80
2	6,293	6,297						
2			20	35.32	73.8	0.00	5.60	7.60
2			25	31.89	77.2	0.13	5.40	8.30
2			32	27.33	79.1	0.19	5.20	9.20
2			40	22.30	80.3	0.31	5.00	10.30
2			50	18.28	82.3	0.44	4.70	11.50
2			63	16.42	86.6	0.69	4.30	13.00
2			80	12.71	89.3	1.01	3.70	14.80
2			100	7.64	90.9	1.57	3.00	16.80
2			125	3.22	93.5	2.39	1.80	18.80
2			160	-2.77	95.5	3.59	0.00	21.10
2			200	-7.55	96.5	5.16	0.00	22.80
20	6,040	6,045						
20			20	35.67	73.8	0.00	5.60	7.60
20			25	32.25	77.2	0.12	5.40	8.30
20			32	27.69	79.1	0.18	5.20	9.20
20			40	22.67	80.3	0.30	5.00	10.30
20			50	18.65	82.3	0.42	4.70	11.50
20			63	16.81	86.6	0.66	4.30	13.00
20			80	13.10	89.3	0.97	3.70	14.80
20			100	8.06	90.9	1.51	3.00	16.80
20			125	3.68	93.5	2.30	1.80	18.80
20			160	-2.27	95.5	3.45	0.00	21.10
20			200	-6.98	96.5	4.96	0.00	22.80
21	4,648	4,657						
21			20	37.94	73.8	0.00	5.60	7.60
21			25	34.55	77.2	0.09	5.40	8.30
21			32	30.00	79.1	0.14	5.20	9.20
21			40	25.01	80.3	0.23	5.00	10.30
21			50	21.01	82.3	0.33	4.70	11.50
21			63	19.23	86.6	0.51	4.30	13.00
21			80	15.59	89.3	0.75	3.70	14.80
21			100	10.67	90.9	1.16	3.00	16.80
21			125	6.47	93.5	1.77	1.80	18.80
21			160	0.78	95.5	2.65	0.00	21.10
21			200	-3.58	96.5	3.82	0.00	22.80
22	4,071	4,079						
22			20	39.09	73.8	0.00	5.60	7.60
22			25	35.71	77.2	0.08	5.40	8.30
22			32	31.17	79.1	0.12	5.20	9.20
22			40	26.19	80.3	0.20	5.00	10.30
22			50	22.20	82.3	0.29	4.70	11.50
22			63	20.44	86.6	0.45	4.30	13.00
22			80	16.84	89.3	0.65	3.70	14.80
22			100	11.97	90.9	1.02	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			125	7.84	93.5	1.55	1.80	18.80
22			160	2.26	95.5	2.32	0.00	21.10
22			200	-1.96	96.5	3.34	0.00	22.80
23	3,598	3,605						
23			20	40.16	73.8	0.00	5.60	7.60
23			25	36.79	77.2	0.07	5.40	8.30
23			32	32.25	79.1	0.11	5.20	9.20
23			40	27.28	80.3	0.18	5.00	10.30
23			50	23.31	82.3	0.25	4.70	11.50
23			63	21.56	86.6	0.40	4.30	13.00
23			80	17.98	89.3	0.58	3.70	14.80
23			100	13.16	90.9	0.90	3.00	16.80
23			125	9.09	93.5	1.37	1.80	18.80
23			160	3.61	95.5	2.06	0.00	21.10
23			200	-0.50	96.5	2.96	0.00	22.80
24	5,506	5,511						
24			20	36.47	73.8	0.00	5.60	7.60
24			25	33.06	77.2	0.11	5.40	8.30
24			32	28.51	79.1	0.17	5.20	9.20
24			40	23.50	80.3	0.28	5.00	10.30
24			50	19.49	82.3	0.39	4.70	11.50
24			63	17.67	86.6	0.61	4.30	13.00
24			80	13.99	89.3	0.88	3.70	14.80
24			100	9.00	90.9	1.38	3.00	16.80
24			125	4.68	93.5	2.09	1.80	18.80
24			160	-1.17	95.5	3.14	0.00	21.10
24			200	-5.74	96.5	4.52	0.00	22.80
25	5,199	5,205						
25			20	36.97	73.8	0.00	5.60	7.60
25			25	33.57	77.2	0.10	5.40	8.30
25			32	29.02	79.1	0.16	5.20	9.20
25			40	24.01	80.3	0.26	5.00	10.30
25			50	20.01	82.3	0.36	4.70	11.50
25			63	18.20	86.6	0.57	4.30	13.00
25			80	14.54	89.3	0.83	3.70	14.80
25			100	9.57	90.9	1.30	3.00	16.80
25			125	5.29	93.5	1.98	1.80	18.80
25			160	-0.49	95.5	2.97	0.00	21.10
25			200	-5.00	96.5	4.27	0.00	22.80
26	4,692	4,700						
26			20	37.86	73.8	0.00	5.60	7.60
26			25	34.46	77.2	0.09	5.40	8.30
26			32	29.92	79.1	0.14	5.20	9.20
26			40	24.92	80.3	0.24	5.00	10.30
26			50	20.93	82.3	0.33	4.70	11.50
26			63	19.14	86.6	0.52	4.30	13.00
26			80	15.51	89.3	0.75	3.70	14.80
26			100	10.58	90.9	1.18	3.00	16.80
26			125	6.37	93.5	1.79	1.80	18.80
26			160	0.68	95.5	2.68	0.00	21.10
26			200	-3.70	96.5	3.85	0.00	22.80
27	4,194	4,203						
27			20	38.83	73.8	0.00	5.60	7.60
27			25	35.45	77.2	0.08	5.40	8.30
27			32	30.90	79.1	0.13	5.20	9.20
27			40	25.92	80.3	0.21	5.00	10.30
27			50	21.94	82.3	0.29	4.70	11.50
27			63	20.17	86.6	0.46	4.30	13.00
27			80	16.56	89.3	0.67	3.70	14.80
27			100	11.68	90.9	1.05	3.00	16.80
27			125	7.53	93.5	1.60	1.80	18.80
27			160	1.93	95.5	2.40	0.00	21.10
27			200	-2.32	96.5	3.45	0.00	22.80
28	3,583	3,592						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			20	40.19	73.8	0.00	5.60	7.60
28			25	36.82	77.2	0.07	5.40	8.30
28			32	32.29	79.1	0.11	5.20	9.20
28			40	27.31	80.3	0.18	5.00	10.30
28			50	23.34	82.3	0.25	4.70	11.50
28			63	21.60	86.6	0.40	4.30	13.00
28			80	18.02	89.3	0.57	3.70	14.80
28			100	13.19	90.9	0.90	3.00	16.80
28			125	9.13	93.5	1.37	1.80	18.80
28			160	3.65	95.5	2.05	0.00	21.10
28			200	-0.45	96.5	2.95	0.00	22.80
29	2,962	2,974						
29			20	41.83	73.8	0.00	5.60	7.60
29			25	38.48	77.2	0.06	5.40	8.30
29			32	33.95	79.1	0.09	5.20	9.20
29			40	28.99	80.3	0.15	5.00	10.30
29			50	25.03	82.3	0.21	4.70	11.50
29			63	23.31	86.6	0.33	4.30	13.00
29			80	19.76	89.3	0.48	3.70	14.80
29			100	14.99	90.9	0.74	3.00	16.80
29			125	11.00	93.5	1.13	1.80	18.80
29			160	5.64	95.5	1.69	0.00	21.10
29			200	1.70	96.5	2.44	0.00	22.80
3	6,030	6,035						
3			20	35.69	73.8	0.00	5.60	7.60
3			25	32.27	77.2	0.12	5.40	8.30
3			32	27.71	79.1	0.18	5.20	9.20
3			40	22.69	80.3	0.30	5.00	10.30
3			50	18.66	82.3	0.42	4.70	11.50
3			63	16.82	86.6	0.66	4.30	13.00
3			80	13.12	89.3	0.97	3.70	14.80
3			100	8.08	90.9	1.51	3.00	16.80
3			125	3.69	93.5	2.29	1.80	18.80
3			160	-2.25	95.5	3.44	0.00	21.10
3			200	-6.96	96.5	4.95	0.00	22.80
30	2,802	2,812						
30			20	42.32	73.8	0.00	5.60	7.60
30			25	38.96	77.2	0.06	5.40	8.30
30			32	34.44	79.1	0.08	5.20	9.20
30			40	29.48	80.3	0.14	5.00	10.30
30			50	25.52	82.3	0.20	4.70	11.50
30			63	23.81	86.6	0.31	4.30	13.00
30			80	20.27	89.3	0.45	3.70	14.80
30			100	15.52	90.9	0.70	3.00	16.80
30			125	11.55	93.5	1.07	1.80	18.80
30			160	6.22	95.5	1.60	0.00	21.10
30			200	2.31	96.5	2.31	0.00	22.80
31	2,438	2,449						
31			20	43.52	73.8	0.00	5.60	7.60
31			25	40.17	77.2	0.05	5.40	8.30
31			32	35.65	79.1	0.07	5.20	9.20
31			40	30.70	80.3	0.12	5.00	10.30
31			50	26.75	82.3	0.17	4.70	11.50
31			63	25.05	86.6	0.27	4.30	13.00
31			80	21.53	89.3	0.39	3.70	14.80
31			100	16.81	90.9	0.61	3.00	16.80
31			125	12.89	93.5	0.93	1.80	18.80
31			160	7.63	95.5	1.40	0.00	21.10
31			200	3.81	96.5	2.01	0.00	22.80
32	2,275	2,288						
32			20	44.11	73.8	0.00	5.60	7.60
32			25	40.77	77.2	0.05	5.40	8.30
32			32	36.24	79.1	0.07	5.20	9.20
32			40	31.30	80.3	0.11	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			50	27.35	82.3	0.16	4.70	11.50
32			63	25.66	86.6	0.25	4.30	13.00
32			80	22.15	89.3	0.37	3.70	14.80
32			100	17.44	90.9	0.57	3.00	16.80
32			125	13.54	93.5	0.87	1.80	18.80
32			160	8.31	95.5	1.30	0.00	21.10
32			200	4.54	96.5	1.88	0.00	22.80
33	2,394	2,408						
33			20	43.67	73.8	0.00	5.60	7.60
33			25	40.32	77.2	0.05	5.40	8.30
33			32	35.80	79.1	0.07	5.20	9.20
33			40	30.85	80.3	0.12	5.00	10.30
33			50	26.90	82.3	0.17	4.70	11.50
33			63	25.20	86.6	0.26	4.30	13.00
33			80	21.68	89.3	0.39	3.70	14.80
33			100	16.97	90.9	0.60	3.00	16.80
33			125	13.05	93.5	0.91	1.80	18.80
33			160	7.80	95.5	1.37	0.00	21.10
33			200	3.99	96.5	1.97	0.00	22.80
4	5,716	5,721						
4			20	36.15	73.8	0.00	5.60	7.60
4			25	32.74	77.2	0.11	5.40	8.30
4			32	28.18	79.1	0.17	5.20	9.20
4			40	23.16	80.3	0.29	5.00	10.30
4			50	19.15	82.3	0.40	4.70	11.50
4			63	17.32	86.6	0.63	4.30	13.00
4			80	13.64	89.3	0.92	3.70	14.80
4			100	8.62	90.9	1.43	3.00	16.80
4			125	4.28	93.5	2.17	1.80	18.80
4			160	-1.61	95.5	3.26	0.00	21.10
4			200	-6.24	96.5	4.69	0.00	22.80
5	5,179	5,184						
5			20	37.01	73.8	0.00	5.60	7.60
5			25	33.60	77.2	0.10	5.40	8.30
5			32	29.05	79.1	0.16	5.20	9.20
5			40	24.05	80.3	0.26	5.00	10.30
5			50	20.04	82.3	0.36	4.70	11.50
5			63	18.24	86.6	0.57	4.30	13.00
5			80	14.58	89.3	0.83	3.70	14.80
5			100	9.61	90.9	1.30	3.00	16.80
5			125	5.34	93.5	1.97	1.80	18.80
5			160	-0.45	95.5	2.96	0.00	21.10
5			200	-4.95	96.5	4.25	0.00	22.80
6	6,582	6,586						
6			20	34.93	73.8	0.00	5.60	7.60
6			25	31.50	77.2	0.13	5.40	8.30
6			32	26.93	79.1	0.20	5.20	9.20
6			40	21.90	80.3	0.33	5.00	10.30
6			50	17.87	82.3	0.46	4.70	11.50
6			63	16.00	86.6	0.72	4.30	13.00
6			80	12.27	89.3	1.05	3.70	14.80
6			100	7.18	90.9	1.65	3.00	16.80
6			125	2.72	93.5	2.50	1.80	18.80
6			160	-3.33	95.5	3.75	0.00	21.10
6			200	-8.17	96.5	5.40	0.00	22.80
7	5,928	5,933						
7			20	35.83	73.8	0.00	5.60	7.60
7			25	32.42	77.2	0.12	5.40	8.30
7			32	27.86	79.1	0.18	5.20	9.20
7			40	22.84	80.3	0.30	5.00	10.30
7			50	18.82	82.3	0.42	4.70	11.50
7			63	16.98	86.6	0.65	4.30	13.00
7			80	13.29	89.3	0.95	3.70	14.80
7			100	8.25	90.9	1.48	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	3.88	93.5	2.25	1.80	18.80
7			160	-2.05	95.5	3.38	0.00	21.10
7			200	-6.73	96.5	4.86	0.00	22.80
8	5,519	5,524						
8			20	36.46	73.8	0.00	5.60	7.60
8			25	33.04	77.2	0.11	5.40	8.30
8			32	28.49	79.1	0.17	5.20	9.20
8			40	23.48	80.3	0.28	5.00	10.30
8			50	19.47	82.3	0.39	4.70	11.50
8			63	17.65	86.6	0.61	4.30	13.00
8			80	13.97	89.3	0.88	3.70	14.80
8			100	8.97	90.9	1.38	3.00	16.80
8			125	4.66	93.5	2.10	1.80	18.80
8			160	-1.19	95.5	3.15	0.00	21.10
8			200	-5.77	96.5	4.53	0.00	22.80
9	4,828	4,834						
9			20	37.61	73.8	0.00	5.60	7.60
9			25	34.22	77.2	0.10	5.40	8.30
9			32	29.67	79.1	0.15	5.20	9.20
9			40	24.67	80.3	0.24	5.00	10.30
9			50	20.68	82.3	0.34	4.70	11.50
9			63	18.88	86.6	0.53	4.30	13.00
9			80	15.24	89.3	0.77	3.70	14.80
9			100	10.31	90.9	1.21	3.00	16.80
9			125	6.08	93.5	1.84	1.80	18.80
9			160	0.36	95.5	2.76	0.00	21.10
9			200	-4.05	96.5	3.96	0.00	22.80
Sum								
Sum			20	53.80				
Sum			25	50.42				
Sum			32	45.88				
Sum			40	40.90				
Sum			50	36.92				
Sum			63	35.16				
Sum			80	31.56				
Sum			100	26.71				
Sum			125	22.60				
Sum			160	17.08				
Sum			200	12.96				

Noise sensitive area: HH Rantala 1 Noise sensitive point: Finnish normal frequency - User defined (288)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,704	1,718						
1			20	46.60	73.8	0.00	5.60	7.60
1			25	43.26	77.2	0.03	5.40	8.30
1			32	38.75	79.1	0.05	5.20	9.20
1			40	33.81	80.3	0.09	5.00	10.30
1			50	29.88	82.3	0.12	4.70	11.50
1			63	28.21	86.6	0.19	4.30	13.00
1			80	24.72	89.3	0.27	3.70	14.80
1			100	20.07	90.9	0.43	3.00	16.80
1			125	16.24	93.5	0.65	1.80	18.80
1			160	11.12	95.5	0.98	0.00	21.10
1			200	7.49	96.5	1.41	0.00	22.80
10	4,451	4,457						
10			20	38.32	73.8	0.00	5.60	7.60
10			25	34.93	77.2	0.09	5.40	8.30
10			32	30.39	79.1	0.13	5.20	9.20
10			40	25.40	80.3	0.22	5.00	10.30
10			50	21.41	82.3	0.31	4.70	11.50
10			63	19.63	86.6	0.49	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	16.01	89.3	0.71	3.70	14.80
10			100	11.10	90.9	1.11	3.00	16.80
10			125	6.93	93.5	1.69	1.80	18.80
10			160	1.28	95.5	2.54	0.00	21.10
10			200	-3.04	96.5	3.65	0.00	22.80
11	4,036	4,043						
11			20	39.17	73.8	0.00	5.60	7.60
11			25	35.79	77.2	0.08	5.40	8.30
11			32	31.25	79.1	0.12	5.20	9.20
11			40	26.26	80.3	0.20	5.00	10.30
11			50	22.28	82.3	0.28	4.70	11.50
11			63	20.52	86.6	0.44	4.30	13.00
11			80	16.92	89.3	0.65	3.70	14.80
11			100	12.06	90.9	1.01	3.00	16.80
11			125	7.93	93.5	1.54	1.80	18.80
11			160	2.36	95.5	2.30	0.00	21.10
11			200	-1.85	96.5	3.32	0.00	22.80
12	5,031	5,036						
12			20	37.26	73.8	0.00	5.60	7.60
12			25	33.86	77.2	0.10	5.40	8.30
12			32	29.31	79.1	0.15	5.20	9.20
12			40	24.31	80.3	0.25	5.00	10.30
12			50	20.31	82.3	0.35	4.70	11.50
12			63	18.50	86.6	0.55	4.30	13.00
12			80	14.85	89.3	0.81	3.70	14.80
12			100	9.90	90.9	1.26	3.00	16.80
12			125	5.64	93.5	1.91	1.80	18.80
12			160	-0.11	95.5	2.87	0.00	21.10
12			200	-4.57	96.5	4.13	0.00	22.80
13	4,610	4,615						
13			20	38.02	73.8	0.00	5.60	7.60
13			25	34.62	77.2	0.09	5.40	8.30
13			32	30.08	79.1	0.14	5.20	9.20
13			40	25.09	80.3	0.23	5.00	10.30
13			50	21.09	82.3	0.32	4.70	11.50
13			63	19.31	86.6	0.51	4.30	13.00
13			80	15.68	89.3	0.74	3.70	14.80
13			100	10.76	90.9	1.15	3.00	16.80
13			125	6.56	93.5	1.75	1.80	18.80
13			160	0.89	95.5	2.63	0.00	21.10
13			200	-3.47	96.5	3.78	0.00	22.80
14	3,271	3,280						
14			20	40.98	73.8	0.00	5.60	7.60
14			25	37.62	77.2	0.07	5.40	8.30
14			32	33.09	79.1	0.10	5.20	9.20
14			40	28.12	80.3	0.16	5.00	10.30
14			50	24.15	82.3	0.23	4.70	11.50
14			63	22.42	86.6	0.36	4.30	13.00
14			80	18.86	89.3	0.52	3.70	14.80
14			100	14.06	90.9	0.82	3.00	16.80
14			125	10.04	93.5	1.25	1.80	18.80
14			160	4.61	95.5	1.87	0.00	21.10
14			200	0.59	96.5	2.69	0.00	22.80
15	5,146	5,151						
15			20	37.06	73.8	0.00	5.60	7.60
15			25	33.66	77.2	0.10	5.40	8.30
15			32	29.11	79.1	0.15	5.20	9.20
15			40	24.10	80.3	0.26	5.00	10.30
15			50	20.10	82.3	0.36	4.70	11.50
15			63	18.29	86.6	0.57	4.30	13.00
15			80	14.64	89.3	0.82	3.70	14.80
15			100	9.67	90.9	1.29	3.00	16.80
15			125	5.40	93.5	1.96	1.80	18.80
15			160	-0.37	95.5	2.94	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	-4.86	96.5	4.22	0.00	22.80
16	4,755	4,760						
16			20	37.75	73.8	0.00	5.60	7.60
16			25	34.35	77.2	0.10	5.40	8.30
16			32	29.80	79.1	0.14	5.20	9.20
16			40	24.81	80.3	0.24	5.00	10.30
16			50	20.81	82.3	0.33	4.70	11.50
16			63	19.02	86.6	0.52	4.30	13.00
16			80	15.39	89.3	0.76	3.70	14.80
16			100	10.46	90.9	1.19	3.00	16.80
16			125	6.24	93.5	1.81	1.80	18.80
16			160	0.53	95.5	2.71	0.00	21.10
16			200	-3.86	96.5	3.90	0.00	22.80
17	4,383	4,391						
17			20	38.45	73.8	0.00	5.60	7.60
17			25	35.06	77.2	0.09	5.40	8.30
17			32	30.52	79.1	0.13	5.20	9.20
17			40	25.53	80.3	0.22	5.00	10.30
17			50	21.54	82.3	0.31	4.70	11.50
17			63	19.77	86.6	0.48	4.30	13.00
17			80	16.15	89.3	0.70	3.70	14.80
17			100	11.25	90.9	1.10	3.00	16.80
17			125	7.08	93.5	1.67	1.80	18.80
17			160	1.45	95.5	2.50	0.00	21.10
17			200	-2.85	96.5	3.60	0.00	22.80
18	3,875	3,883						
18			20	39.52	73.8	0.00	5.60	7.60
18			25	36.14	77.2	0.08	5.40	8.30
18			32	31.60	79.1	0.12	5.20	9.20
18			40	26.62	80.3	0.19	5.00	10.30
18			50	22.64	82.3	0.27	4.70	11.50
18			63	20.89	86.6	0.43	4.30	13.00
18			80	17.29	89.3	0.62	3.70	14.80
18			100	12.44	90.9	0.97	3.00	16.80
18			125	8.34	93.5	1.48	1.80	18.80
18			160	2.80	95.5	2.21	0.00	21.10
18			200	-1.37	96.5	3.18	0.00	22.80
19	5,438	5,442						
19			20	36.58	73.8	0.00	5.60	7.60
19			25	33.18	77.2	0.11	5.40	8.30
19			32	28.62	79.1	0.16	5.20	9.20
19			40	23.61	80.3	0.27	5.00	10.30
19			50	19.60	82.3	0.38	4.70	11.50
19			63	17.79	86.6	0.60	4.30	13.00
19			80	14.11	89.3	0.87	3.70	14.80
19			100	9.12	90.9	1.36	3.00	16.80
19			125	4.82	93.5	2.07	1.80	18.80
19			160	-1.02	95.5	3.10	0.00	21.10
19			200	-5.58	96.5	4.46	0.00	22.80
2	2,604	2,614						
2			20	42.95	73.8	0.00	5.60	7.60
2			25	39.60	77.2	0.05	5.40	8.30
2			32	35.08	79.1	0.08	5.20	9.20
2			40	30.12	80.3	0.13	5.00	10.30
2			50	26.17	82.3	0.18	4.70	11.50
2			63	24.47	86.6	0.29	4.30	13.00
2			80	20.94	89.3	0.42	3.70	14.80
2			100	16.20	90.9	0.65	3.00	16.80
2			125	12.26	93.5	0.99	1.80	18.80
2			160	6.96	95.5	1.49	0.00	21.10
2			200	3.11	96.5	2.14	0.00	22.80
20	5,392	5,397						
20			20	36.66	73.8	0.00	5.60	7.60
20			25	33.25	77.2	0.11	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	28.70	79.1	0.16	5.20	9.20
20			40	23.69	80.3	0.27	5.00	10.30
20			50	19.68	82.3	0.38	4.70	11.50
20			63	17.86	86.6	0.59	4.30	13.00
20			80	14.19	89.3	0.86	3.70	14.80
20			100	9.21	90.9	1.35	3.00	16.80
20			125	4.91	93.5	2.05	1.80	18.80
20			160	-0.92	95.5	3.08	0.00	21.10
20			200	-5.47	96.5	4.43	0.00	22.80
21	4,346	4,354						
21			20	38.52	73.8	0.00	5.60	7.60
21			25	35.13	77.2	0.09	5.40	8.30
21			32	30.59	79.1	0.13	5.20	9.20
21			40	25.60	80.3	0.22	5.00	10.30
21			50	21.62	82.3	0.30	4.70	11.50
21			63	19.84	86.6	0.48	4.30	13.00
21			80	16.22	89.3	0.70	3.70	14.80
21			100	11.33	90.9	1.09	3.00	16.80
21			125	7.17	93.5	1.65	1.80	18.80
21			160	1.54	95.5	2.48	0.00	21.10
21			200	-2.75	96.5	3.57	0.00	22.80
22	4,338	4,345						
22			20	38.54	73.8	0.00	5.60	7.60
22			25	35.15	77.2	0.09	5.40	8.30
22			32	30.61	79.1	0.13	5.20	9.20
22			40	25.62	80.3	0.22	5.00	10.30
22			50	21.64	82.3	0.30	4.70	11.50
22			63	19.86	86.6	0.48	4.30	13.00
22			80	16.25	89.3	0.70	3.70	14.80
22			100	11.35	90.9	1.09	3.00	16.80
22			125	7.19	93.5	1.65	1.80	18.80
22			160	1.56	95.5	2.48	0.00	21.10
22			200	-2.72	96.5	3.56	0.00	22.80
23	3,922	3,929						
23			20	39.42	73.8	0.00	5.60	7.60
23			25	36.04	77.2	0.08	5.40	8.30
23			32	31.50	79.1	0.12	5.20	9.20
23			40	26.52	80.3	0.20	5.00	10.30
23			50	22.54	82.3	0.27	4.70	11.50
23			63	20.78	86.6	0.43	4.30	13.00
23			80	17.19	89.3	0.63	3.70	14.80
23			100	12.33	90.9	0.98	3.00	16.80
23			125	8.22	93.5	1.49	1.80	18.80
23			160	2.68	95.5	2.24	0.00	21.10
23			200	-1.51	96.5	3.22	0.00	22.80
24	5,509	5,514						
24			20	36.47	73.8	0.00	5.60	7.60
24			25	33.06	77.2	0.11	5.40	8.30
24			32	28.50	79.1	0.17	5.20	9.20
24			40	23.49	80.3	0.28	5.00	10.30
24			50	19.48	82.3	0.39	4.70	11.50
24			63	17.66	86.6	0.61	4.30	13.00
24			80	13.99	89.3	0.88	3.70	14.80
24			100	8.99	90.9	1.38	3.00	16.80
24			125	4.67	93.5	2.10	1.80	18.80
24			160	-1.17	95.5	3.14	0.00	21.10
24			200	-5.75	96.5	4.52	0.00	22.80
25	4,926	4,932						
25			20	37.44	73.8	0.00	5.60	7.60
25			25	34.04	77.2	0.10	5.40	8.30
25			32	29.49	79.1	0.15	5.20	9.20
25			40	24.49	80.3	0.25	5.00	10.30
25			50	20.49	82.3	0.35	4.70	11.50
25			63	18.70	86.6	0.54	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			80	15.05	89.3	0.79	3.70	14.80
25			100	10.11	90.9	1.23	3.00	16.80
25			125	5.87	93.5	1.87	1.80	18.80
25			160	0.13	95.5	2.81	0.00	21.10
25			200	-4.31	96.5	4.04	0.00	22.80
26	4,955	4,963						
26			20	37.39	73.8	0.00	5.60	7.60
26			25	33.99	77.2	0.10	5.40	8.30
26			32	29.44	79.1	0.15	5.20	9.20
26			40	24.44	80.3	0.25	5.00	10.30
26			50	20.44	82.3	0.35	4.70	11.50
26			63	18.64	86.6	0.55	4.30	13.00
26			80	14.99	89.3	0.79	3.70	14.80
26			100	10.05	90.9	1.24	3.00	16.80
26			125	5.80	93.5	1.89	1.80	18.80
26			160	0.06	95.5	2.83	0.00	21.10
26			200	-4.38	96.5	4.07	0.00	22.80
27	4,877	4,884						
27			20	37.52	73.8	0.00	5.60	7.60
27			25	34.13	77.2	0.10	5.40	8.30
27			32	29.58	79.1	0.15	5.20	9.20
27			40	24.58	80.3	0.24	5.00	10.30
27			50	20.58	82.3	0.34	4.70	11.50
27			63	18.79	86.6	0.54	4.30	13.00
27			80	15.14	89.3	0.78	3.70	14.80
27			100	10.20	90.9	1.22	3.00	16.80
27			125	5.97	93.5	1.86	1.80	18.80
27			160	0.24	95.5	2.78	0.00	21.10
27			200	-4.18	96.5	4.00	0.00	22.80
28	4,620	4,626						
28			20	38.00	73.8	0.00	5.60	7.60
28			25	34.60	77.2	0.09	5.40	8.30
28			32	30.06	79.1	0.14	5.20	9.20
28			40	25.06	80.3	0.23	5.00	10.30
28			50	21.07	82.3	0.32	4.70	11.50
28			63	19.29	86.6	0.51	4.30	13.00
28			80	15.66	89.3	0.74	3.70	14.80
28			100	10.74	90.9	1.16	3.00	16.80
28			125	6.54	93.5	1.76	1.80	18.80
28			160	0.86	95.5	2.64	0.00	21.10
28			200	-3.50	96.5	3.79	0.00	22.80
29	4,432	4,439						
29			20	38.36	73.8	0.00	5.60	7.60
29			25	34.97	77.2	0.09	5.40	8.30
29			32	30.42	79.1	0.13	5.20	9.20
29			40	25.43	80.3	0.22	5.00	10.30
29			50	21.44	82.3	0.31	4.70	11.50
29			63	19.67	86.6	0.49	4.30	13.00
29			80	16.04	89.3	0.71	3.70	14.80
29			100	11.15	90.9	1.11	3.00	16.80
29			125	6.97	93.5	1.69	1.80	18.80
29			160	1.33	95.5	2.53	0.00	21.10
29			200	-2.98	96.5	3.64	0.00	22.80
3	1,974	1,988						
3			20	45.33	73.8	0.00	5.60	7.60
3			25	41.99	77.2	0.04	5.40	8.30
3			32	37.47	79.1	0.06	5.20	9.20
3			40	32.53	80.3	0.10	5.00	10.30
3			50	28.59	82.3	0.14	4.70	11.50
3			63	26.91	86.6	0.22	4.30	13.00
3			80	23.41	89.3	0.32	3.70	14.80
3			100	18.73	90.9	0.50	3.00	16.80
3			125	14.88	93.5	0.76	1.80	18.80
3			160	9.70	95.5	1.13	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			200	6.00	96.5	1.63	0.00	22.80
30	3,873	3,879						
30			20	39.53	73.8	0.00	5.60	7.60
30			25	36.15	77.2	0.08	5.40	8.30
30			32	31.61	79.1	0.12	5.20	9.20
30			40	26.63	80.3	0.19	5.00	10.30
30			50	22.65	82.3	0.27	4.70	11.50
30			63	20.90	86.6	0.43	4.30	13.00
30			80	17.30	89.3	0.62	3.70	14.80
30			100	12.46	90.9	0.97	3.00	16.80
30			125	8.35	93.5	1.47	1.80	18.80
30			160	2.81	95.5	2.21	0.00	21.10
30			200	-1.36	96.5	3.18	0.00	22.80
31	4,523	4,528						
31			20	38.18	73.8	0.00	5.60	7.60
31			25	34.79	77.2	0.09	5.40	8.30
31			32	30.25	79.1	0.14	5.20	9.20
31			40	25.26	80.3	0.23	5.00	10.30
31			50	21.26	82.3	0.32	4.70	11.50
31			63	19.48	86.6	0.50	4.30	13.00
31			80	15.86	89.3	0.72	3.70	14.80
31			100	10.95	90.9	1.13	3.00	16.80
31			125	6.76	93.5	1.72	1.80	18.80
31			160	1.10	95.5	2.58	0.00	21.10
31			200	-3.23	96.5	3.71	0.00	22.80
32	3,876	3,883						
32			20	39.52	73.8	0.00	5.60	7.60
32			25	36.14	77.2	0.08	5.40	8.30
32			32	31.60	79.1	0.12	5.20	9.20
32			40	26.62	80.3	0.19	5.00	10.30
32			50	22.65	82.3	0.27	4.70	11.50
32			63	20.89	86.6	0.43	4.30	13.00
32			80	17.30	89.3	0.62	3.70	14.80
32			100	12.45	90.9	0.97	3.00	16.80
32			125	8.34	93.5	1.48	1.80	18.80
32			160	2.80	95.5	2.21	0.00	21.10
32			200	-1.37	96.5	3.18	0.00	22.80
33	3,412	3,421						
33			20	40.62	73.8	0.00	5.60	7.60
33			25	37.25	77.2	0.07	5.40	8.30
33			32	32.71	79.1	0.10	5.20	9.20
33			40	27.75	80.3	0.17	5.00	10.30
33			50	23.78	82.3	0.24	4.70	11.50
33			63	22.04	86.6	0.38	4.30	13.00
33			80	18.47	89.3	0.55	3.70	14.80
33			100	13.66	90.9	0.86	3.00	16.80
33			125	9.62	93.5	1.30	1.80	18.80
33			160	4.17	95.5	1.95	0.00	21.10
33			200	0.11	96.5	2.81	0.00	22.80
4	2,342	2,353						
4			20	43.87	73.8	0.00	5.60	7.60
4			25	40.52	77.2	0.05	5.40	8.30
4			32	36.00	79.1	0.07	5.20	9.20
4			40	31.05	80.3	0.12	5.00	10.30
4			50	27.10	82.3	0.16	4.70	11.50
4			63	25.41	86.6	0.26	4.30	13.00
4			80	21.89	89.3	0.38	3.70	14.80
4			100	17.18	90.9	0.59	3.00	16.80
4			125	13.27	93.5	0.89	1.80	18.80
4			160	8.02	95.5	1.34	0.00	21.10
4			200	4.24	96.5	1.93	0.00	22.80
5	2,435	2,446						
5			20	43.53	73.8	0.00	5.60	7.60
5			25	40.18	77.2	0.05	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			32	35.66	79.1	0.07	5.20	9.20
5			40	30.71	80.3	0.12	5.00	10.30
5			50	26.76	82.3	0.17	4.70	11.50
5			63	25.06	86.6	0.27	4.30	13.00
5			80	21.54	89.3	0.39	3.70	14.80
5			100	16.82	90.9	0.61	3.00	16.80
5			125	12.90	93.5	0.93	1.80	18.80
5			160	7.64	95.5	1.39	0.00	21.10
5			200	3.83	96.5	2.01	0.00	22.80
6	3,728	3,736						
6			20	39.85	73.8	0.00	5.60	7.60
6			25	36.48	77.2	0.07	5.40	8.30
6			32	31.94	79.1	0.11	5.20	9.20
6			40	26.97	80.3	0.19	5.00	10.30
6			50	22.99	82.3	0.26	4.70	11.50
6			63	21.24	86.6	0.41	4.30	13.00
6			80	17.66	89.3	0.60	3.70	14.80
6			100	12.82	90.9	0.93	3.00	16.80
6			125	8.73	93.5	1.42	1.80	18.80
6			160	3.22	95.5	2.13	0.00	21.10
6			200	-0.91	96.5	3.06	0.00	22.80
7	3,407	3,415						
7			20	40.63	73.8	0.00	5.60	7.60
7			25	37.26	77.2	0.07	5.40	8.30
7			32	32.73	79.1	0.10	5.20	9.20
7			40	27.76	80.3	0.17	5.00	10.30
7			50	23.79	82.3	0.24	4.70	11.50
7			63	22.06	86.6	0.38	4.30	13.00
7			80	18.49	89.3	0.55	3.70	14.80
7			100	13.68	90.9	0.85	3.00	16.80
7			125	9.63	93.5	1.30	1.80	18.80
7			160	4.19	95.5	1.95	0.00	21.10
7			200	0.13	96.5	2.80	0.00	22.80
8	2,923	2,932						
8			20	41.96	73.8	0.00	5.60	7.60
8			25	38.60	77.2	0.06	5.40	8.30
8			32	34.07	79.1	0.09	5.20	9.20
8			40	29.11	80.3	0.15	5.00	10.30
8			50	25.15	82.3	0.21	4.70	11.50
8			63	23.43	86.6	0.32	4.30	13.00
8			80	19.89	89.3	0.47	3.70	14.80
8			100	15.12	90.9	0.73	3.00	16.80
8			125	11.14	93.5	1.11	1.80	18.80
8			160	5.78	95.5	1.67	0.00	21.10
8			200	1.85	96.5	2.40	0.00	22.80
9	2,882	2,891						
9			20	42.08	73.8	0.00	5.60	7.60
9			25	38.72	77.2	0.06	5.40	8.30
9			32	34.19	79.1	0.09	5.20	9.20
9			40	29.23	80.3	0.14	5.00	10.30
9			50	25.28	82.3	0.20	4.70	11.50
9			63	23.56	86.6	0.32	4.30	13.00
9			80	20.02	89.3	0.46	3.70	14.80
9			100	15.26	90.9	0.72	3.00	16.80
9			125	11.28	93.5	1.10	1.80	18.80
9			160	5.93	95.5	1.65	0.00	21.10
9			200	2.01	96.5	2.37	0.00	22.80
Sum								
Sum			20	55.66				
Sum			25	52.30				
Sum			32	47.76				
Sum			40	42.80				
Sum			50	38.83				
Sum			63	37.10				

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			80	33.54				
Sum			100	28.75				
Sum			125	24.73				
Sum			160	19.33				
Sum			200	15.36				

Noise sensitive area: HH Suonpää 1 Noise sensitive point: Finnish normal frequency - User defined (286)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,916	4,921						
1			20	37.46	73.8	0.00	5.60	7.60
1			25	34.06	77.2	0.10	5.40	8.30
1			32	29.51	79.1	0.15	5.20	9.20
1			40	24.51	80.3	0.25	5.00	10.30
1			50	20.52	82.3	0.34	4.70	11.50
1			63	18.72	86.6	0.54	4.30	13.00
1			80	15.07	89.3	0.79	3.70	14.80
1			100	10.13	90.9	1.23	3.00	16.80
1			125	5.89	93.5	1.87	1.80	18.80
1			160	0.15	95.5	2.80	0.00	21.10
1			200	-4.28	96.5	4.03	0.00	22.80
10	2,190	2,201						
10			20	44.45	73.8	0.00	5.60	7.60
10			25	41.10	77.2	0.04	5.40	8.30
10			32	36.58	79.1	0.07	5.20	9.20
10			40	31.64	80.3	0.11	5.00	10.30
10			50	27.69	82.3	0.15	4.70	11.50
10			63	26.01	86.6	0.24	4.30	13.00
10			80	22.50	89.3	0.35	3.70	14.80
10			100	17.80	90.9	0.55	3.00	16.80
10			125	13.91	93.5	0.84	1.80	18.80
10			160	8.69	95.5	1.25	0.00	21.10
10			200	4.94	96.5	1.80	0.00	22.80
11	2,769	2,777						
11			20	42.43	73.8	0.00	5.60	7.60
11			25	39.07	77.2	0.06	5.40	8.30
11			32	34.54	79.1	0.08	5.20	9.20
11			40	29.59	80.3	0.14	5.00	10.30
11			50	25.63	82.3	0.19	4.70	11.50
11			63	23.92	86.6	0.31	4.30	13.00
11			80	20.38	89.3	0.44	3.70	14.80
11			100	15.63	90.9	0.69	3.00	16.80
11			125	11.67	93.5	1.06	1.80	18.80
11			160	6.34	95.5	1.58	0.00	21.10
11			200	2.45	96.5	2.28	0.00	22.80
12	1,644	1,658						
12			20	46.91	73.8	0.00	5.60	7.60
12			25	43.57	77.2	0.03	5.40	8.30
12			32	39.06	79.1	0.05	5.20	9.20
12			40	34.12	80.3	0.08	5.00	10.30
12			50	30.19	82.3	0.12	4.70	11.50
12			63	28.53	86.6	0.18	4.30	13.00
12			80	25.04	89.3	0.27	3.70	14.80
12			100	20.39	90.9	0.41	3.00	16.80
12			125	16.58	93.5	0.63	1.80	18.80
12			160	11.46	95.5	0.95	0.00	21.10
12			200	7.85	96.5	1.36	0.00	22.80
13	2,440	2,450						
13			20	43.52	73.8	0.00	5.60	7.60
13			25	40.17	77.2	0.05	5.40	8.30
13			32	35.64	79.1	0.07	5.20	9.20
13			40	30.69	80.3	0.12	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			50	26.75	82.3	0.17	4.70	11.50
13			63	25.05	86.6	0.27	4.30	13.00
13			80	21.53	89.3	0.39	3.70	14.80
13			100	16.80	90.9	0.61	3.00	16.80
13			125	12.89	93.5	0.93	1.80	18.80
13			160	7.62	95.5	1.40	0.00	21.10
13			200	3.81	96.5	2.01	0.00	22.80
14	3,863	3,869						
14			20	39.55	73.8	0.00	5.60	7.60
14			25	36.17	77.2	0.08	5.40	8.30
14			32	31.63	79.1	0.12	5.20	9.20
14			40	26.65	80.3	0.19	5.00	10.30
14			50	22.68	82.3	0.27	4.70	11.50
14			63	20.92	86.6	0.43	4.30	13.00
14			80	17.33	89.3	0.62	3.70	14.80
14			100	12.48	90.9	0.97	3.00	16.80
14			125	8.38	93.5	1.47	1.80	18.80
14			160	2.84	95.5	2.21	0.00	21.10
14			200	-1.32	96.5	3.17	0.00	22.80
15	1,922	1,934						
15			20	45.57	73.8	0.00	5.60	7.60
15			25	42.23	77.2	0.04	5.40	8.30
15			32	37.71	79.1	0.06	5.20	9.20
15			40	32.78	80.3	0.10	5.00	10.30
15			50	28.84	82.3	0.14	4.70	11.50
15			63	27.16	86.6	0.21	4.30	13.00
15			80	23.66	89.3	0.31	3.70	14.80
15			100	18.99	90.9	0.48	3.00	16.80
15			125	15.14	93.5	0.73	1.80	18.80
15			160	9.97	95.5	1.10	0.00	21.10
15			200	6.29	96.5	1.59	0.00	22.80
16	2,792	2,800						
16			20	42.36	73.8	0.00	5.60	7.60
16			25	39.00	77.2	0.06	5.40	8.30
16			32	34.47	79.1	0.08	5.20	9.20
16			40	29.52	80.3	0.14	5.00	10.30
16			50	25.56	82.3	0.20	4.70	11.50
16			63	23.85	86.6	0.31	4.30	13.00
16			80	20.31	89.3	0.45	3.70	14.80
16			100	15.56	90.9	0.70	3.00	16.80
16			125	11.59	93.5	1.06	1.80	18.80
16			160	6.26	95.5	1.60	0.00	21.10
16			200	2.36	96.5	2.30	0.00	22.80
17	3,459	3,468						
17			20	40.50	73.8	0.00	5.60	7.60
17			25	37.13	77.2	0.07	5.40	8.30
17			32	32.59	79.1	0.10	5.20	9.20
17			40	27.63	80.3	0.17	5.00	10.30
17			50	23.66	82.3	0.24	4.70	11.50
17			63	21.92	86.6	0.38	4.30	13.00
17			80	18.34	89.3	0.55	3.70	14.80
17			100	13.53	90.9	0.87	3.00	16.80
17			125	9.48	93.5	1.32	1.80	18.80
17			160	4.02	95.5	1.98	0.00	21.10
17			200	-0.04	96.5	2.84	0.00	22.80
18	3,678	3,686						
18			20	39.97	73.8	0.00	5.60	7.60
18			25	36.59	77.2	0.07	5.40	8.30
18			32	32.06	79.1	0.11	5.20	9.20
18			40	27.08	80.3	0.18	5.00	10.30
18			50	23.11	82.3	0.26	4.70	11.50
18			63	21.36	86.6	0.41	4.30	13.00
18			80	17.78	89.3	0.59	3.70	14.80
18			100	12.95	90.9	0.92	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			125	8.87	93.5	1.40	1.80	18.80
18			160	3.37	95.5	2.10	0.00	21.10
18			200	-0.75	96.5	3.02	0.00	22.80
19	2,158	2,168						
19			20	44.58	73.8	0.00	5.60	7.60
19			25	41.24	77.2	0.04	5.40	8.30
19			32	36.71	79.1	0.07	5.20	9.20
19			40	31.77	80.3	0.11	5.00	10.30
19			50	27.83	82.3	0.15	4.70	11.50
19			63	26.14	86.6	0.24	4.30	13.00
19			80	22.63	89.3	0.35	3.70	14.80
19			100	17.94	90.9	0.54	3.00	16.80
19			125	14.05	93.5	0.82	1.80	18.80
19			160	8.84	95.5	1.24	0.00	21.10
19			200	5.10	96.5	1.78	0.00	22.80
2	3,936	3,942						
2			20	39.39	73.8	0.00	5.60	7.60
2			25	36.01	77.2	0.08	5.40	8.30
2			32	31.47	79.1	0.12	5.20	9.20
2			40	26.49	80.3	0.20	5.00	10.30
2			50	22.51	82.3	0.28	4.70	11.50
2			63	20.75	86.6	0.43	4.30	13.00
2			80	17.16	89.3	0.63	3.70	14.80
2			100	12.30	90.9	0.99	3.00	16.80
2			125	8.19	93.5	1.50	1.80	18.80
2			160	2.64	95.5	2.25	0.00	21.10
2			200	-1.55	96.5	3.23	0.00	22.80
20	2,767	2,775						
20			20	42.43	73.8	0.00	5.60	7.60
20			25	39.08	77.2	0.06	5.40	8.30
20			32	34.55	79.1	0.08	5.20	9.20
20			40	29.60	80.3	0.14	5.00	10.30
20			50	25.64	82.3	0.19	4.70	11.50
20			63	23.93	86.6	0.31	4.30	13.00
20			80	20.39	89.3	0.44	3.70	14.80
20			100	15.64	90.9	0.69	3.00	16.80
20			125	11.68	93.5	1.05	1.80	18.80
20			160	6.35	95.5	1.58	0.00	21.10
20			200	2.46	96.5	2.28	0.00	22.80
21	4,059	4,067						
21			20	39.11	73.8	0.00	5.60	7.60
21			25	35.73	77.2	0.08	5.40	8.30
21			32	31.19	79.1	0.12	5.20	9.20
21			40	26.21	80.3	0.20	5.00	10.30
21			50	22.23	82.3	0.28	4.70	11.50
21			63	20.47	86.6	0.45	4.30	13.00
21			80	16.86	89.3	0.65	3.70	14.80
21			100	12.00	90.9	1.02	3.00	16.80
21			125	7.87	93.5	1.55	1.80	18.80
21			160	2.30	95.5	2.32	0.00	21.10
21			200	-1.92	96.5	3.34	0.00	22.80
22	4,636	4,642						
22			20	37.97	73.8	0.00	5.60	7.60
22			25	34.57	77.2	0.09	5.40	8.30
22			32	30.03	79.1	0.14	5.20	9.20
22			40	25.03	80.3	0.23	5.00	10.30
22			50	21.04	82.3	0.32	4.70	11.50
22			63	19.26	86.6	0.51	4.30	13.00
22			80	15.62	89.3	0.74	3.70	14.80
22			100	10.71	90.9	1.16	3.00	16.80
22			125	6.50	93.5	1.76	1.80	18.80
22			160	0.82	95.5	2.65	0.00	21.10
22			200	-3.54	96.5	3.81	0.00	22.80
23	5,142	5,147						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			20	37.07	73.8	0.00	5.60	7.60
23			25	33.67	77.2	0.10	5.40	8.30
23			32	29.12	79.1	0.15	5.20	9.20
23			40	24.11	80.3	0.26	5.00	10.30
23			50	20.11	82.3	0.36	4.70	11.50
23			63	18.30	86.6	0.57	4.30	13.00
23			80	14.65	89.3	0.82	3.70	14.80
23			100	9.68	90.9	1.29	3.00	16.80
23			125	5.41	93.5	1.96	1.80	18.80
23			160	-0.36	95.5	2.93	0.00	21.10
23			200	-4.85	96.5	4.22	0.00	22.80
24	3,425	3,433						
24			20	40.59	73.8	0.00	5.60	7.60
24			25	37.22	77.2	0.07	5.40	8.30
24			32	32.68	79.1	0.10	5.20	9.20
24			40	27.72	80.3	0.17	5.00	10.30
24			50	23.75	82.3	0.24	4.70	11.50
24			63	22.01	86.6	0.38	4.30	13.00
24			80	18.44	89.3	0.55	3.70	14.80
24			100	13.63	90.9	0.86	3.00	16.80
24			125	9.58	93.5	1.30	1.80	18.80
24			160	4.13	95.5	1.96	0.00	21.10
24			200	0.07	96.5	2.81	0.00	22.80
25	3,552	3,559						
25			20	40.27	73.8	0.00	5.60	7.60
25			25	36.90	77.2	0.07	5.40	8.30
25			32	32.37	79.1	0.11	5.20	9.20
25			40	27.40	80.3	0.18	5.00	10.30
25			50	23.42	82.3	0.25	4.70	11.50
25			63	21.68	86.6	0.39	4.30	13.00
25			80	18.10	89.3	0.57	3.70	14.80
25			100	13.28	90.9	0.89	3.00	16.80
25			125	9.22	93.5	1.35	1.80	18.80
25			160	3.75	95.5	2.03	0.00	21.10
25			200	-0.34	96.5	2.92	0.00	22.80
26	4,093	4,101						
26			20	39.04	73.8	0.00	5.60	7.60
26			25	35.66	77.2	0.08	5.40	8.30
26			32	31.12	79.1	0.12	5.20	9.20
26			40	26.14	80.3	0.21	5.00	10.30
26			50	22.15	82.3	0.29	4.70	11.50
26			63	20.39	86.6	0.45	4.30	13.00
26			80	16.79	89.3	0.66	3.70	14.80
26			100	11.92	90.9	1.03	3.00	16.80
26			125	7.78	93.5	1.56	1.80	18.80
26			160	2.20	95.5	2.34	0.00	21.10
26			200	-2.02	96.5	3.36	0.00	22.80
27	4,587	4,593						
27			20	38.06	73.8	0.00	5.60	7.60
27			25	34.67	77.2	0.09	5.40	8.30
27			32	30.12	79.1	0.14	5.20	9.20
27			40	25.13	80.3	0.23	5.00	10.30
27			50	21.14	82.3	0.32	4.70	11.50
27			63	19.35	86.6	0.51	4.30	13.00
27			80	15.72	89.3	0.73	3.70	14.80
27			100	10.81	90.9	1.15	3.00	16.80
27			125	6.61	93.5	1.75	1.80	18.80
27			160	0.94	95.5	2.62	0.00	21.10
27			200	-3.41	96.5	3.77	0.00	22.80
28	5,148	5,153						
28			20	37.06	73.8	0.00	5.60	7.60
28			25	33.66	77.2	0.10	5.40	8.30
28			32	29.10	79.1	0.15	5.20	9.20
28			40	24.10	80.3	0.26	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			50	20.10	82.3	0.36	4.70	11.50
28			63	18.29	86.6	0.57	4.30	13.00
28			80	14.63	89.3	0.82	3.70	14.80
28			100	9.67	90.9	1.29	3.00	16.80
28			125	5.40	93.5	1.96	1.80	18.80
28			160	-0.38	95.5	2.94	0.00	21.10
28			200	-4.87	96.5	4.23	0.00	22.80
29	5,745	5,750						
29			20	36.11	73.8	0.00	5.60	7.60
29			25	32.69	77.2	0.12	5.40	8.30
29			32	28.13	79.1	0.17	5.20	9.20
29			40	23.12	80.3	0.29	5.00	10.30
29			50	19.10	82.3	0.40	4.70	11.50
29			63	17.27	86.6	0.63	4.30	13.00
29			80	13.59	89.3	0.92	3.70	14.80
29			100	8.57	90.9	1.44	3.00	16.80
29			125	4.22	93.5	2.19	1.80	18.80
29			160	-1.67	95.5	3.28	0.00	21.10
29			200	-6.31	96.5	4.72	0.00	22.80
3	4,566	4,571						
3			20	38.10	73.8	0.00	5.60	7.60
3			25	34.71	77.2	0.09	5.40	8.30
3			32	30.16	79.1	0.14	5.20	9.20
3			40	25.17	80.3	0.23	5.00	10.30
3			50	21.18	82.3	0.32	4.70	11.50
3			63	19.40	86.6	0.50	4.30	13.00
3			80	15.77	89.3	0.73	3.70	14.80
3			100	10.86	90.9	1.14	3.00	16.80
3			125	6.66	93.5	1.74	1.80	18.80
3			160	0.99	95.5	2.61	0.00	21.10
3			200	-3.35	96.5	3.75	0.00	22.80
30	5,986	5,990						
30			20	35.75	73.8	0.00	5.60	7.60
30			25	32.33	77.2	0.12	5.40	8.30
30			32	27.77	79.1	0.18	5.20	9.20
30			40	22.75	80.3	0.30	5.00	10.30
30			50	18.73	82.3	0.42	4.70	11.50
30			63	16.89	86.6	0.66	4.30	13.00
30			80	13.19	89.3	0.96	3.70	14.80
30			100	8.15	90.9	1.50	3.00	16.80
30			125	3.78	93.5	2.28	1.80	18.80
30			160	-2.16	95.5	3.41	0.00	21.10
30			200	-6.86	96.5	4.91	0.00	22.80
31	6,269	6,273						
31			20	35.35	73.8	0.00	5.60	7.60
31			25	31.93	77.2	0.13	5.40	8.30
31			32	27.36	79.1	0.19	5.20	9.20
31			40	22.34	80.3	0.31	5.00	10.30
31			50	18.31	82.3	0.44	4.70	11.50
31			63	16.46	86.6	0.69	4.30	13.00
31			80	12.75	89.3	1.00	3.70	14.80
31			100	7.68	90.9	1.57	3.00	16.80
31			125	3.27	93.5	2.38	1.80	18.80
31			160	-2.72	95.5	3.58	0.00	21.10
31			200	-7.49	96.5	5.14	0.00	22.80
32	6,612	6,616						
32			20	34.89	73.8	0.00	5.60	7.60
32			25	31.46	77.2	0.13	5.40	8.30
32			32	26.89	79.1	0.20	5.20	9.20
32			40	21.86	80.3	0.33	5.00	10.30
32			50	17.83	82.3	0.46	4.70	11.50
32			63	15.96	86.6	0.73	4.30	13.00
32			80	12.23	89.3	1.06	3.70	14.80
32			100	7.13	90.9	1.65	3.00	16.80

To be continued on next page...

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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			125	2.67	93.5	2.51	1.80	18.80
32			160	-3.38	95.5	3.77	0.00	21.10
32			200	-8.24	96.5	5.42	0.00	22.80
33	6,926	6,930						
33			20	34.49	73.8	0.00	5.60	7.60
33			25	31.05	77.2	0.14	5.40	8.30
33			32	26.48	79.1	0.21	5.20	9.20
33			40	21.44	80.3	0.35	5.00	10.30
33			50	17.40	82.3	0.49	4.70	11.50
33			63	15.52	86.6	0.76	4.30	13.00
33			80	11.78	89.3	1.11	3.70	14.80
33			100	6.65	90.9	1.73	3.00	16.80
33			125	2.15	93.5	2.63	1.80	18.80
33			160	-3.96	95.5	3.95	0.00	21.10
33			200	-8.90	96.5	5.68	0.00	22.80
4	4,278	4,283						
4			20	38.66	73.8	0.00	5.60	7.60
4			25	35.28	77.2	0.09	5.40	8.30
4			32	30.74	79.1	0.13	5.20	9.20
4			40	25.75	80.3	0.21	5.00	10.30
4			50	21.76	82.3	0.30	4.70	11.50
4			63	19.99	86.6	0.47	4.30	13.00
4			80	16.38	89.3	0.69	3.70	14.80
4			100	11.49	90.9	1.07	3.00	16.80
4			125	7.34	93.5	1.63	1.80	18.80
4			160	1.72	95.5	2.44	0.00	21.10
4			200	-2.55	96.5	3.51	0.00	22.80
5	4,461	4,466						
5			20	38.30	73.8	0.00	5.60	7.60
5			25	34.91	77.2	0.09	5.40	8.30
5			32	30.37	79.1	0.13	5.20	9.20
5			40	25.38	80.3	0.22	5.00	10.30
5			50	21.39	82.3	0.31	4.70	11.50
5			63	19.61	86.6	0.49	4.30	13.00
5			80	15.99	89.3	0.71	3.70	14.80
5			100	11.09	90.9	1.12	3.00	16.80
5			125	6.90	93.5	1.70	1.80	18.80
5			160	1.26	95.5	2.55	0.00	21.10
5			200	-3.06	96.5	3.66	0.00	22.80
6	2,840	2,848						
6			20	42.21	73.8	0.00	5.60	7.60
6			25	38.85	77.2	0.06	5.40	8.30
6			32	34.32	79.1	0.09	5.20	9.20
6			40	29.37	80.3	0.14	5.00	10.30
6			50	25.41	82.3	0.20	4.70	11.50
6			63	23.70	86.6	0.31	4.30	13.00
6			80	20.15	89.3	0.46	3.70	14.80
6			100	15.40	90.9	0.71	3.00	16.80
6			125	11.43	93.5	1.08	1.80	18.80
6			160	6.08	95.5	1.62	0.00	21.10
6			200	2.17	96.5	2.34	0.00	22.80
7	3,332	3,339						
7			20	40.83	73.8	0.00	5.60	7.60
7			25	37.46	77.2	0.07	5.40	8.30
7			32	32.93	79.1	0.10	5.20	9.20
7			40	27.96	80.3	0.17	5.00	10.30
7			50	23.99	82.3	0.23	4.70	11.50
7			63	22.26	86.6	0.37	4.30	13.00
7			80	18.69	89.3	0.53	3.70	14.80
7			100	13.89	90.9	0.83	3.00	16.80
7			125	9.86	93.5	1.27	1.80	18.80
7			160	4.42	95.5	1.90	0.00	21.10
7			200	0.39	96.5	2.74	0.00	22.80
8	3,895	3,901						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			20	39.48	73.8	0.00	5.60	7.60
8			25	36.10	77.2	0.08	5.40	8.30
8			32	31.56	79.1	0.12	5.20	9.20
8			40	26.58	80.3	0.20	5.00	10.30
8			50	22.60	82.3	0.27	4.70	11.50
8			63	20.85	86.6	0.43	4.30	13.00
8			80	17.25	89.3	0.62	3.70	14.80
8			100	12.40	90.9	0.98	3.00	16.80
8			125	8.29	93.5	1.48	1.80	18.80
8			160	2.75	95.5	2.22	0.00	21.10
8			200	-1.42	96.5	3.20	0.00	22.80
9	4,398	4,403						
9			20	38.42	73.8	0.00	5.60	7.60
9			25	35.04	77.2	0.09	5.40	8.30
9			32	30.49	79.1	0.13	5.20	9.20
9			40	25.50	80.3	0.22	5.00	10.30
9			50	21.52	82.3	0.31	4.70	11.50
9			63	19.74	86.6	0.48	4.30	13.00
9			80	16.12	89.3	0.70	3.70	14.80
9			100	11.22	90.9	1.10	3.00	16.80
9			125	7.05	93.5	1.67	1.80	18.80
9			160	1.42	95.5	2.51	0.00	21.10
9			200	-2.89	96.5	3.61	0.00	22.80
Sum								
Sum			20	56.07				
Sum			25	52.70				
Sum			32	48.17				
Sum			40	43.21				
Sum			50	39.25				
Sum			63	37.53				
Sum			80	33.97				
Sum			100	29.20				
Sum			125	25.21				
Sum			160	19.85				
Sum			200	15.93				

Noise sensitive area: HH Viitajärvi 3 Noise sensitive point: Finnish normal frequency - User defined (306)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,269	6,272						
1			20	35.35	73.8	0.00	5.60	7.60
1			25	31.93	77.2	0.13	5.40	8.30
1			32	27.36	79.1	0.19	5.20	9.20
1			40	22.34	80.3	0.31	5.00	10.30
1			50	18.31	82.3	0.44	4.70	11.50
1			63	16.46	86.6	0.69	4.30	13.00
1			80	12.75	89.3	1.00	3.70	14.80
1			100	7.68	90.9	1.57	3.00	16.80
1			125	3.27	93.5	2.38	1.80	18.80
1			160	-2.72	95.5	3.58	0.00	21.10
1			200	-7.49	96.5	5.14	0.00	22.80
10	5,118	5,121						
10			20	37.11	73.8	0.00	5.60	7.60
10			25	33.71	77.2	0.10	5.40	8.30
10			32	29.16	79.1	0.15	5.20	9.20
10			40	24.16	80.3	0.26	5.00	10.30
10			50	20.15	82.3	0.36	4.70	11.50
10			63	18.35	86.6	0.56	4.30	13.00
10			80	14.69	89.3	0.82	3.70	14.80
10			100	9.73	90.9	1.28	3.00	16.80
10			125	5.47	93.5	1.95	1.80	18.80
10			160	-0.31	95.5	2.92	0.00	21.10

To be continued on next page...

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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			200	-4.79	96.5	4.20	0.00	22.80
11	4,668	4,672						
11			20	37.91	73.8	0.00	5.60	7.60
11			25	34.52	77.2	0.09	5.40	8.30
11			32	29.97	79.1	0.14	5.20	9.20
11			40	24.98	80.3	0.23	5.00	10.30
11			50	20.98	82.3	0.33	4.70	11.50
11			63	19.20	86.6	0.51	4.30	13.00
11			80	15.56	89.3	0.75	3.70	14.80
11			100	10.64	90.9	1.17	3.00	16.80
11			125	6.43	93.5	1.78	1.80	18.80
11			160	0.75	95.5	2.66	0.00	21.10
11			200	-3.62	96.5	3.83	0.00	22.80
12	5,232	5,235						
12			20	36.92	73.8	0.00	5.60	7.60
12			25	33.52	77.2	0.10	5.40	8.30
12			32	28.96	79.1	0.16	5.20	9.20
12			40	23.96	80.3	0.26	5.00	10.30
12			50	19.96	82.3	0.37	4.70	11.50
12			63	18.15	86.6	0.58	4.30	13.00
12			80	14.48	89.3	0.84	3.70	14.80
12			100	9.51	90.9	1.31	3.00	16.80
12			125	5.23	93.5	1.99	1.80	18.80
12			160	-0.56	95.5	2.98	0.00	21.10
12			200	-5.07	96.5	4.29	0.00	22.80
13	4,438	4,442						
13			20	38.35	73.8	0.00	5.60	7.60
13			25	34.96	77.2	0.09	5.40	8.30
13			32	30.42	79.1	0.13	5.20	9.20
13			40	25.43	80.3	0.22	5.00	10.30
13			50	21.44	82.3	0.31	4.70	11.50
13			63	19.66	86.6	0.49	4.30	13.00
13			80	16.04	89.3	0.71	3.70	14.80
13			100	11.14	90.9	1.11	3.00	16.80
13			125	6.96	93.5	1.69	1.80	18.80
13			160	1.32	95.5	2.53	0.00	21.10
13			200	-2.99	96.5	3.64	0.00	22.80
14	4,172	4,176						
14			20	38.88	73.8	0.00	5.60	7.60
14			25	35.50	77.2	0.08	5.40	8.30
14			32	30.96	79.1	0.13	5.20	9.20
14			40	25.98	80.3	0.21	5.00	10.30
14			50	21.99	82.3	0.29	4.70	11.50
14			63	20.22	86.6	0.46	4.30	13.00
14			80	16.62	89.3	0.67	3.70	14.80
14			100	11.74	90.9	1.04	3.00	16.80
14			125	7.60	93.5	1.59	1.80	18.80
14			160	2.00	95.5	2.38	0.00	21.10
14			200	-2.24	96.5	3.42	0.00	22.80
15	4,672	4,676						
15			20	37.90	73.8	0.00	5.60	7.60
15			25	34.51	77.2	0.09	5.40	8.30
15			32	29.96	79.1	0.14	5.20	9.20
15			40	24.97	80.3	0.23	5.00	10.30
15			50	20.98	82.3	0.33	4.70	11.50
15			63	19.19	86.6	0.51	4.30	13.00
15			80	15.55	89.3	0.75	3.70	14.80
15			100	10.63	90.9	1.17	3.00	16.80
15			125	6.43	93.5	1.78	1.80	18.80
15			160	0.74	95.5	2.67	0.00	21.10
15			200	-3.63	96.5	3.83	0.00	22.80
16	3,890	3,895						
16			20	39.49	73.8	0.00	5.60	7.60
16			25	36.11	77.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			32	31.57	79.1	0.12	5.20	9.20
16			40	26.60	80.3	0.19	5.00	10.30
16			50	22.62	82.3	0.27	4.70	11.50
16			63	20.86	86.6	0.43	4.30	13.00
16			80	17.27	89.3	0.62	3.70	14.80
16			100	12.42	90.9	0.97	3.00	16.80
16			125	8.31	93.5	1.48	1.80	18.80
16			160	2.77	95.5	2.22	0.00	21.10
16			200	-1.40	96.5	3.19	0.00	22.80
17	3,443	3,450						
17			20	40.54	73.8	0.00	5.60	7.60
17			25	37.18	77.2	0.07	5.40	8.30
17			32	32.64	79.1	0.10	5.20	9.20
17			40	27.67	80.3	0.17	5.00	10.30
17			50	23.70	82.3	0.24	4.70	11.50
17			63	21.97	86.6	0.38	4.30	13.00
17			80	18.39	89.3	0.55	3.70	14.80
17			100	13.58	90.9	0.86	3.00	16.80
17			125	9.53	93.5	1.31	1.80	18.80
17			160	4.08	95.5	1.97	0.00	21.10
17			200	0.02	96.5	2.83	0.00	22.80
18	3,675	3,681						
18			20	39.98	73.8	0.00	5.60	7.60
18			25	36.61	77.2	0.07	5.40	8.30
18			32	32.07	79.1	0.11	5.20	9.20
18			40	27.10	80.3	0.18	5.00	10.30
18			50	23.12	82.3	0.26	4.70	11.50
18			63	21.38	86.6	0.40	4.30	13.00
18			80	17.79	89.3	0.59	3.70	14.80
18			100	12.96	90.9	0.92	3.00	16.80
18			125	8.88	93.5	1.40	1.80	18.80
18			160	3.38	95.5	2.10	0.00	21.10
18			200	-0.74	96.5	3.02	0.00	22.80
19	4,265	4,268						
19			20	38.69	73.8	0.00	5.60	7.60
19			25	35.31	77.2	0.09	5.40	8.30
19			32	30.77	79.1	0.13	5.20	9.20
19			40	25.78	80.3	0.21	5.00	10.30
19			50	21.80	82.3	0.30	4.70	11.50
19			63	20.03	86.6	0.47	4.30	13.00
19			80	16.41	89.3	0.68	3.70	14.80
19			100	11.53	90.9	1.07	3.00	16.80
19			125	7.37	93.5	1.62	1.80	18.80
19			160	1.76	95.5	2.43	0.00	21.10
19			200	-2.51	96.5	3.50	0.00	22.80
2	5,627	5,630						
2			20	36.29	73.8	0.00	5.60	7.60
2			25	32.88	77.2	0.11	5.40	8.30
2			32	28.32	79.1	0.17	5.20	9.20
2			40	23.31	80.3	0.28	5.00	10.30
2			50	19.30	82.3	0.39	4.70	11.50
2			63	17.47	86.6	0.62	4.30	13.00
2			80	13.79	89.3	0.90	3.70	14.80
2			100	8.78	90.9	1.41	3.00	16.80
2			125	4.45	93.5	2.14	1.80	18.80
2			160	-1.42	95.5	3.21	0.00	21.10
2			200	-6.03	96.5	4.62	0.00	22.80
20	3,642	3,647						
20			20	40.06	73.8	0.00	5.60	7.60
20			25	36.69	77.2	0.07	5.40	8.30
20			32	32.15	79.1	0.11	5.20	9.20
20			40	27.18	80.3	0.18	5.00	10.30
20			50	23.21	82.3	0.26	4.70	11.50
20			63	21.46	86.6	0.40	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			80	17.88	89.3	0.58	3.70	14.80
20			100	13.05	90.9	0.91	3.00	16.80
20			125	8.98	93.5	1.39	1.80	18.80
20			160	3.48	95.5	2.08	0.00	21.10
20			200	-0.63	96.5	2.99	0.00	22.80
21	2,927	2,936						
21			20	41.95	73.8	0.00	5.60	7.60
21			25	38.59	77.2	0.06	5.40	8.30
21			32	34.06	79.1	0.09	5.20	9.20
21			40	29.10	80.3	0.15	5.00	10.30
21			50	25.14	82.3	0.21	4.70	11.50
21			63	23.42	86.6	0.32	4.30	13.00
21			80	19.88	89.3	0.47	3.70	14.80
21			100	15.11	90.9	0.73	3.00	16.80
21			125	11.13	93.5	1.12	1.80	18.80
21			160	5.77	95.5	1.67	0.00	21.10
21			200	1.84	96.5	2.41	0.00	22.80
22	2,521	2,529						
22			20	43.24	73.8	0.00	5.60	7.60
22			25	39.89	77.2	0.05	5.40	8.30
22			32	35.37	79.1	0.08	5.20	9.20
22			40	30.41	80.3	0.13	5.00	10.30
22			50	26.46	82.3	0.18	4.70	11.50
22			63	24.76	86.6	0.28	4.30	13.00
22			80	21.24	89.3	0.40	3.70	14.80
22			100	16.51	90.9	0.63	3.00	16.80
22			125	12.58	93.5	0.96	1.80	18.80
22			160	7.30	95.5	1.44	0.00	21.10
22			200	3.47	96.5	2.07	0.00	22.80
23	2,677	2,684						
23			20	42.72	73.8	0.00	5.60	7.60
23			25	39.37	77.2	0.05	5.40	8.30
23			32	34.84	79.1	0.08	5.20	9.20
23			40	29.89	80.3	0.13	5.00	10.30
23			50	25.94	82.3	0.19	4.70	11.50
23			63	24.23	86.6	0.30	4.30	13.00
23			80	20.70	89.3	0.43	3.70	14.80
23			100	15.95	90.9	0.67	3.00	16.80
23			125	12.01	93.5	1.02	1.80	18.80
23			160	6.70	95.5	1.53	0.00	21.10
23			200	2.82	96.5	2.20	0.00	22.80
24	2,961	2,968						
24			20	41.85	73.8	0.00	5.60	7.60
24			25	38.49	77.2	0.06	5.40	8.30
24			32	33.96	79.1	0.09	5.20	9.20
24			40	29.00	80.3	0.15	5.00	10.30
24			50	25.04	82.3	0.21	4.70	11.50
24			63	23.33	86.6	0.33	4.30	13.00
24			80	19.78	89.3	0.47	3.70	14.80
24			100	15.01	90.9	0.74	3.00	16.80
24			125	11.02	93.5	1.13	1.80	18.80
24			160	5.66	95.5	1.69	0.00	21.10
24			200	1.72	96.5	2.43	0.00	22.80
25	3,016	3,022						
25			20	41.69	73.8	0.00	5.60	7.60
25			25	38.33	77.2	0.06	5.40	8.30
25			32	33.80	79.1	0.09	5.20	9.20
25			40	28.84	80.3	0.15	5.00	10.30
25			50	24.88	82.3	0.21	4.70	11.50
25			63	23.16	86.6	0.33	4.30	13.00
25			80	19.61	89.3	0.48	3.70	14.80
25			100	14.84	90.9	0.76	3.00	16.80
25			125	10.84	93.5	1.15	1.80	18.80
25			160	5.47	95.5	1.72	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			200	1.51	96.5	2.48	0.00	22.80
26	2,502	2,512						
26			20	43.30	73.8	0.00	5.60	7.60
26			25	39.95	77.2	0.05	5.40	8.30
26			32	35.42	79.1	0.08	5.20	9.20
26			40	30.47	80.3	0.13	5.00	10.30
26			50	26.52	82.3	0.18	4.70	11.50
26			63	24.82	86.6	0.28	4.30	13.00
26			80	21.30	89.3	0.40	3.70	14.80
26			100	16.57	90.9	0.63	3.00	16.80
26			125	12.65	93.5	0.95	1.80	18.80
26			160	7.37	95.5	1.43	0.00	21.10
26			200	3.54	96.5	2.06	0.00	22.80
27	2,147	2,157						
27			20	44.62	73.8	0.00	5.60	7.60
27			25	41.28	77.2	0.04	5.40	8.30
27			32	36.76	79.1	0.06	5.20	9.20
27			40	31.81	80.3	0.11	5.00	10.30
27			50	27.87	82.3	0.15	4.70	11.50
27			63	26.18	86.6	0.24	4.30	13.00
27			80	22.68	89.3	0.35	3.70	14.80
27			100	17.98	90.9	0.54	3.00	16.80
27			125	14.10	93.5	0.82	1.80	18.80
27			160	8.89	95.5	1.23	0.00	21.10
27			200	5.15	96.5	1.77	0.00	22.80
28	2,025	2,035						
28			20	45.13	73.8	0.00	5.60	7.60
28			25	41.79	77.2	0.04	5.40	8.30
28			32	37.27	79.1	0.06	5.20	9.20
28			40	32.33	80.3	0.10	5.00	10.30
28			50	28.39	82.3	0.14	4.70	11.50
28			63	26.70	86.6	0.22	4.30	13.00
28			80	23.20	89.3	0.33	3.70	14.80
28			100	18.52	90.9	0.51	3.00	16.80
28			125	14.66	93.5	0.77	1.80	18.80
28			160	9.47	95.5	1.16	0.00	21.10
28			200	5.76	96.5	1.67	0.00	22.80
29	2,108	2,118						
29			20	44.78	73.8	0.00	5.60	7.60
29			25	41.44	77.2	0.04	5.40	8.30
29			32	36.92	79.1	0.06	5.20	9.20
29			40	31.98	80.3	0.11	5.00	10.30
29			50	28.03	82.3	0.15	4.70	11.50
29			63	26.35	86.6	0.23	4.30	13.00
29			80	22.84	89.3	0.34	3.70	14.80
29			100	18.15	90.9	0.53	3.00	16.80
29			125	14.28	93.5	0.80	1.80	18.80
29			160	9.07	95.5	1.21	0.00	21.10
29			200	5.34	96.5	1.74	0.00	22.80
3	5,726	5,730						
3			20	36.14	73.8	0.00	5.60	7.60
3			25	32.72	77.2	0.11	5.40	8.30
3			32	28.17	79.1	0.17	5.20	9.20
3			40	23.15	80.3	0.29	5.00	10.30
3			50	19.14	82.3	0.40	4.70	11.50
3			63	17.31	86.6	0.63	4.30	13.00
3			80	13.62	89.3	0.92	3.70	14.80
3			100	8.60	90.9	1.43	3.00	16.80
3			125	4.26	93.5	2.18	1.80	18.80
3			160	-1.63	95.5	3.27	0.00	21.10
3			200	-6.26	96.5	4.70	0.00	22.80
30	2,715	2,721						
30			20	42.60	73.8	0.00	5.60	7.60
30			25	39.25	77.2	0.05	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
30			32	34.72	79.1	0.08	5.20	9.20
30			40	29.77	80.3	0.14	5.00	10.30
30			50	25.81	82.3	0.19	4.70	11.50
30			63	24.10	86.6	0.30	4.30	13.00
30			80	20.57	89.3	0.44	3.70	14.80
30			100	15.82	90.9	0.68	3.00	16.80
30			125	11.87	93.5	1.03	1.80	18.80
30			160	6.55	95.5	1.55	0.00	21.10
30			200	2.67	96.5	2.23	0.00	22.80
31	2,145	2,153						
31			20	44.64	73.8	0.00	5.60	7.60
31			25	41.30	77.2	0.04	5.40	8.30
31			32	36.77	79.1	0.06	5.20	9.20
31			40	31.83	80.3	0.11	5.00	10.30
31			50	27.89	82.3	0.15	4.70	11.50
31			63	26.20	86.6	0.24	4.30	13.00
31			80	22.69	89.3	0.34	3.70	14.80
31			100	18.00	90.9	0.54	3.00	16.80
31			125	14.12	93.5	0.82	1.80	18.80
31			160	8.91	95.5	1.23	0.00	21.10
31			200	5.17	96.5	1.77	0.00	22.80
32	2,989	2,994						
32			20	41.77	73.8	0.00	5.60	7.60
32			25	38.41	77.2	0.06	5.40	8.30
32			32	33.88	79.1	0.09	5.20	9.20
32			40	28.92	80.3	0.15	5.00	10.30
32			50	24.96	82.3	0.21	4.70	11.50
32			63	23.24	86.6	0.33	4.30	13.00
32			80	19.69	89.3	0.48	3.70	14.80
32			100	14.93	90.9	0.75	3.00	16.80
32			125	10.94	93.5	1.14	1.80	18.80
32			160	5.57	95.5	1.71	0.00	21.10
32			200	1.62	96.5	2.46	0.00	22.80
33	3,663	3,669						
33			20	40.01	73.8	0.00	5.60	7.60
33			25	36.64	77.2	0.07	5.40	8.30
33			32	32.10	79.1	0.11	5.20	9.20
33			40	27.12	80.3	0.18	5.00	10.30
33			50	23.15	82.3	0.26	4.70	11.50
33			63	21.40	86.6	0.40	4.30	13.00
33			80	17.82	89.3	0.59	3.70	14.80
33			100	12.99	90.9	0.92	3.00	16.80
33			125	8.91	93.5	1.39	1.80	18.80
33			160	3.42	95.5	2.09	0.00	21.10
33			200	-0.70	96.5	3.01	0.00	22.80
4	5,201	5,205						
4			20	36.97	73.8	0.00	5.60	7.60
4			25	33.57	77.2	0.10	5.40	8.30
4			32	29.02	79.1	0.16	5.20	9.20
4			40	24.01	80.3	0.26	5.00	10.30
4			50	20.01	82.3	0.36	4.70	11.50
4			63	18.20	86.6	0.57	4.30	13.00
4			80	14.54	89.3	0.83	3.70	14.80
4			100	9.57	90.9	1.30	3.00	16.80
4			125	5.29	93.5	1.98	1.80	18.80
4			160	-0.50	95.5	2.97	0.00	21.10
4			200	-5.00	96.5	4.27	0.00	22.80
5	4,688	4,692						
5			20	37.87	73.8	0.00	5.60	7.60
5			25	34.48	77.2	0.09	5.40	8.30
5			32	29.93	79.1	0.14	5.20	9.20
5			40	24.94	80.3	0.23	5.00	10.30
5			50	20.94	82.3	0.33	4.70	11.50
5			63	19.16	86.6	0.52	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			80	15.52	89.3	0.75	3.70	14.80
5			100	10.60	90.9	1.17	3.00	16.80
5			125	6.39	93.5	1.78	1.80	18.80
5			160	0.70	95.5	2.67	0.00	21.10
5			200	-3.67	96.5	3.85	0.00	22.80
6	5,270	5,273						
6			20	36.86	73.8	0.00	5.60	7.60
6			25	33.45	77.2	0.11	5.40	8.30
6			32	28.90	79.1	0.16	5.20	9.20
6			40	23.89	80.3	0.26	5.00	10.30
6			50	19.89	82.3	0.37	4.70	11.50
6			63	18.08	86.6	0.58	4.30	13.00
6			80	14.41	89.3	0.84	3.70	14.80
6			100	9.44	90.9	1.32	3.00	16.80
6			125	5.15	93.5	2.00	1.80	18.80
6			160	-0.65	95.5	3.01	0.00	21.10
6			200	-5.17	96.5	4.32	0.00	22.80
7	4,751	4,755						
7			20	37.76	73.8	0.00	5.60	7.60
7			25	34.36	77.2	0.10	5.40	8.30
7			32	29.82	79.1	0.14	5.20	9.20
7			40	24.82	80.3	0.24	5.00	10.30
7			50	20.82	82.3	0.33	4.70	11.50
7			63	19.03	86.6	0.52	4.30	13.00
7			80	15.40	89.3	0.76	3.70	14.80
7			100	10.47	90.9	1.19	3.00	16.80
7			125	6.25	93.5	1.81	1.80	18.80
7			160	0.55	95.5	2.71	0.00	21.10
7			200	-3.84	96.5	3.90	0.00	22.80
8	4,658	4,662						
8			20	37.93	73.8	0.00	5.60	7.60
8			25	34.54	77.2	0.09	5.40	8.30
8			32	29.99	79.1	0.14	5.20	9.20
8			40	25.00	80.3	0.23	5.00	10.30
8			50	21.00	82.3	0.33	4.70	11.50
8			63	19.22	86.6	0.51	4.30	13.00
8			80	15.58	89.3	0.75	3.70	14.80
8			100	10.66	90.9	1.17	3.00	16.80
8			125	6.46	93.5	1.77	1.80	18.80
8			160	0.77	95.5	2.66	0.00	21.10
8			200	-3.59	96.5	3.82	0.00	22.80
9	4,131	4,136						
9			20	38.97	73.8	0.00	5.60	7.60
9			25	35.59	77.2	0.08	5.40	8.30
9			32	31.05	79.1	0.12	5.20	9.20
9			40	26.06	80.3	0.21	5.00	10.30
9			50	22.08	82.3	0.29	4.70	11.50
9			63	20.31	86.6	0.45	4.30	13.00
9			80	16.71	89.3	0.66	3.70	14.80
9			100	11.84	90.9	1.03	3.00	16.80
9			125	7.70	93.5	1.57	1.80	18.80
9			160	2.11	95.5	2.36	0.00	21.10
9			200	-2.12	96.5	3.39	0.00	22.80
Sum								
Sum			20	56.06				
Sum			25	52.70				
Sum			32	48.16				
Sum			40	43.20				
Sum			50	39.24				
Sum			63	37.51				
Sum			80	33.96				
Sum			100	29.18				
Sum			125	25.18				
Sum			160	19.80				
Sum			200	15.86				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: RH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (322)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,783	2,790						
1			20	42.39	73.8	0.00	5.60	7.60
1			25	39.03	77.2	0.06	5.40	8.30
1			32	34.50	79.1	0.08	5.20	9.20
1			40	29.55	80.3	0.14	5.00	10.30
1			50	25.59	82.3	0.20	4.70	11.50
1			63	23.88	86.6	0.31	4.30	13.00
1			80	20.34	89.3	0.45	3.70	14.80
1			100	15.59	90.9	0.70	3.00	16.80
1			125	11.63	93.5	1.06	1.80	18.80
1			160	6.30	95.5	1.59	0.00	21.10
1			200	2.40	96.5	2.29	0.00	22.80
10	2,940	2,947						
10			20	41.91	73.8	0.00	5.60	7.60
10			25	38.55	77.2	0.06	5.40	8.30
10			32	34.02	79.1	0.09	5.20	9.20
10			40	29.06	80.3	0.15	5.00	10.30
10			50	25.11	82.3	0.21	4.70	11.50
10			63	23.39	86.6	0.32	4.30	13.00
10			80	19.84	89.3	0.47	3.70	14.80
10			100	15.08	90.9	0.74	3.00	16.80
10			125	11.09	93.5	1.12	1.80	18.80
10			160	5.73	95.5	1.68	0.00	21.10
10			200	1.80	96.5	2.42	0.00	22.80
11	3,241	3,247						
11			20	41.07	73.8	0.00	5.60	7.60
11			25	37.70	77.2	0.06	5.40	8.30
11			32	33.17	79.1	0.10	5.20	9.20
11			40	28.21	80.3	0.16	5.00	10.30
11			50	24.24	82.3	0.23	4.70	11.50
11			63	22.51	86.6	0.36	4.30	13.00
11			80	18.95	89.3	0.52	3.70	14.80
11			100	14.16	90.9	0.81	3.00	16.80
11			125	10.14	93.5	1.23	1.80	18.80
11			160	4.72	95.5	1.85	0.00	21.10
11			200	0.71	96.5	2.66	0.00	22.80
12	3,159	3,165						
12			20	41.29	73.8	0.00	5.60	7.60
12			25	37.93	77.2	0.06	5.40	8.30
12			32	33.40	79.1	0.09	5.20	9.20
12			40	28.43	80.3	0.16	5.00	10.30
12			50	24.47	82.3	0.22	4.70	11.50
12			63	22.74	86.6	0.35	4.30	13.00
12			80	19.19	89.3	0.51	3.70	14.80
12			100	14.40	90.9	0.79	3.00	16.80
12			125	10.39	93.5	1.20	1.80	18.80
12			160	4.99	95.5	1.80	0.00	21.10
12			200	1.00	96.5	2.60	0.00	22.80
13	3,628	3,633						
13			20	40.09	73.8	0.00	5.60	7.60
13			25	36.72	77.2	0.07	5.40	8.30
13			32	32.18	79.1	0.11	5.20	9.20
13			40	27.21	80.3	0.18	5.00	10.30
13			50	23.24	82.3	0.25	4.70	11.50
13			63	21.49	86.6	0.40	4.30	13.00
13			80	17.91	89.3	0.58	3.70	14.80
13			100	13.09	90.9	0.91	3.00	16.80
13			125	9.01	93.5	1.38	1.80	18.80
13			160	3.52	95.5	2.07	0.00	21.10
13			200	-0.59	96.5	2.98	0.00	22.80
14	3,808	3,814						
14			20	39.67	73.8	0.00	5.60	7.60
14			25	36.30	77.2	0.08	5.40	8.30

To be continued on next page...

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wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	31.76	79.1	0.11	5.20	9.20
14			40	26.78	80.3	0.19	5.00	10.30
14			50	22.81	82.3	0.27	4.70	11.50
14			63	21.05	86.6	0.42	4.30	13.00
14			80	17.46	89.3	0.61	3.70	14.80
14			100	12.62	90.9	0.95	3.00	16.80
14			125	8.52	93.5	1.45	1.80	18.80
14			160	3.00	95.5	2.17	0.00	21.10
14			200	-1.15	96.5	3.13	0.00	22.80
15	3,715	3,720						
15			20	39.89	73.8	0.00	5.60	7.60
15			25	36.51	77.2	0.07	5.40	8.30
15			32	31.98	79.1	0.11	5.20	9.20
15			40	27.00	80.3	0.19	5.00	10.30
15			50	23.03	82.3	0.26	4.70	11.50
15			63	21.28	86.6	0.41	4.30	13.00
15			80	17.69	89.3	0.60	3.70	14.80
15			100	12.86	90.9	0.93	3.00	16.80
15			125	8.78	93.5	1.41	1.80	18.80
15			160	3.27	95.5	2.12	0.00	21.10
15			200	-0.86	96.5	3.05	0.00	22.80
16	4,166	4,171						
16			20	38.90	73.8	0.00	5.60	7.60
16			25	35.51	77.2	0.08	5.40	8.30
16			32	30.97	79.1	0.13	5.20	9.20
16			40	25.99	80.3	0.21	5.00	10.30
16			50	22.00	82.3	0.29	4.70	11.50
16			63	20.24	86.6	0.46	4.30	13.00
16			80	16.63	89.3	0.67	3.70	14.80
16			100	11.75	90.9	1.04	3.00	16.80
16			125	7.61	93.5	1.58	1.80	18.80
16			160	2.02	95.5	2.38	0.00	21.10
16			200	-2.22	96.5	3.42	0.00	22.80
17	4,456	4,462						
17			20	38.31	73.8	0.00	5.60	7.60
17			25	34.92	77.2	0.09	5.40	8.30
17			32	30.38	79.1	0.13	5.20	9.20
17			40	25.39	80.3	0.22	5.00	10.30
17			50	21.40	82.3	0.31	4.70	11.50
17			63	19.62	86.6	0.49	4.30	13.00
17			80	16.00	89.3	0.71	3.70	14.80
17			100	11.09	90.9	1.12	3.00	16.80
17			125	6.91	93.5	1.70	1.80	18.80
17			160	1.27	95.5	2.54	0.00	21.10
17			200	-3.05	96.5	3.66	0.00	22.80
18	4,213	4,220						
18			20	38.79	73.8	0.00	5.60	7.60
18			25	35.41	77.2	0.08	5.40	8.30
18			32	30.87	79.1	0.13	5.20	9.20
18			40	25.88	80.3	0.21	5.00	10.30
18			50	21.90	82.3	0.30	4.70	11.50
18			63	20.13	86.6	0.46	4.30	13.00
18			80	16.52	89.3	0.68	3.70	14.80
18			100	11.64	90.9	1.05	3.00	16.80
18			125	7.49	93.5	1.60	1.80	18.80
18			160	1.89	95.5	2.41	0.00	21.10
18			200	-2.37	96.5	3.46	0.00	22.80
19	4,244	4,248						
19			20	38.74	73.8	0.00	5.60	7.60
19			25	35.35	77.2	0.08	5.40	8.30
19			32	30.81	79.1	0.13	5.20	9.20
19			40	25.82	80.3	0.21	5.00	10.30
19			50	21.84	82.3	0.30	4.70	11.50
19			63	20.07	86.6	0.47	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	16.46	89.3	0.68	3.70	14.80
19			100	11.57	90.9	1.06	3.00	16.80
19			125	7.42	93.5	1.61	1.80	18.80
19			160	1.81	95.5	2.42	0.00	21.10
19			200	-2.45	96.5	3.48	0.00	22.80
2	2,560	2,568						
2			20	43.11	73.8	0.00	5.60	7.60
2			25	39.76	77.2	0.05	5.40	8.30
2			32	35.23	79.1	0.08	5.20	9.20
2			40	30.28	80.3	0.13	5.00	10.30
2			50	26.33	82.3	0.18	4.70	11.50
2			63	24.63	86.6	0.28	4.30	13.00
2			80	21.10	89.3	0.41	3.70	14.80
2			100	16.37	90.9	0.64	3.00	16.80
2			125	12.43	93.5	0.98	1.80	18.80
2			160	7.14	95.5	1.46	0.00	21.10
2			200	3.30	96.5	2.11	0.00	22.80
20	4,701	4,705						
20			20	37.85	73.8	0.00	5.60	7.60
20			25	34.45	77.2	0.09	5.40	8.30
20			32	29.91	79.1	0.14	5.20	9.20
20			40	24.91	80.3	0.24	5.00	10.30
20			50	20.92	82.3	0.33	4.70	11.50
20			63	19.13	86.6	0.52	4.30	13.00
20			80	15.50	89.3	0.75	3.70	14.80
20			100	10.57	90.9	1.18	3.00	16.80
20			125	6.36	93.5	1.79	1.80	18.80
20			160	0.67	95.5	2.68	0.00	21.10
20			200	-3.71	96.5	3.86	0.00	22.80
21	4,955	4,961						
21			20	37.39	73.8	0.00	5.60	7.60
21			25	33.99	77.2	0.10	5.40	8.30
21			32	29.44	79.1	0.15	5.20	9.20
21			40	24.44	80.3	0.25	5.00	10.30
21			50	20.44	82.3	0.35	4.70	11.50
21			63	18.64	86.6	0.55	4.30	13.00
21			80	14.99	89.3	0.79	3.70	14.80
21			100	10.05	90.9	1.24	3.00	16.80
21			125	5.80	93.5	1.89	1.80	18.80
21			160	0.06	95.5	2.83	0.00	21.10
21			200	-4.38	96.5	4.07	0.00	22.80
22	5,419	5,424						
22			20	36.61	73.8	0.00	5.60	7.60
22			25	33.21	77.2	0.11	5.40	8.30
22			32	28.65	79.1	0.16	5.20	9.20
22			40	23.64	80.3	0.27	5.00	10.30
22			50	19.63	82.3	0.38	4.70	11.50
22			63	17.82	86.6	0.60	4.30	13.00
22			80	14.15	89.3	0.87	3.70	14.80
22			100	9.16	90.9	1.36	3.00	16.80
22			125	4.85	93.5	2.06	1.80	18.80
22			160	-0.98	95.5	3.09	0.00	21.10
22			200	-5.53	96.5	4.45	0.00	22.80
23	5,545	5,549						
23			20	36.42	73.8	0.00	5.60	7.60
23			25	33.00	77.2	0.11	5.40	8.30
23			32	28.45	79.1	0.17	5.20	9.20
23			40	23.44	80.3	0.28	5.00	10.30
23			50	19.43	82.3	0.39	4.70	11.50
23			63	17.61	86.6	0.61	4.30	13.00
23			80	13.93	89.3	0.89	3.70	14.80
23			100	8.93	90.9	1.39	3.00	16.80
23			125	4.61	93.5	2.11	1.80	18.80
23			160	-1.25	95.5	3.16	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-5.83	96.5	4.55	0.00	22.80
24	5,289	5,294						
24			20	36.83	73.8	0.00	5.60	7.60
24			25	33.42	77.2	0.11	5.40	8.30
24			32	28.87	79.1	0.16	5.20	9.20
24			40	23.86	80.3	0.26	5.00	10.30
24			50	19.85	82.3	0.37	4.70	11.50
24			63	18.04	86.6	0.58	4.30	13.00
24			80	14.38	89.3	0.85	3.70	14.80
24			100	9.40	90.9	1.32	3.00	16.80
24			125	5.11	93.5	2.01	1.80	18.80
24			160	-0.69	95.5	3.02	0.00	21.10
24			200	-5.22	96.5	4.34	0.00	22.80
25	4,969	4,974						
25			20	37.37	73.8	0.00	5.60	7.60
25			25	33.97	77.2	0.10	5.40	8.30
25			32	29.42	79.1	0.15	5.20	9.20
25			40	24.42	80.3	0.25	5.00	10.30
25			50	20.42	82.3	0.35	4.70	11.50
25			63	18.62	86.6	0.55	4.30	13.00
25			80	14.97	89.3	0.80	3.70	14.80
25			100	10.02	90.9	1.24	3.00	16.80
25			125	5.78	93.5	1.89	1.80	18.80
25			160	0.03	95.5	2.84	0.00	21.10
25			200	-4.41	96.5	4.08	0.00	22.80
26	5,414	5,419						
26			20	36.62	73.8	0.00	5.60	7.60
26			25	33.21	77.2	0.11	5.40	8.30
26			32	28.66	79.1	0.16	5.20	9.20
26			40	23.65	80.3	0.27	5.00	10.30
26			50	19.64	82.3	0.38	4.70	11.50
26			63	17.83	86.6	0.60	4.30	13.00
26			80	14.15	89.3	0.87	3.70	14.80
26			100	9.17	90.9	1.35	3.00	16.80
26			125	4.86	93.5	2.06	1.80	18.80
26			160	-0.97	95.5	3.09	0.00	21.10
26			200	-5.52	96.5	4.44	0.00	22.80
27	5,733	5,738						
27			20	36.12	73.8	0.00	5.60	7.60
27			25	32.71	77.2	0.11	5.40	8.30
27			32	28.15	79.1	0.17	5.20	9.20
27			40	23.14	80.3	0.29	5.00	10.30
27			50	19.12	82.3	0.40	4.70	11.50
27			63	17.29	86.6	0.63	4.30	13.00
27			80	13.61	89.3	0.92	3.70	14.80
27			100	8.59	90.9	1.43	3.00	16.80
27			125	4.24	93.5	2.18	1.80	18.80
27			160	-1.65	95.5	3.27	0.00	21.10
27			200	-6.28	96.5	4.71	0.00	22.80
28	5,986	5,990						
28			20	35.75	73.8	0.00	5.60	7.60
28			25	32.33	77.2	0.12	5.40	8.30
28			32	27.77	79.1	0.18	5.20	9.20
28			40	22.75	80.3	0.30	5.00	10.30
28			50	18.73	82.3	0.42	4.70	11.50
28			63	16.89	86.6	0.66	4.30	13.00
28			80	13.19	89.3	0.96	3.70	14.80
28			100	8.15	90.9	1.50	3.00	16.80
28			125	3.78	93.5	2.28	1.80	18.80
28			160	-2.16	95.5	3.41	0.00	21.10
28			200	-6.86	96.5	4.91	0.00	22.80
29	6,303	6,307						
29			20	35.30	73.8	0.00	5.60	7.60
29			25	31.88	77.2	0.13	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			32	27.31	79.1	0.19	5.20	9.20
29			40	22.29	80.3	0.32	5.00	10.30
29			50	18.26	82.3	0.44	4.70	11.50
29			63	16.41	86.6	0.69	4.30	13.00
29			80	12.69	89.3	1.01	3.70	14.80
29			100	7.63	90.9	1.58	3.00	16.80
29			125	3.21	93.5	2.40	1.80	18.80
29			160	-2.79	95.5	3.59	0.00	21.10
29			200	-7.57	96.5	5.17	0.00	22.80
3	2,910	2,918						
3			20	42.00	73.8	0.00	5.60	7.60
3			25	38.64	77.2	0.06	5.40	8.30
3			32	34.11	79.1	0.09	5.20	9.20
3			40	29.15	80.3	0.15	5.00	10.30
3			50	25.19	82.3	0.20	4.70	11.50
3			63	23.48	86.6	0.32	4.30	13.00
3			80	19.93	89.3	0.47	3.70	14.80
3			100	15.17	90.9	0.73	3.00	16.80
3			125	11.19	93.5	1.11	1.80	18.80
3			160	5.84	95.5	1.66	0.00	21.10
3			200	1.91	96.5	2.39	0.00	22.80
30	6,148	6,151						
30			20	35.52	73.8	0.00	5.60	7.60
30			25	32.10	77.2	0.12	5.40	8.30
30			32	27.54	79.1	0.18	5.20	9.20
30			40	22.51	80.3	0.31	5.00	10.30
30			50	18.49	82.3	0.43	4.70	11.50
30			63	16.64	86.6	0.68	4.30	13.00
30			80	12.94	89.3	0.98	3.70	14.80
30			100	7.88	90.9	1.54	3.00	16.80
30			125	3.48	93.5	2.34	1.80	18.80
30			160	-2.48	95.5	3.51	0.00	21.10
30			200	-7.22	96.5	5.04	0.00	22.80
31	6,716	6,719						
31			20	34.75	73.8	0.00	5.60	7.60
31			25	31.32	77.2	0.13	5.40	8.30
31			32	26.75	79.1	0.20	5.20	9.20
31			40	21.72	80.3	0.34	5.00	10.30
31			50	17.68	82.3	0.47	4.70	11.50
31			63	15.81	86.6	0.74	4.30	13.00
31			80	12.08	89.3	1.08	3.70	14.80
31			100	6.97	90.9	1.68	3.00	16.80
31			125	2.50	93.5	2.55	1.80	18.80
31			160	-3.58	95.5	3.83	0.00	21.10
31			200	-8.46	96.5	5.51	0.00	22.80
32	6,585	6,588						
32			20	34.92	73.8	0.00	5.60	7.60
32			25	31.49	77.2	0.13	5.40	8.30
32			32	26.93	79.1	0.20	5.20	9.20
32			40	21.90	80.3	0.33	5.00	10.30
32			50	17.86	82.3	0.46	4.70	11.50
32			63	16.00	86.6	0.72	4.30	13.00
32			80	12.27	89.3	1.05	3.70	14.80
32			100	7.18	90.9	1.65	3.00	16.80
32			125	2.72	93.5	2.50	1.80	18.80
32			160	-3.33	95.5	3.76	0.00	21.10
32			200	-8.18	96.5	5.40	0.00	22.80
33	6,534	6,538						
33			20	34.99	73.8	0.00	5.60	7.60
33			25	31.56	77.2	0.13	5.40	8.30
33			32	26.99	79.1	0.20	5.20	9.20
33			40	21.96	80.3	0.33	5.00	10.30
33			50	17.93	82.3	0.46	4.70	11.50
33			63	16.07	86.6	0.72	4.30	13.00

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			80	12.34	89.3	1.05	3.70	14.80
33			100	7.26	90.9	1.63	3.00	16.80
33			125	2.81	93.5	2.48	1.80	18.80
33			160	-3.24	95.5	3.73	0.00	21.10
33			200	-8.07	96.5	5.36	0.00	22.80
4	3,139	3,146						
4			20	41.35	73.8	0.00	5.60	7.60
4			25	37.98	77.2	0.06	5.40	8.30
4			32	33.45	79.1	0.09	5.20	9.20
4			40	28.49	80.3	0.16	5.00	10.30
4			50	24.53	82.3	0.22	4.70	11.50
4			63	22.80	86.6	0.35	4.30	13.00
4			80	19.24	89.3	0.50	3.70	14.80
4			100	14.46	90.9	0.79	3.00	16.80
4			125	10.45	93.5	1.20	1.80	18.80
4			160	5.05	95.5	1.79	0.00	21.10
4			200	1.07	96.5	2.58	0.00	22.80
5	3,674	3,680						
5			20	39.98	73.8	0.00	5.60	7.60
5			25	36.61	77.2	0.07	5.40	8.30
5			32	32.07	79.1	0.11	5.20	9.20
5			40	27.10	80.3	0.18	5.00	10.30
5			50	23.13	82.3	0.26	4.70	11.50
5			63	21.38	86.6	0.40	4.30	13.00
5			80	17.79	89.3	0.59	3.70	14.80
5			100	12.96	90.9	0.92	3.00	16.80
5			125	8.89	93.5	1.40	1.80	18.80
5			160	3.39	95.5	2.10	0.00	21.10
5			200	-0.73	96.5	3.02	0.00	22.80
6	2,613	2,621						
6			20	42.93	73.8	0.00	5.60	7.60
6			25	39.58	77.2	0.05	5.40	8.30
6			32	35.05	79.1	0.08	5.20	9.20
6			40	30.10	80.3	0.13	5.00	10.30
6			50	26.15	82.3	0.18	4.70	11.50
6			63	24.44	86.6	0.29	4.30	13.00
6			80	20.91	89.3	0.42	3.70	14.80
6			100	16.18	90.9	0.66	3.00	16.80
6			125	12.23	93.5	1.00	1.80	18.80
6			160	6.94	95.5	1.49	0.00	21.10
6			200	3.08	96.5	2.15	0.00	22.80
7	3,151	3,158						
7			20	41.31	73.8	0.00	5.60	7.60
7			25	37.95	77.2	0.06	5.40	8.30
7			32	33.42	79.1	0.09	5.20	9.20
7			40	28.45	80.3	0.16	5.00	10.30
7			50	24.49	82.3	0.22	4.70	11.50
7			63	22.76	86.6	0.35	4.30	13.00
7			80	19.21	89.3	0.51	3.70	14.80
7			100	14.42	90.9	0.79	3.00	16.80
7			125	10.41	93.5	1.20	1.80	18.80
7			160	5.01	95.5	1.80	0.00	21.10
7			200	1.02	96.5	2.59	0.00	22.80
8	3,399	3,405						
8			20	40.66	73.8	0.00	5.60	7.60
8			25	37.29	77.2	0.07	5.40	8.30
8			32	32.75	79.1	0.10	5.20	9.20
8			40	27.79	80.3	0.17	5.00	10.30
8			50	23.82	82.3	0.24	4.70	11.50
8			63	22.08	86.6	0.37	4.30	13.00
8			80	18.51	89.3	0.54	3.70	14.80
8			100	13.71	90.9	0.85	3.00	16.80
8			125	9.66	93.5	1.29	1.80	18.80
8			160	4.22	95.5	1.94	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	0.16	96.5	2.79	0.00	22.80
9	4,075	4,080						
9			20	39.09	73.8	0.00	5.60	7.60
9			25	35.71	77.2	0.08	5.40	8.30
9			32	31.17	79.1	0.12	5.20	9.20
9			40	26.18	80.3	0.20	5.00	10.30
9			50	22.20	82.3	0.29	4.70	11.50
9			63	20.44	86.6	0.45	4.30	13.00
9			80	16.83	89.3	0.65	3.70	14.80
9			100	11.97	90.9	1.02	3.00	16.80
9			125	7.84	93.5	1.55	1.80	18.80
9			160	2.26	95.5	2.33	0.00	21.10
9			200	-1.96	96.5	3.35	0.00	22.80
Sum								
Sum			20	54.63				
Sum			25	51.25				
Sum			32	46.71				
Sum			40	41.74				
Sum			50	37.76				
Sum			63	36.01				
Sum			80	32.43				
Sum			100	27.60				
Sum			125	23.52				
Sum			160	18.03				
Sum			200	13.93				

Noise sensitive area: RH Hiekkala Noise sensitive point: Finnish normal frequency - User defined (311)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,468	3,475						
1			20	40.48	73.8	0.00	5.60	7.60
1			25	37.11	77.2	0.07	5.40	8.30
1			32	32.58	79.1	0.10	5.20	9.20
1			40	27.61	80.3	0.17	5.00	10.30
1			50	23.64	82.3	0.24	4.70	11.50
1			63	21.90	86.6	0.38	4.30	13.00
1			80	18.33	89.3	0.56	3.70	14.80
1			100	13.51	90.9	0.87	3.00	16.80
1			125	9.46	93.5	1.32	1.80	18.80
1			160	4.00	95.5	1.98	0.00	21.10
1			200	-0.07	96.5	2.85	0.00	22.80
10	5,351	5,355						
10			20	36.72	73.8	0.00	5.60	7.60
10			25	33.32	77.2	0.11	5.40	8.30
10			32	28.76	79.1	0.16	5.20	9.20
10			40	23.76	80.3	0.27	5.00	10.30
10			50	19.75	82.3	0.37	4.70	11.50
10			63	17.94	86.6	0.59	4.30	13.00
10			80	14.27	89.3	0.86	3.70	14.80
10			100	9.29	90.9	1.34	3.00	16.80
10			125	4.99	93.5	2.04	1.80	18.80
10			160	-0.83	95.5	3.05	0.00	21.10
10			200	-5.37	96.5	4.39	0.00	22.80
11	4,777	4,783						
11			20	37.71	73.8	0.00	5.60	7.60
11			25	34.31	77.2	0.10	5.40	8.30
11			32	29.76	79.1	0.14	5.20	9.20
11			40	24.77	80.3	0.24	5.00	10.30
11			50	20.77	82.3	0.33	4.70	11.50
11			63	18.98	86.6	0.53	4.30	13.00
11			80	15.34	89.3	0.77	3.70	14.80
11			100	10.41	90.9	1.20	3.00	16.80

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	6.19	93.5	1.82	1.80	18.80
11			160	0.48	95.5	2.73	0.00	21.10
11			200	-3.91	96.5	3.92	0.00	22.80
12	5,900	5,904						
12			20	35.88	73.8	0.00	5.60	7.60
12			25	32.46	77.2	0.12	5.40	8.30
12			32	27.90	79.1	0.18	5.20	9.20
12			40	22.88	80.3	0.30	5.00	10.30
12			50	18.86	82.3	0.41	4.70	11.50
12			63	17.03	86.6	0.65	4.30	13.00
12			80	13.33	89.3	0.94	3.70	14.80
12			100	8.30	90.9	1.48	3.00	16.80
12			125	3.93	93.5	2.24	1.80	18.80
12			160	-1.99	95.5	3.37	0.00	21.10
12			200	-6.66	96.5	4.84	0.00	22.80
13	5,210	5,214						
13			20	36.96	73.8	0.00	5.60	7.60
13			25	33.55	77.2	0.10	5.40	8.30
13			32	29.00	79.1	0.16	5.20	9.20
13			40	24.00	80.3	0.26	5.00	10.30
13			50	19.99	82.3	0.37	4.70	11.50
13			63	18.18	86.6	0.57	4.30	13.00
13			80	14.52	89.3	0.83	3.70	14.80
13			100	9.55	90.9	1.30	3.00	16.80
13			125	5.27	93.5	1.98	1.80	18.80
13			160	-0.52	95.5	2.97	0.00	21.10
13			200	-5.02	96.5	4.28	0.00	22.80
14	3,710	3,717						
14			20	39.90	73.8	0.00	5.60	7.60
14			25	36.52	77.2	0.07	5.40	8.30
14			32	31.99	79.1	0.11	5.20	9.20
14			40	27.01	80.3	0.19	5.00	10.30
14			50	23.04	82.3	0.26	4.70	11.50
14			63	21.29	86.6	0.41	4.30	13.00
14			80	17.70	89.3	0.59	3.70	14.80
14			100	12.87	90.9	0.93	3.00	16.80
14			125	8.78	93.5	1.41	1.80	18.80
14			160	3.28	95.5	2.12	0.00	21.10
14			200	-0.85	96.5	3.05	0.00	22.80
15	5,787	5,791						
15			20	36.04	73.8	0.00	5.60	7.60
15			25	32.63	77.2	0.12	5.40	8.30
15			32	28.07	79.1	0.17	5.20	9.20
15			40	23.05	80.3	0.29	5.00	10.30
15			50	19.04	82.3	0.41	4.70	11.50
15			63	17.21	86.6	0.64	4.30	13.00
15			80	13.52	89.3	0.93	3.70	14.80
15			100	8.50	90.9	1.45	3.00	16.80
15			125	4.14	93.5	2.20	1.80	18.80
15			160	-1.76	95.5	3.30	0.00	21.10
15			200	-6.40	96.5	4.75	0.00	22.80
16	5,110	5,114						
16			20	37.12	73.8	0.00	5.60	7.60
16			25	33.72	77.2	0.10	5.40	8.30
16			32	29.17	79.1	0.15	5.20	9.20
16			40	24.17	80.3	0.26	5.00	10.30
16			50	20.17	82.3	0.36	4.70	11.50
16			63	18.36	86.6	0.56	4.30	13.00
16			80	14.71	89.3	0.82	3.70	14.80
16			100	9.75	90.9	1.28	3.00	16.80
16			125	5.48	93.5	1.94	1.80	18.80
16			160	-0.29	95.5	2.92	0.00	21.10
16			200	-4.77	96.5	4.19	0.00	22.80
17	4,521	4,528						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	38.18	73.8	0.00	5.60	7.60
17			25	34.79	77.2	0.09	5.40	8.30
17			32	30.25	79.1	0.14	5.20	9.20
17			40	25.25	80.3	0.23	5.00	10.30
17			50	21.26	82.3	0.32	4.70	11.50
17			63	19.48	86.6	0.50	4.30	13.00
17			80	15.86	89.3	0.72	3.70	14.80
17			100	10.95	90.9	1.13	3.00	16.80
17			125	6.76	93.5	1.72	1.80	18.80
17			160	1.10	95.5	2.58	0.00	21.10
17			200	-3.23	96.5	3.71	0.00	22.80
18	4,087	4,094						
18			20	39.06	73.8	0.00	5.60	7.60
18			25	35.67	77.2	0.08	5.40	8.30
18			32	31.13	79.1	0.12	5.20	9.20
18			40	26.15	80.3	0.20	5.00	10.30
18			50	22.17	82.3	0.29	4.70	11.50
18			63	20.41	86.6	0.45	4.30	13.00
18			80	16.80	89.3	0.66	3.70	14.80
18			100	11.93	90.9	1.02	3.00	16.80
18			125	7.80	93.5	1.56	1.80	18.80
18			160	2.22	95.5	2.33	0.00	21.10
18			200	-2.00	96.5	3.36	0.00	22.80
19	5,888	5,892						
19			20	35.89	73.8	0.00	5.60	7.60
19			25	32.48	77.2	0.12	5.40	8.30
19			32	27.92	79.1	0.18	5.20	9.20
19			40	22.90	80.3	0.29	5.00	10.30
19			50	18.88	82.3	0.41	4.70	11.50
19			63	17.05	86.6	0.65	4.30	13.00
19			80	13.35	89.3	0.94	3.70	14.80
19			100	8.32	90.9	1.47	3.00	16.80
19			125	3.96	93.5	2.24	1.80	18.80
19			160	-1.96	95.5	3.36	0.00	21.10
19			200	-6.64	96.5	4.83	0.00	22.80
2	3,920	3,926						
2			20	39.42	73.8	0.00	5.60	7.60
2			25	36.04	77.2	0.08	5.40	8.30
2			32	31.50	79.1	0.12	5.20	9.20
2			40	26.52	80.3	0.20	5.00	10.30
2			50	22.55	82.3	0.27	4.70	11.50
2			63	20.79	86.6	0.43	4.30	13.00
2			80	17.19	89.3	0.63	3.70	14.80
2			100	12.34	90.9	0.98	3.00	16.80
2			125	8.23	93.5	1.49	1.80	18.80
2			160	2.68	95.5	2.24	0.00	21.10
2			200	-1.50	96.5	3.22	0.00	22.80
20	5,606	5,610						
20			20	36.32	73.8	0.00	5.60	7.60
20			25	32.91	77.2	0.11	5.40	8.30
20			32	28.35	79.1	0.17	5.20	9.20
20			40	23.34	80.3	0.28	5.00	10.30
20			50	19.33	82.3	0.39	4.70	11.50
20			63	17.50	86.6	0.62	4.30	13.00
20			80	13.82	89.3	0.90	3.70	14.80
20			100	8.82	90.9	1.40	3.00	16.80
20			125	4.49	93.5	2.13	1.80	18.80
20			160	-1.38	95.5	3.20	0.00	21.10
20			200	-5.98	96.5	4.60	0.00	22.80
21	4,184	4,193						
21			20	38.85	73.8	0.00	5.60	7.60
21			25	35.47	77.2	0.08	5.40	8.30
21			32	30.92	79.1	0.13	5.20	9.20
21			40	25.94	80.3	0.21	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	21.96	82.3	0.29	4.70	11.50
21			63	20.19	86.6	0.46	4.30	13.00
21			80	16.58	89.3	0.67	3.70	14.80
21			100	11.70	90.9	1.05	3.00	16.80
21			125	7.56	93.5	1.59	1.80	18.80
21			160	1.96	95.5	2.39	0.00	21.10
21			200	-2.29	96.5	3.44	0.00	22.80
22	3,882	3,890						
22			20	39.50	73.8	0.00	5.60	7.60
22			25	36.12	77.2	0.08	5.40	8.30
22			32	31.58	79.1	0.12	5.20	9.20
22			40	26.61	80.3	0.19	5.00	10.30
22			50	22.63	82.3	0.27	4.70	11.50
22			63	20.87	86.6	0.43	4.30	13.00
22			80	17.28	89.3	0.62	3.70	14.80
22			100	12.43	90.9	0.97	3.00	16.80
22			125	8.32	93.5	1.48	1.80	18.80
22			160	2.78	95.5	2.22	0.00	21.10
22			200	-1.39	96.5	3.19	0.00	22.80
23	3,269	3,277						
23			20	40.99	73.8	0.00	5.60	7.60
23			25	37.63	77.2	0.07	5.40	8.30
23			32	33.09	79.1	0.10	5.20	9.20
23			40	28.13	80.3	0.16	5.00	10.30
23			50	24.16	82.3	0.23	4.70	11.50
23			63	22.43	86.6	0.36	4.30	13.00
23			80	18.87	89.3	0.52	3.70	14.80
23			100	14.07	90.9	0.82	3.00	16.80
23			125	10.05	93.5	1.25	1.80	18.80
23			160	4.62	95.5	1.87	0.00	21.10
23			200	0.60	96.5	2.69	0.00	22.80
24	5,446	5,451						
24			20	36.57	73.8	0.00	5.60	7.60
24			25	33.16	77.2	0.11	5.40	8.30
24			32	28.61	79.1	0.16	5.20	9.20
24			40	23.60	80.3	0.27	5.00	10.30
24			50	19.59	82.3	0.38	4.70	11.50
24			63	17.77	86.6	0.60	4.30	13.00
24			80	14.10	89.3	0.87	3.70	14.80
24			100	9.11	90.9	1.36	3.00	16.80
24			125	4.80	93.5	2.07	1.80	18.80
24			160	-1.04	95.5	3.11	0.00	21.10
24			200	-5.60	96.5	4.47	0.00	22.80
25	4,886	4,892						
25			20	37.51	73.8	0.00	5.60	7.60
25			25	34.11	77.2	0.10	5.40	8.30
25			32	29.56	79.1	0.15	5.20	9.20
25			40	24.57	80.3	0.24	5.00	10.30
25			50	20.57	82.3	0.34	4.70	11.50
25			63	18.77	86.6	0.54	4.30	13.00
25			80	15.13	89.3	0.78	3.70	14.80
25			100	10.19	90.9	1.22	3.00	16.80
25			125	5.95	93.5	1.86	1.80	18.80
25			160	0.22	95.5	2.79	0.00	21.10
25			200	-4.20	96.5	4.01	0.00	22.80
26	4,669	4,677						
26			20	37.90	73.8	0.00	5.60	7.60
26			25	34.51	77.2	0.09	5.40	8.30
26			32	29.96	79.1	0.14	5.20	9.20
26			40	24.97	80.3	0.23	5.00	10.30
26			50	20.97	82.3	0.33	4.70	11.50
26			63	19.19	86.6	0.51	4.30	13.00
26			80	15.55	89.3	0.75	3.70	14.80
26			100	10.63	90.9	1.17	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
26			125	6.42	93.5	1.78	1.80	18.80
26			160	0.74	95.5	2.67	0.00	21.10
26			200	-3.63	96.5	3.83	0.00	22.80
27	4,376	4,384						
27			20	38.46	73.8	0.00	5.60	7.60
27			25	35.08	77.2	0.09	5.40	8.30
27			32	30.53	79.1	0.13	5.20	9.20
27			40	25.54	80.3	0.22	5.00	10.30
27			50	21.56	82.3	0.31	4.70	11.50
27			63	19.78	86.6	0.48	4.30	13.00
27			80	16.16	89.3	0.70	3.70	14.80
27			100	11.27	90.9	1.10	3.00	16.80
27			125	7.10	93.5	1.67	1.80	18.80
27			160	1.46	95.5	2.50	0.00	21.10
27			200	-2.83	96.5	3.59	0.00	22.80
28	3,876	3,884						
28			20	39.52	73.8	0.00	5.60	7.60
28			25	36.14	77.2	0.08	5.40	8.30
28			32	31.60	79.1	0.12	5.20	9.20
28			40	26.62	80.3	0.19	5.00	10.30
28			50	22.64	82.3	0.27	4.70	11.50
28			63	20.89	86.6	0.43	4.30	13.00
28			80	17.29	89.3	0.62	3.70	14.80
28			100	12.44	90.9	0.97	3.00	16.80
28			125	8.34	93.5	1.48	1.80	18.80
28			160	2.80	95.5	2.21	0.00	21.10
28			200	-1.37	96.5	3.18	0.00	22.80
29	3,404	3,413						
29			20	40.64	73.8	0.00	5.60	7.60
29			25	37.27	77.2	0.07	5.40	8.30
29			32	32.73	79.1	0.10	5.20	9.20
29			40	27.77	80.3	0.17	5.00	10.30
29			50	23.80	82.3	0.24	4.70	11.50
29			63	22.06	86.6	0.38	4.30	13.00
29			80	18.49	89.3	0.55	3.70	14.80
29			100	13.68	90.9	0.85	3.00	16.80
29			125	9.64	93.5	1.30	1.80	18.80
29			160	4.19	95.5	1.95	0.00	21.10
29			200	0.14	96.5	2.80	0.00	22.80
3	3,390	3,397						
3			20	40.68	73.8	0.00	5.60	7.60
3			25	37.31	77.2	0.07	5.40	8.30
3			32	32.78	79.1	0.10	5.20	9.20
3			40	27.81	80.3	0.17	5.00	10.30
3			50	23.84	82.3	0.24	4.70	11.50
3			63	22.10	86.6	0.37	4.30	13.00
3			80	18.53	89.3	0.54	3.70	14.80
3			100	13.73	90.9	0.85	3.00	16.80
3			125	9.69	93.5	1.29	1.80	18.80
3			160	4.24	95.5	1.94	0.00	21.10
3			200	0.19	96.5	2.79	0.00	22.80
30	2,746	2,755						
30			20	42.50	73.8	0.00	5.60	7.60
30			25	39.14	77.2	0.06	5.40	8.30
30			32	34.62	79.1	0.08	5.20	9.20
30			40	29.66	80.3	0.14	5.00	10.30
30			50	25.71	82.3	0.19	4.70	11.50
30			63	24.00	86.6	0.30	4.30	13.00
30			80	20.46	89.3	0.44	3.70	14.80
30			100	15.71	90.9	0.69	3.00	16.80
30			125	11.75	93.5	1.05	1.80	18.80
30			160	6.43	95.5	1.57	0.00	21.10
30			200	2.54	96.5	2.26	0.00	22.80
31	3,237	3,245						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			20	41.08	73.8	0.00	5.60	7.60
31			25	37.71	77.2	0.06	5.40	8.30
31			32	33.18	79.1	0.10	5.20	9.20
31			40	28.21	80.3	0.16	5.00	10.30
31			50	24.25	82.3	0.23	4.70	11.50
31			63	22.52	86.6	0.36	4.30	13.00
31			80	18.96	89.3	0.52	3.70	14.80
31			100	14.17	90.9	0.81	3.00	16.80
31			125	10.14	93.5	1.23	1.80	18.80
31			160	4.73	95.5	1.85	0.00	21.10
31			200	0.72	96.5	2.66	0.00	22.80
32	2,396	2,407						
32			20	43.67	73.8	0.00	5.60	7.60
32			25	40.32	77.2	0.05	5.40	8.30
32			32	35.80	79.1	0.07	5.20	9.20
32			40	30.85	80.3	0.12	5.00	10.30
32			50	26.90	82.3	0.17	4.70	11.50
32			63	25.21	86.6	0.26	4.30	13.00
32			80	21.69	89.3	0.39	3.70	14.80
32			100	16.97	90.9	0.60	3.00	16.80
32			125	13.06	93.5	0.91	1.80	18.80
32			160	7.80	95.5	1.37	0.00	21.10
32			200	4.00	96.5	1.97	0.00	22.80
33	1,736	1,753						
33			20	46.42	73.8	0.00	5.60	7.60
33			25	43.09	77.2	0.04	5.40	8.30
33			32	38.57	79.1	0.05	5.20	9.20
33			40	33.63	80.3	0.09	5.00	10.30
33			50	29.70	82.3	0.12	4.70	11.50
33			63	28.03	86.6	0.19	4.30	13.00
33			80	24.54	89.3	0.28	3.70	14.80
33			100	19.88	90.9	0.44	3.00	16.80
33			125	16.06	93.5	0.67	1.80	18.80
33			160	10.92	95.5	1.00	0.00	21.10
33			200	7.28	96.5	1.44	0.00	22.80
4	3,400	3,408						
4			20	40.65	73.8	0.00	5.60	7.60
4			25	37.28	77.2	0.07	5.40	8.30
4			32	32.75	79.1	0.10	5.20	9.20
4			40	27.78	80.3	0.17	5.00	10.30
4			50	23.81	82.3	0.24	4.70	11.50
4			63	22.08	86.6	0.37	4.30	13.00
4			80	18.51	89.3	0.55	3.70	14.80
4			100	13.70	90.9	0.85	3.00	16.80
4			125	9.66	93.5	1.29	1.80	18.80
4			160	4.21	95.5	1.94	0.00	21.10
4			200	0.16	96.5	2.79	0.00	22.80
5	3,091	3,099						
5			20	41.47	73.8	0.00	5.60	7.60
5			25	38.11	77.2	0.06	5.40	8.30
5			32	33.58	79.1	0.09	5.20	9.20
5			40	28.62	80.3	0.15	5.00	10.30
5			50	24.66	82.3	0.22	4.70	11.50
5			63	22.93	86.6	0.34	4.30	13.00
5			80	19.38	89.3	0.50	3.70	14.80
5			100	14.60	90.9	0.77	3.00	16.80
5			125	10.60	93.5	1.18	1.80	18.80
5			160	5.21	95.5	1.77	0.00	21.10
5			200	1.23	96.5	2.54	0.00	22.80
6	4,770	4,776						
6			20	37.72	73.8	0.00	5.60	7.60
6			25	34.32	77.2	0.10	5.40	8.30
6			32	29.78	79.1	0.14	5.20	9.20
6			40	24.78	80.3	0.24	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			50	20.78	82.3	0.33	4.70	11.50
6			63	18.99	86.6	0.53	4.30	13.00
6			80	15.36	89.3	0.76	3.70	14.80
6			100	10.43	90.9	1.19	3.00	16.80
6			125	6.20	93.5	1.81	1.80	18.80
6			160	0.50	95.5	2.72	0.00	21.10
6			200	-3.90	96.5	3.92	0.00	22.80
7	4,211	4,217						
7			20	38.80	73.8	0.00	5.60	7.60
7			25	35.42	77.2	0.08	5.40	8.30
7			32	30.87	79.1	0.13	5.20	9.20
7			40	25.89	80.3	0.21	5.00	10.30
7			50	21.91	82.3	0.30	4.70	11.50
7			63	20.14	86.6	0.46	4.30	13.00
7			80	16.53	89.3	0.67	3.70	14.80
7			100	11.65	90.9	1.05	3.00	16.80
7			125	7.50	93.5	1.60	1.80	18.80
7			160	1.90	95.5	2.40	0.00	21.10
7			200	-2.36	96.5	3.46	0.00	22.80
8	3,649	3,656						
8			20	40.04	73.8	0.00	5.60	7.60
8			25	36.67	77.2	0.07	5.40	8.30
8			32	32.13	79.1	0.11	5.20	9.20
8			40	27.16	80.3	0.18	5.00	10.30
8			50	23.18	82.3	0.26	4.70	11.50
8			63	21.44	86.6	0.40	4.30	13.00
8			80	17.85	89.3	0.59	3.70	14.80
8			100	13.02	90.9	0.91	3.00	16.80
8			125	8.95	93.5	1.39	1.80	18.80
8			160	3.45	95.5	2.08	0.00	21.10
8			200	-0.66	96.5	3.00	0.00	22.80
9	3,173	3,180						
9			20	41.25	73.8	0.00	5.60	7.60
9			25	37.89	77.2	0.06	5.40	8.30
9			32	33.35	79.1	0.10	5.20	9.20
9			40	28.39	80.3	0.16	5.00	10.30
9			50	24.43	82.3	0.22	4.70	11.50
9			63	22.70	86.6	0.35	4.30	13.00
9			80	19.14	89.3	0.51	3.70	14.80
9			100	14.36	90.9	0.80	3.00	16.80
9			125	10.34	93.5	1.21	1.80	18.80
9			160	4.94	95.5	1.81	0.00	21.10
9			200	0.94	96.5	2.61	0.00	22.80
Sum								
Sum			20	55.13				
Sum			25	51.76				
Sum			32	47.23				
Sum			40	42.26				
Sum			50	38.29				
Sum			63	36.55				
Sum			80	32.97				
Sum			100	28.16				
Sum			125	24.11				
Sum			160	18.67				
Sum			200	14.63				

Noise sensitive area: RH Honkala Noise sensitive point: Finnish normal frequency - User defined (329)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,705	6,707						
1			20	34.77	73.8	0.00	5.60	7.60
1			25	31.34	77.2	0.13	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
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+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			32	26.77	79.1	0.20	5.20	9.20
1			40	21.73	80.3	0.34	5.00	10.30
1			50	17.70	82.3	0.47	4.70	11.50
1			63	15.83	86.6	0.74	4.30	13.00
1			80	12.10	89.3	1.07	3.70	14.80
1			100	6.99	90.9	1.68	3.00	16.80
1			125	2.52	93.5	2.55	1.80	18.80
1			160	-3.55	95.5	3.82	0.00	21.10
1			200	-8.43	96.5	5.50	0.00	22.80
10	5,761	5,764						
10			20	36.09	73.8	0.00	5.60	7.60
10			25	32.67	77.2	0.12	5.40	8.30
10			32	28.11	79.1	0.17	5.20	9.20
10			40	23.10	80.3	0.29	5.00	10.30
10			50	19.08	82.3	0.40	4.70	11.50
10			63	17.25	86.6	0.63	4.30	13.00
10			80	13.56	89.3	0.92	3.70	14.80
10			100	8.54	90.9	1.44	3.00	16.80
10			125	4.20	93.5	2.19	1.80	18.80
10			160	-1.70	95.5	3.29	0.00	21.10
10			200	-6.34	96.5	4.73	0.00	22.80
11	5,285	5,289						
11			20	36.83	73.8	0.00	5.60	7.60
11			25	33.43	77.2	0.11	5.40	8.30
11			32	28.87	79.1	0.16	5.20	9.20
11			40	23.87	80.3	0.26	5.00	10.30
11			50	19.86	82.3	0.37	4.70	11.50
11			63	18.05	86.6	0.58	4.30	13.00
11			80	14.39	89.3	0.85	3.70	14.80
11			100	9.41	90.9	1.32	3.00	16.80
11			125	5.12	93.5	2.01	1.80	18.80
11			160	-0.68	95.5	3.01	0.00	21.10
11			200	-5.20	96.5	4.34	0.00	22.80
12	5,904	5,906						
12			20	35.87	73.8	0.00	5.60	7.60
12			25	32.46	77.2	0.12	5.40	8.30
12			32	27.90	79.1	0.18	5.20	9.20
12			40	22.88	80.3	0.30	5.00	10.30
12			50	18.86	82.3	0.41	4.70	11.50
12			63	17.02	86.6	0.65	4.30	13.00
12			80	13.33	89.3	0.94	3.70	14.80
12			100	8.30	90.9	1.48	3.00	16.80
12			125	3.93	93.5	2.24	1.80	18.80
12			160	-1.99	95.5	3.37	0.00	21.10
12			200	-6.67	96.5	4.84	0.00	22.80
13	5,092	5,095						
13			20	37.16	73.8	0.00	5.60	7.60
13			25	33.75	77.2	0.10	5.40	8.30
13			32	29.20	79.1	0.15	5.20	9.20
13			40	24.20	80.3	0.25	5.00	10.30
13			50	20.20	82.3	0.36	4.70	11.50
13			63	18.40	86.6	0.56	4.30	13.00
13			80	14.74	89.3	0.82	3.70	14.80
13			100	9.78	90.9	1.27	3.00	16.80
13			125	5.52	93.5	1.94	1.80	18.80
13			160	-0.25	95.5	2.90	0.00	21.10
13			200	-4.72	96.5	4.18	0.00	22.80
14	4,703	4,706						
14			20	37.85	73.8	0.00	5.60	7.60
14			25	34.45	77.2	0.09	5.40	8.30
14			32	29.90	79.1	0.14	5.20	9.20
14			40	24.91	80.3	0.24	5.00	10.30
14			50	20.92	82.3	0.33	4.70	11.50
14			63	19.13	86.6	0.52	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			80	15.49	89.3	0.75	3.70	14.80
14			100	10.57	90.9	1.18	3.00	16.80
14			125	6.36	93.5	1.79	1.80	18.80
14			160	0.66	95.5	2.68	0.00	21.10
14			200	-3.71	96.5	3.86	0.00	22.80
15	5,353	5,356						
15			20	36.72	73.8	0.00	5.60	7.60
15			25	33.32	77.2	0.11	5.40	8.30
15			32	28.76	79.1	0.16	5.20	9.20
15			40	23.76	80.3	0.27	5.00	10.30
15			50	19.75	82.3	0.37	4.70	11.50
15			63	17.93	86.6	0.59	4.30	13.00
15			80	14.27	89.3	0.86	3.70	14.80
15			100	9.28	90.9	1.34	3.00	16.80
15			125	4.99	93.5	2.04	1.80	18.80
15			160	-0.83	95.5	3.05	0.00	21.10
15			200	-5.37	96.5	4.39	0.00	22.80
16	4,552	4,555						
16			20	38.13	73.8	0.00	5.60	7.60
16			25	34.74	77.2	0.09	5.40	8.30
16			32	30.19	79.1	0.14	5.20	9.20
16			40	25.20	80.3	0.23	5.00	10.30
16			50	21.21	82.3	0.32	4.70	11.50
16			63	19.43	86.6	0.50	4.30	13.00
16			80	15.80	89.3	0.73	3.70	14.80
16			100	10.89	90.9	1.14	3.00	16.80
16			125	6.70	93.5	1.73	1.80	18.80
16			160	1.03	95.5	2.60	0.00	21.10
16			200	-3.31	96.5	3.74	0.00	22.80
17	4,066	4,071						
17			20	39.11	73.8	0.00	5.60	7.60
17			25	35.72	77.2	0.08	5.40	8.30
17			32	31.18	79.1	0.12	5.20	9.20
17			40	26.20	80.3	0.20	5.00	10.30
17			50	22.22	82.3	0.28	4.70	11.50
17			63	20.46	86.6	0.45	4.30	13.00
17			80	16.85	89.3	0.65	3.70	14.80
17			100	11.99	90.9	1.02	3.00	16.80
17			125	7.86	93.5	1.55	1.80	18.80
17			160	2.28	95.5	2.32	0.00	21.10
17			200	-1.93	96.5	3.34	0.00	22.80
18	4,252	4,256						
18			20	38.72	73.8	0.00	5.60	7.60
18			25	35.33	77.2	0.09	5.40	8.30
18			32	30.79	79.1	0.13	5.20	9.20
18			40	25.81	80.3	0.21	5.00	10.30
18			50	21.82	82.3	0.30	4.70	11.50
18			63	20.05	86.6	0.47	4.30	13.00
18			80	16.44	89.3	0.68	3.70	14.80
18			100	11.55	90.9	1.06	3.00	16.80
18			125	7.40	93.5	1.62	1.80	18.80
18			160	1.79	95.5	2.43	0.00	21.10
18			200	-2.47	96.5	3.49	0.00	22.80
19	4,959	4,962						
19			20	37.39	73.8	0.00	5.60	7.60
19			25	33.99	77.2	0.10	5.40	8.30
19			32	29.44	79.1	0.15	5.20	9.20
19			40	24.44	80.3	0.25	5.00	10.30
19			50	20.44	82.3	0.35	4.70	11.50
19			63	18.64	86.6	0.55	4.30	13.00
19			80	14.99	89.3	0.79	3.70	14.80
19			100	10.05	90.9	1.24	3.00	16.80
19			125	5.80	93.5	1.89	1.80	18.80
19			160	0.06	95.5	2.83	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			200	-4.38	96.5	4.07	0.00	22.80
2	6,137	6,139						
2			20	35.54	73.8	0.00	5.60	7.60
2			25	32.11	77.2	0.12	5.40	8.30
2			32	27.55	79.1	0.18	5.20	9.20
2			40	22.53	80.3	0.31	5.00	10.30
2			50	18.51	82.3	0.43	4.70	11.50
2			63	16.66	86.6	0.68	4.30	13.00
2			80	12.96	89.3	0.98	3.70	14.80
2			100	7.90	90.9	1.53	3.00	16.80
2			125	3.50	93.5	2.33	1.80	18.80
2			160	-2.46	95.5	3.50	0.00	21.10
2			200	-7.20	96.5	5.03	0.00	22.80
20	4,337	4,340						
20			20	38.55	73.8	0.00	5.60	7.60
20			25	35.16	77.2	0.09	5.40	8.30
20			32	30.62	79.1	0.13	5.20	9.20
20			40	25.63	80.3	0.22	5.00	10.30
20			50	21.65	82.3	0.30	4.70	11.50
20			63	19.87	86.6	0.48	4.30	13.00
20			80	16.26	89.3	0.69	3.70	14.80
20			100	11.37	90.9	1.09	3.00	16.80
20			125	7.20	93.5	1.65	1.80	18.80
20			160	1.58	95.5	2.47	0.00	21.10
20			200	-2.71	96.5	3.56	0.00	22.80
21	3,517	3,524						
21			20	40.36	73.8	0.00	5.60	7.60
21			25	36.99	77.2	0.07	5.40	8.30
21			32	32.45	79.1	0.11	5.20	9.20
21			40	27.48	80.3	0.18	5.00	10.30
21			50	23.51	82.3	0.25	4.70	11.50
21			63	21.77	86.6	0.39	4.30	13.00
21			80	18.20	89.3	0.56	3.70	14.80
21			100	13.38	90.9	0.88	3.00	16.80
21			125	9.32	93.5	1.34	1.80	18.80
21			160	3.85	95.5	2.01	0.00	21.10
21			200	-0.23	96.5	2.89	0.00	22.80
22	3,054	3,060						
22			20	41.59	73.8	0.00	5.60	7.60
22			25	38.22	77.2	0.06	5.40	8.30
22			32	33.69	79.1	0.09	5.20	9.20
22			40	28.73	80.3	0.15	5.00	10.30
22			50	24.77	82.3	0.21	4.70	11.50
22			63	23.05	86.6	0.34	4.30	13.00
22			80	19.50	89.3	0.49	3.70	14.80
22			100	14.72	90.9	0.77	3.00	16.80
22			125	10.72	93.5	1.16	1.80	18.80
22			160	5.34	95.5	1.74	0.00	21.10
22			200	1.38	96.5	2.51	0.00	22.80
23	3,092	3,096						
23			20	41.48	73.8	0.00	5.60	7.60
23			25	38.12	77.2	0.06	5.40	8.30
23			32	33.59	79.1	0.09	5.20	9.20
23			40	28.63	80.3	0.15	5.00	10.30
23			50	24.67	82.3	0.22	4.70	11.50
23			63	22.94	86.6	0.34	4.30	13.00
23			80	19.39	89.3	0.50	3.70	14.80
23			100	14.61	90.9	0.77	3.00	16.80
23			125	10.61	93.5	1.18	1.80	18.80
23			160	5.22	95.5	1.76	0.00	21.10
23			200	1.24	96.5	2.54	0.00	22.80
24	3,659	3,664						
24			20	40.02	73.8	0.00	5.60	7.60
24			25	36.65	77.2	0.07	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			32	32.11	79.1	0.11	5.20	9.20
24			40	27.14	80.3	0.18	5.00	10.30
24			50	23.16	82.3	0.26	4.70	11.50
24			63	21.42	86.6	0.40	4.30	13.00
24			80	17.83	89.3	0.59	3.70	14.80
24			100	13.00	90.9	0.92	3.00	16.80
24			125	8.93	93.5	1.39	1.80	18.80
24			160	3.43	95.5	2.09	0.00	21.10
24			200	-0.68	96.5	3.00	0.00	22.80
25	3,678	3,682						
25			20	39.98	73.8	0.00	5.60	7.60
25			25	36.60	77.2	0.07	5.40	8.30
25			32	32.07	79.1	0.11	5.20	9.20
25			40	27.09	80.3	0.18	5.00	10.30
25			50	23.12	82.3	0.26	4.70	11.50
25			63	21.37	86.6	0.41	4.30	13.00
25			80	17.79	89.3	0.59	3.70	14.80
25			100	12.96	90.9	0.92	3.00	16.80
25			125	8.88	93.5	1.40	1.80	18.80
25			160	3.38	95.5	2.10	0.00	21.10
25			200	-0.74	96.5	3.02	0.00	22.80
26	3,148	3,155						
26			20	41.32	73.8	0.00	5.60	7.60
26			25	37.96	77.2	0.06	5.40	8.30
26			32	33.43	79.1	0.09	5.20	9.20
26			40	28.46	80.3	0.16	5.00	10.30
26			50	24.50	82.3	0.22	4.70	11.50
26			63	22.77	86.6	0.35	4.30	13.00
26			80	19.22	89.3	0.50	3.70	14.80
26			100	14.43	90.9	0.79	3.00	16.80
26			125	10.42	93.5	1.20	1.80	18.80
26			160	5.02	95.5	1.80	0.00	21.10
26			200	1.03	96.5	2.59	0.00	22.80
27	2,750	2,757						
27			20	42.49	73.8	0.00	5.60	7.60
27			25	39.14	77.2	0.06	5.40	8.30
27			32	34.61	79.1	0.08	5.20	9.20
27			40	29.65	80.3	0.14	5.00	10.30
27			50	25.70	82.3	0.19	4.70	11.50
27			63	23.99	86.6	0.30	4.30	13.00
27			80	20.45	89.3	0.44	3.70	14.80
27			100	15.70	90.9	0.69	3.00	16.80
27			125	11.74	93.5	1.05	1.80	18.80
27			160	6.42	95.5	1.57	0.00	21.10
27			200	2.53	96.5	2.26	0.00	22.80
28	2,509	2,516						
28			20	43.29	73.8	0.00	5.60	7.60
28			25	39.94	77.2	0.05	5.40	8.30
28			32	35.41	79.1	0.08	5.20	9.20
28			40	30.46	80.3	0.13	5.00	10.30
28			50	26.51	82.3	0.18	4.70	11.50
28			63	24.81	86.6	0.28	4.30	13.00
28			80	21.28	89.3	0.40	3.70	14.80
28			100	16.56	90.9	0.63	3.00	16.80
28			125	12.63	93.5	0.96	1.80	18.80
28			160	7.35	95.5	1.43	0.00	21.10
28			200	3.52	96.5	2.06	0.00	22.80
29	2,419	2,427						
29			20	43.60	73.8	0.00	5.60	7.60
29			25	40.25	77.2	0.05	5.40	8.30
29			32	35.73	79.1	0.07	5.20	9.20
29			40	30.78	80.3	0.12	5.00	10.30
29			50	26.83	82.3	0.17	4.70	11.50
29			63	25.13	86.6	0.27	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			80	21.61	89.3	0.39	3.70	14.80
29			100	16.89	90.9	0.61	3.00	16.80
29			125	12.98	93.5	0.92	1.80	18.80
29			160	7.72	95.5	1.38	0.00	21.10
29			200	3.91	96.5	1.99	0.00	22.80
3	6,181	6,183						
3			20	35.48	73.8	0.00	5.60	7.60
3			25	32.05	77.2	0.12	5.40	8.30
3			32	27.49	79.1	0.19	5.20	9.20
3			40	22.47	80.3	0.31	5.00	10.30
3			50	18.44	82.3	0.43	4.70	11.50
3			63	16.60	86.6	0.68	4.30	13.00
3			80	12.89	89.3	0.99	3.70	14.80
3			100	7.83	90.9	1.55	3.00	16.80
3			125	3.43	93.5	2.35	1.80	18.80
3			160	-2.55	95.5	3.52	0.00	21.10
3			200	-7.29	96.5	5.07	0.00	22.80
30	2,940	2,945						
30			20	41.92	73.8	0.00	5.60	7.60
30			25	38.56	77.2	0.06	5.40	8.30
30			32	34.03	79.1	0.09	5.20	9.20
30			40	29.07	80.3	0.15	5.00	10.30
30			50	25.11	82.3	0.21	4.70	11.50
30			63	23.39	86.6	0.32	4.30	13.00
30			80	19.85	89.3	0.47	3.70	14.80
30			100	15.08	90.9	0.74	3.00	16.80
30			125	11.10	93.5	1.12	1.80	18.80
30			160	5.74	95.5	1.68	0.00	21.10
30			200	1.80	96.5	2.41	0.00	22.80
31	2,299	2,305						
31			20	44.04	73.8	0.00	5.60	7.60
31			25	40.70	77.2	0.05	5.40	8.30
31			32	36.18	79.1	0.07	5.20	9.20
31			40	31.23	80.3	0.12	5.00	10.30
31			50	27.28	82.3	0.16	4.70	11.50
31			63	25.59	86.6	0.25	4.30	13.00
31			80	22.08	89.3	0.37	3.70	14.80
31			100	17.37	90.9	0.58	3.00	16.80
31			125	13.47	93.5	0.88	1.80	18.80
31			160	8.23	95.5	1.31	0.00	21.10
31			200	4.45	96.5	1.89	0.00	22.80
32	3,067	3,072						
32			20	41.55	73.8	0.00	5.60	7.60
32			25	38.19	77.2	0.06	5.40	8.30
32			32	33.66	79.1	0.09	5.20	9.20
32			40	28.70	80.3	0.15	5.00	10.30
32			50	24.74	82.3	0.22	4.70	11.50
32			63	23.01	86.6	0.34	4.30	13.00
32			80	19.46	89.3	0.49	3.70	14.80
32			100	14.68	90.9	0.77	3.00	16.80
32			125	10.68	93.5	1.17	1.80	18.80
32			160	5.30	95.5	1.75	0.00	21.10
32			200	1.33	96.5	2.52	0.00	22.80
33	3,711	3,716						
33			20	39.90	73.8	0.00	5.60	7.60
33			25	36.52	77.2	0.07	5.40	8.30
33			32	31.99	79.1	0.11	5.20	9.20
33			40	27.01	80.3	0.19	5.00	10.30
33			50	23.04	82.3	0.26	4.70	11.50
33			63	21.29	86.6	0.41	4.30	13.00
33			80	17.70	89.3	0.59	3.70	14.80
33			100	12.87	90.9	0.93	3.00	16.80
33			125	8.79	93.5	1.41	1.80	18.80
33			160	3.28	95.5	2.12	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			200	-0.85	96.5	3.05	0.00	22.80
4	5,677	5,680						
4			20	36.21	73.8	0.00	5.60	7.60
4			25	32.80	77.2	0.11	5.40	8.30
4			32	28.24	79.1	0.17	5.20	9.20
4			40	23.23	80.3	0.28	5.00	10.30
4			50	19.22	82.3	0.40	4.70	11.50
4			63	17.39	86.6	0.62	4.30	13.00
4			80	13.70	89.3	0.91	3.70	14.80
4			100	8.69	90.9	1.42	3.00	16.80
4			125	4.36	93.5	2.16	1.80	18.80
4			160	-1.52	95.5	3.24	0.00	21.10
4			200	-6.14	96.5	4.66	0.00	22.80
5	5,144	5,147						
5			20	37.07	73.8	0.00	5.60	7.60
5			25	33.67	77.2	0.10	5.40	8.30
5			32	29.12	79.1	0.15	5.20	9.20
5			40	24.11	80.3	0.26	5.00	10.30
5			50	20.11	82.3	0.36	4.70	11.50
5			63	18.30	86.6	0.57	4.30	13.00
5			80	14.65	89.3	0.82	3.70	14.80
5			100	9.68	90.9	1.29	3.00	16.80
5			125	5.41	93.5	1.96	1.80	18.80
5			160	-0.36	95.5	2.93	0.00	21.10
5			200	-4.85	96.5	4.22	0.00	22.80
6	5,867	5,869						
6			20	35.93	73.8	0.00	5.60	7.60
6			25	32.51	77.2	0.12	5.40	8.30
6			32	27.95	79.1	0.18	5.20	9.20
6			40	22.93	80.3	0.29	5.00	10.30
6			50	18.92	82.3	0.41	4.70	11.50
6			63	17.08	86.6	0.65	4.30	13.00
6			80	13.39	89.3	0.94	3.70	14.80
6			100	8.36	90.9	1.47	3.00	16.80
6			125	4.00	93.5	2.23	1.80	18.80
6			160	-1.92	95.5	3.35	0.00	21.10
6			200	-6.58	96.5	4.81	0.00	22.80
7	5,318	5,321						
7			20	36.78	73.8	0.00	5.60	7.60
7			25	33.37	77.2	0.11	5.40	8.30
7			32	28.82	79.1	0.16	5.20	9.20
7			40	23.81	80.3	0.27	5.00	10.30
7			50	19.81	82.3	0.37	4.70	11.50
7			63	17.99	86.6	0.59	4.30	13.00
7			80	14.33	89.3	0.85	3.70	14.80
7			100	9.35	90.9	1.33	3.00	16.80
7			125	5.06	93.5	2.02	1.80	18.80
7			160	-0.75	95.5	3.03	0.00	21.10
7			200	-5.28	96.5	4.36	0.00	22.80
8	5,174	5,177						
8			20	37.02	73.8	0.00	5.60	7.60
8			25	33.61	77.2	0.10	5.40	8.30
8			32	29.06	79.1	0.16	5.20	9.20
8			40	24.06	80.3	0.26	5.00	10.30
8			50	20.06	82.3	0.36	4.70	11.50
8			63	18.25	86.6	0.57	4.30	13.00
8			80	14.59	89.3	0.83	3.70	14.80
8			100	9.62	90.9	1.29	3.00	16.80
8			125	5.35	93.5	1.97	1.80	18.80
8			160	-0.43	95.5	2.95	0.00	21.10
8			200	-4.93	96.5	4.25	0.00	22.80
9	4,601	4,604						
9			20	38.04	73.8	0.00	5.60	7.60
9			25	34.65	77.2	0.09	5.40	8.30

To be continued on next page...

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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			32	30.10	79.1	0.14	5.20	9.20
9			40	25.11	80.3	0.23	5.00	10.30
9			50	21.11	82.3	0.32	4.70	11.50
9			63	19.33	86.6	0.51	4.30	13.00
9			80	15.70	89.3	0.74	3.70	14.80
9			100	10.79	90.9	1.15	3.00	16.80
9			125	6.59	93.5	1.75	1.80	18.80
9			160	0.91	95.5	2.62	0.00	21.10
9			200	-3.44	96.5	3.78	0.00	22.80
Sum								
Sum			20	54.81				
Sum			25	51.44				
Sum			32	46.90				
Sum			40	41.93				
Sum			50	37.96				
Sum			63	36.21				
Sum			80	32.63				
Sum			100	27.81				
Sum			125	23.74				
Sum			160	18.27				
Sum			200	14.21				

Noise sensitive area: RH Kauvanjärvi 2 Noise sensitive point: Finnish normal frequency - User defined (324)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,558	6,562						
1			20	34.96	73.8	0.00	5.60	7.60
1			25	31.53	77.2	0.13	5.40	8.30
1			32	26.96	79.1	0.20	5.20	9.20
1			40	21.93	80.3	0.33	5.00	10.30
1			50	17.90	82.3	0.46	4.70	11.50
1			63	16.04	86.6	0.72	4.30	13.00
1			80	12.31	89.3	1.05	3.70	14.80
1			100	7.22	90.9	1.64	3.00	16.80
1			125	2.77	93.5	2.49	1.80	18.80
1			160	-3.28	95.5	3.74	0.00	21.10
1			200	-8.12	96.5	5.38	0.00	22.80
10	6,751	6,755						
10			20	34.71	73.8	0.00	5.60	7.60
10			25	31.27	77.2	0.14	5.40	8.30
10			32	26.70	79.1	0.20	5.20	9.20
10			40	21.67	80.3	0.34	5.00	10.30
10			50	17.63	82.3	0.47	4.70	11.50
10			63	15.76	86.6	0.74	4.30	13.00
10			80	12.03	89.3	1.08	3.70	14.80
10			100	6.92	90.9	1.69	3.00	16.80
10			125	2.44	93.5	2.57	1.80	18.80
10			160	-3.64	95.5	3.85	0.00	21.10
10			200	-8.53	96.5	5.54	0.00	22.80
11	6,159	6,163						
11			20	35.50	73.8	0.00	5.60	7.60
11			25	32.08	77.2	0.12	5.40	8.30
11			32	27.52	79.1	0.18	5.20	9.20
11			40	22.50	80.3	0.31	5.00	10.30
11			50	18.47	82.3	0.43	4.70	11.50
11			63	16.63	86.6	0.68	4.30	13.00
11			80	12.92	89.3	0.99	3.70	14.80
11			100	7.86	90.9	1.54	3.00	16.80
11			125	3.46	93.5	2.34	1.80	18.80
11			160	-2.51	95.5	3.51	0.00	21.10
11			200	-7.25	96.5	5.05	0.00	22.80
12	7,084	7,088						

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			20	34.29	73.8	0.00	5.60	7.60
12			25	30.85	77.2	0.14	5.40	8.30
12			32	26.28	79.1	0.21	5.20	9.20
12			40	21.23	80.3	0.35	5.00	10.30
12			50	17.19	82.3	0.50	4.70	11.50
12			63	15.31	86.6	0.78	4.30	13.00
12			80	11.55	89.3	1.13	3.70	14.80
12			100	6.42	90.9	1.77	3.00	16.80
12			125	1.90	93.5	2.69	1.80	18.80
12			160	-4.25	95.5	4.04	0.00	21.10
12			200	-9.22	96.5	5.81	0.00	22.80
13	6,212	6,217						
13			20	35.43	73.8	0.00	5.60	7.60
13			25	32.00	77.2	0.12	5.40	8.30
13			32	27.44	79.1	0.19	5.20	9.20
13			40	22.42	80.3	0.31	5.00	10.30
13			50	18.39	82.3	0.44	4.70	11.50
13			63	16.55	86.6	0.68	4.30	13.00
13			80	12.83	89.3	0.99	3.70	14.80
13			100	7.77	90.9	1.55	3.00	16.80
13			125	3.37	93.5	2.36	1.80	18.80
13			160	-2.61	95.5	3.54	0.00	21.10
13			200	-7.37	96.5	5.10	0.00	22.80
14	5,220	5,225						
14			20	36.94	73.8	0.00	5.60	7.60
14			25	33.53	77.2	0.10	5.40	8.30
14			32	28.98	79.1	0.16	5.20	9.20
14			40	23.98	80.3	0.26	5.00	10.30
14			50	19.97	82.3	0.37	4.70	11.50
14			63	18.16	86.6	0.57	4.30	13.00
14			80	14.50	89.3	0.84	3.70	14.80
14			100	9.53	90.9	1.31	3.00	16.80
14			125	5.25	93.5	1.99	1.80	18.80
14			160	-0.54	95.5	2.98	0.00	21.10
14			200	-5.05	96.5	4.28	0.00	22.80
15	6,649	6,653						
15			20	34.84	73.8	0.00	5.60	7.60
15			25	31.41	77.2	0.13	5.40	8.30
15			32	26.84	79.1	0.20	5.20	9.20
15			40	21.81	80.3	0.33	5.00	10.30
15			50	17.77	82.3	0.47	4.70	11.50
15			63	15.91	86.6	0.73	4.30	13.00
15			80	12.17	89.3	1.06	3.70	14.80
15			100	7.08	90.9	1.66	3.00	16.80
15			125	2.61	93.5	2.53	1.80	18.80
15			160	-3.45	95.5	3.79	0.00	21.10
15			200	-8.32	96.5	5.46	0.00	22.80
16	5,773	5,778						
16			20	36.06	73.8	0.00	5.60	7.60
16			25	32.65	77.2	0.12	5.40	8.30
16			32	28.09	79.1	0.17	5.20	9.20
16			40	23.08	80.3	0.29	5.00	10.30
16			50	19.06	82.3	0.40	4.70	11.50
16			63	17.23	86.6	0.64	4.30	13.00
16			80	13.54	89.3	0.92	3.70	14.80
16			100	8.52	90.9	1.44	3.00	16.80
16			125	4.17	93.5	2.20	1.80	18.80
16			160	-1.73	95.5	3.29	0.00	21.10
16			200	-6.37	96.5	4.74	0.00	22.80
17	5,127	5,134						
17			20	37.09	73.8	0.00	5.60	7.60
17			25	33.69	77.2	0.10	5.40	8.30
17			32	29.14	79.1	0.15	5.20	9.20
17			40	24.13	80.3	0.26	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			50	20.13	82.3	0.36	4.70	11.50
17			63	18.33	86.6	0.56	4.30	13.00
17			80	14.67	89.3	0.82	3.70	14.80
17			100	9.71	90.9	1.28	3.00	16.80
17			125	5.44	93.5	1.95	1.80	18.80
17			160	-0.34	95.5	2.93	0.00	21.10
17			200	-4.82	96.5	4.21	0.00	22.80
18	5,053	5,060						
18			20	37.22	73.8	0.00	5.60	7.60
18			25	33.82	77.2	0.10	5.40	8.30
18			32	29.27	79.1	0.15	5.20	9.20
18			40	24.26	80.3	0.25	5.00	10.30
18			50	20.26	82.3	0.35	4.70	11.50
18			63	18.46	86.6	0.56	4.30	13.00
18			80	14.81	89.3	0.81	3.70	14.80
18			100	9.85	90.9	1.26	3.00	16.80
18			125	5.59	93.5	1.92	1.80	18.80
18			160	-0.17	95.5	2.88	0.00	21.10
18			200	-4.63	96.5	4.15	0.00	22.80
19	6,410	6,414						
19			20	35.16	73.8	0.00	5.60	7.60
19			25	31.73	77.2	0.13	5.40	8.30
19			32	27.16	79.1	0.19	5.20	9.20
19			40	22.14	80.3	0.32	5.00	10.30
19			50	18.11	82.3	0.45	4.70	11.50
19			63	16.25	86.6	0.71	4.30	13.00
19			80	12.53	89.3	1.03	3.70	14.80
19			100	7.45	90.9	1.60	3.00	16.80
19			125	3.02	93.5	2.44	1.80	18.80
19			160	-3.00	95.5	3.66	0.00	21.10
19			200	-7.80	96.5	5.26	0.00	22.80
2	6,379	6,384						
2			20	35.20	73.8	0.00	5.60	7.60
2			25	31.77	77.2	0.13	5.40	8.30
2			32	27.21	79.1	0.19	5.20	9.20
2			40	22.18	80.3	0.32	5.00	10.30
2			50	18.15	82.3	0.45	4.70	11.50
2			63	16.30	86.6	0.70	4.30	13.00
2			80	12.58	89.3	1.02	3.70	14.80
2			100	7.50	90.9	1.60	3.00	16.80
2			125	3.07	93.5	2.43	1.80	18.80
2			160	-2.94	95.5	3.64	0.00	21.10
2			200	-7.74	96.5	5.23	0.00	22.80
20	5,838	5,843						
20			20	35.97	73.8	0.00	5.60	7.60
20			25	32.55	77.2	0.12	5.40	8.30
20			32	27.99	79.1	0.18	5.20	9.20
20			40	22.98	80.3	0.29	5.00	10.30
20			50	18.96	82.3	0.41	4.70	11.50
20			63	17.12	86.6	0.64	4.30	13.00
20			80	13.43	89.3	0.93	3.70	14.80
20			100	8.41	90.9	1.46	3.00	16.80
20			125	4.05	93.5	2.22	1.80	18.80
20			160	-1.86	95.5	3.33	0.00	21.10
20			200	-6.52	96.5	4.79	0.00	22.80
21	4,512	4,521						
21			20	38.19	73.8	0.00	5.60	7.60
21			25	34.80	77.2	0.09	5.40	8.30
21			32	30.26	79.1	0.14	5.20	9.20
21			40	25.27	80.3	0.23	5.00	10.30
21			50	21.28	82.3	0.32	4.70	11.50
21			63	19.50	86.6	0.50	4.30	13.00
21			80	15.87	89.3	0.72	3.70	14.80
21			100	10.96	90.9	1.13	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			125	6.78	93.5	1.72	1.80	18.80
21			160	1.12	95.5	2.58	0.00	21.10
21			200	-3.21	96.5	3.71	0.00	22.80
22	3,931	3,939						
22			20	39.39	73.8	0.00	5.60	7.60
22			25	36.01	77.2	0.08	5.40	8.30
22			32	31.47	79.1	0.12	5.20	9.20
22			40	26.50	80.3	0.20	5.00	10.30
22			50	22.52	82.3	0.28	4.70	11.50
22			63	20.76	86.6	0.43	4.30	13.00
22			80	17.16	89.3	0.63	3.70	14.80
22			100	12.31	90.9	0.98	3.00	16.80
22			125	8.20	93.5	1.50	1.80	18.80
22			160	2.65	95.5	2.25	0.00	21.10
22			200	-1.54	96.5	3.23	0.00	22.80
23	3,525	3,533						
23			20	40.34	73.8	0.00	5.60	7.60
23			25	36.97	77.2	0.07	5.40	8.30
23			32	32.43	79.1	0.11	5.20	9.20
23			40	27.46	80.3	0.18	5.00	10.30
23			50	23.49	82.3	0.25	4.70	11.50
23			63	21.75	86.6	0.39	4.30	13.00
23			80	18.17	89.3	0.57	3.70	14.80
23			100	13.35	90.9	0.88	3.00	16.80
23			125	9.29	93.5	1.34	1.80	18.80
23			160	3.82	95.5	2.01	0.00	21.10
23			200	-0.26	96.5	2.90	0.00	22.80
24	5,267	5,273						
24			20	36.86	73.8	0.00	5.60	7.60
24			25	33.45	77.2	0.11	5.40	8.30
24			32	28.90	79.1	0.16	5.20	9.20
24			40	23.90	80.3	0.26	5.00	10.30
24			50	19.89	82.3	0.37	4.70	11.50
24			63	18.08	86.6	0.58	4.30	13.00
24			80	14.42	89.3	0.84	3.70	14.80
24			100	9.44	90.9	1.32	3.00	16.80
24			125	5.16	93.5	2.00	1.80	18.80
24			160	-0.65	95.5	3.01	0.00	21.10
24			200	-5.16	96.5	4.32	0.00	22.80
25	5,011	5,017						
25			20	37.29	73.8	0.00	5.60	7.60
25			25	33.89	77.2	0.10	5.40	8.30
25			32	29.34	79.1	0.15	5.20	9.20
25			40	24.34	80.3	0.25	5.00	10.30
25			50	20.34	82.3	0.35	4.70	11.50
25			63	18.54	86.6	0.55	4.30	13.00
25			80	14.89	89.3	0.80	3.70	14.80
25			100	9.94	90.9	1.25	3.00	16.80
25			125	5.68	93.5	1.91	1.80	18.80
25			160	-0.07	95.5	2.86	0.00	21.10
25			200	-4.52	96.5	4.11	0.00	22.80
26	4,484	4,493						
26			20	38.25	73.8	0.00	5.60	7.60
26			25	34.86	77.2	0.09	5.40	8.30
26			32	30.32	79.1	0.13	5.20	9.20
26			40	25.33	80.3	0.22	5.00	10.30
26			50	21.34	82.3	0.31	4.70	11.50
26			63	19.56	86.6	0.49	4.30	13.00
26			80	15.93	89.3	0.72	3.70	14.80
26			100	11.03	90.9	1.12	3.00	16.80
26			125	6.84	93.5	1.71	1.80	18.80
26			160	1.19	95.5	2.56	0.00	21.10
26			200	-3.13	96.5	3.68	0.00	22.80
27	3,984	3,993						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			20	39.27	73.8	0.00	5.60	7.60
27			25	35.89	77.2	0.08	5.40	8.30
27			32	31.35	79.1	0.12	5.20	9.20
27			40	26.37	80.3	0.20	5.00	10.30
27			50	22.39	82.3	0.28	4.70	11.50
27			63	20.64	86.6	0.44	4.30	13.00
27			80	17.04	89.3	0.64	3.70	14.80
27			100	12.18	90.9	1.00	3.00	16.80
27			125	8.06	93.5	1.52	1.80	18.80
27			160	2.50	95.5	2.28	0.00	21.10
27			200	-1.70	96.5	3.27	0.00	22.80
28	3,404	3,413						
28			20	40.64	73.8	0.00	5.60	7.60
28			25	37.27	77.2	0.07	5.40	8.30
28			32	32.74	79.1	0.10	5.20	9.20
28			40	27.77	80.3	0.17	5.00	10.30
28			50	23.80	82.3	0.24	4.70	11.50
28			63	22.06	86.6	0.38	4.30	13.00
28			80	18.49	89.3	0.55	3.70	14.80
28			100	13.68	90.9	0.85	3.00	16.80
28			125	9.64	93.5	1.30	1.80	18.80
28			160	4.19	95.5	1.95	0.00	21.10
28			200	0.14	96.5	2.80	0.00	22.80
29	2,829	2,841						
29			20	42.23	73.8	0.00	5.60	7.60
29			25	38.88	77.2	0.06	5.40	8.30
29			32	34.35	79.1	0.09	5.20	9.20
29			40	29.39	80.3	0.14	5.00	10.30
29			50	25.43	82.3	0.20	4.70	11.50
29			63	23.72	86.6	0.31	4.30	13.00
29			80	20.18	89.3	0.45	3.70	14.80
29			100	15.42	90.9	0.71	3.00	16.80
29			125	11.45	93.5	1.08	1.80	18.80
29			160	6.11	95.5	1.62	0.00	21.10
29			200	2.20	96.5	2.33	0.00	22.80
3	6,168	6,173						
3			20	35.49	73.8	0.00	5.60	7.60
3			25	32.07	77.2	0.12	5.40	8.30
3			32	27.51	79.1	0.19	5.20	9.20
3			40	22.48	80.3	0.31	5.00	10.30
3			50	18.46	82.3	0.43	4.70	11.50
3			63	16.61	86.6	0.68	4.30	13.00
3			80	12.90	89.3	0.99	3.70	14.80
3			100	7.85	90.9	1.54	3.00	16.80
3			125	3.44	93.5	2.35	1.80	18.80
3			160	-2.53	95.5	3.52	0.00	21.10
3			200	-7.27	96.5	5.06	0.00	22.80
30	2,796	2,805						
30			20	42.34	73.8	0.00	5.60	7.60
30			25	38.98	77.2	0.06	5.40	8.30
30			32	34.46	79.1	0.08	5.20	9.20
30			40	29.50	80.3	0.14	5.00	10.30
30			50	25.54	82.3	0.20	4.70	11.50
30			63	23.83	86.6	0.31	4.30	13.00
30			80	20.29	89.3	0.45	3.70	14.80
30			100	15.54	90.9	0.70	3.00	16.80
30			125	11.57	93.5	1.07	1.80	18.80
30			160	6.24	95.5	1.60	0.00	21.10
30			200	2.34	96.5	2.30	0.00	22.80
31	2,321	2,332						
31			20	43.94	73.8	0.00	5.60	7.60
31			25	40.60	77.2	0.05	5.40	8.30
31			32	36.07	79.1	0.07	5.20	9.20
31			40	31.13	80.3	0.12	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			50	27.18	82.3	0.16	4.70	11.50
31			63	25.49	86.6	0.26	4.30	13.00
31			80	21.97	89.3	0.37	3.70	14.80
31			100	17.26	90.9	0.58	3.00	16.80
31			125	13.36	93.5	0.89	1.80	18.80
31			160	8.11	95.5	1.33	0.00	21.10
31			200	4.33	96.5	1.91	0.00	22.80
32	2,363	2,374						
32			20	43.79	73.8	0.00	5.60	7.60
32			25	40.44	77.2	0.05	5.40	8.30
32			32	35.92	79.1	0.07	5.20	9.20
32			40	30.97	80.3	0.12	5.00	10.30
32			50	27.02	82.3	0.17	4.70	11.50
32			63	25.33	86.6	0.26	4.30	13.00
32			80	21.81	89.3	0.38	3.70	14.80
32			100	17.10	90.9	0.59	3.00	16.80
32			125	13.19	93.5	0.90	1.80	18.80
32			160	7.94	95.5	1.35	0.00	21.10
32			200	4.14	96.5	1.95	0.00	22.80
33	2,626	2,638						
33			20	42.87	73.8	0.00	5.60	7.60
33			25	39.52	77.2	0.05	5.40	8.30
33			32	34.99	79.1	0.08	5.20	9.20
33			40	30.04	80.3	0.13	5.00	10.30
33			50	26.09	82.3	0.18	4.70	11.50
33			63	24.38	86.6	0.29	4.30	13.00
33			80	20.85	89.3	0.42	3.70	14.80
33			100	16.11	90.9	0.66	3.00	16.80
33			125	12.17	93.5	1.00	1.80	18.80
33			160	6.87	95.5	1.50	0.00	21.10
33			200	3.01	96.5	2.16	0.00	22.80
4	5,813	5,818						
4			20	36.00	73.8	0.00	5.60	7.60
4			25	32.59	77.2	0.12	5.40	8.30
4			32	28.03	79.1	0.17	5.20	9.20
4			40	23.01	80.3	0.29	5.00	10.30
4			50	19.00	82.3	0.41	4.70	11.50
4			63	17.16	86.6	0.64	4.30	13.00
4			80	13.47	89.3	0.93	3.70	14.80
4			100	8.45	90.9	1.45	3.00	16.80
4			125	4.09	93.5	2.21	1.80	18.80
4			160	-1.81	95.5	3.32	0.00	21.10
4			200	-6.47	96.5	4.77	0.00	22.80
5	5,263	5,269						
5			20	36.87	73.8	0.00	5.60	7.60
5			25	33.46	77.2	0.11	5.40	8.30
5			32	28.91	79.1	0.16	5.20	9.20
5			40	23.90	80.3	0.26	5.00	10.30
5			50	19.90	82.3	0.37	4.70	11.50
5			63	18.09	86.6	0.58	4.30	13.00
5			80	14.42	89.3	0.84	3.70	14.80
5			100	9.45	90.9	1.32	3.00	16.80
5			125	5.16	93.5	2.00	1.80	18.80
5			160	-0.64	95.5	3.00	0.00	21.10
5			200	-5.15	96.5	4.32	0.00	22.80
6	6,571	6,575						
6			20	34.94	73.8	0.00	5.60	7.60
6			25	31.51	77.2	0.13	5.40	8.30
6			32	26.94	79.1	0.20	5.20	9.20
6			40	21.91	80.3	0.33	5.00	10.30
6			50	17.88	82.3	0.46	4.70	11.50
6			63	16.02	86.6	0.72	4.30	13.00
6			80	12.29	89.3	1.05	3.70	14.80
6			100	7.20	90.9	1.64	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			125	2.74	93.5	2.50	1.80	18.80
6			160	-3.31	95.5	3.75	0.00	21.10
6			200	-8.15	96.5	5.39	0.00	22.80
7	5,924	5,929						
7			20	35.84	73.8	0.00	5.60	7.60
7			25	32.42	77.2	0.12	5.40	8.30
7			32	27.86	79.1	0.18	5.20	9.20
7			40	22.84	80.3	0.30	5.00	10.30
7			50	18.83	82.3	0.42	4.70	11.50
7			63	16.99	86.6	0.65	4.30	13.00
7			80	13.29	89.3	0.95	3.70	14.80
7			100	8.26	90.9	1.48	3.00	16.80
7			125	3.89	93.5	2.25	1.80	18.80
7			160	-2.04	95.5	3.38	0.00	21.10
7			200	-6.72	96.5	4.86	0.00	22.80
8	5,554	5,559						
8			20	36.40	73.8	0.00	5.60	7.60
8			25	32.99	77.2	0.11	5.40	8.30
8			32	28.43	79.1	0.17	5.20	9.20
8			40	23.42	80.3	0.28	5.00	10.30
8			50	19.41	82.3	0.39	4.70	11.50
8			63	17.59	86.6	0.61	4.30	13.00
8			80	13.91	89.3	0.89	3.70	14.80
8			100	8.91	90.9	1.39	3.00	16.80
8			125	4.59	93.5	2.11	1.80	18.80
8			160	-1.27	95.5	3.17	0.00	21.10
8			200	-5.86	96.5	4.56	0.00	22.80
9	4,866	4,872						
9			20	37.55	73.8	0.00	5.60	7.60
9			25	34.15	77.2	0.10	5.40	8.30
9			32	29.60	79.1	0.15	5.20	9.20
9			40	24.60	80.3	0.24	5.00	10.30
9			50	20.61	82.3	0.34	4.70	11.50
9			63	18.81	86.6	0.54	4.30	13.00
9			80	15.17	89.3	0.78	3.70	14.80
9			100	10.23	90.9	1.22	3.00	16.80
9			125	6.00	93.5	1.85	1.80	18.80
9			160	0.27	95.5	2.78	0.00	21.10
9			200	-4.15	96.5	3.99	0.00	22.80
Sum								
Sum			20	53.86				
Sum			25	50.48				
Sum			32	45.94				
Sum			40	40.96				
Sum			50	36.98				
Sum			63	35.22				
Sum			80	31.62				
Sum			100	26.77				
Sum			125	22.67				
Sum			160	17.15				
Sum			200	13.03				

Noise sensitive area: RH Kirnumäki Noise sensitive point: Finnish normal frequency - User defined (307)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,894	5,897						
1			20	35.89	73.8	0.00	5.60	7.60
1			25	32.47	77.2	0.12	5.40	8.30
1			32	27.91	79.1	0.18	5.20	9.20
1			40	22.89	80.3	0.29	5.00	10.30
1			50	18.87	82.3	0.41	4.70	11.50
1			63	17.04	86.6	0.65	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			80	13.34	89.3	0.94	3.70	14.80
1			100	8.31	90.9	1.47	3.00	16.80
1			125	3.95	93.5	2.24	1.80	18.80
1			160	-1.97	95.5	3.36	0.00	21.10
1			200	-6.65	96.5	4.84	0.00	22.80
10	2,952	2,958						
10			20	41.88	73.8	0.00	5.60	7.60
10			25	38.52	77.2	0.06	5.40	8.30
10			32	33.99	79.1	0.09	5.20	9.20
10			40	29.03	80.3	0.15	5.00	10.30
10			50	25.07	82.3	0.21	4.70	11.50
10			63	23.35	86.6	0.33	4.30	13.00
10			80	19.81	89.3	0.47	3.70	14.80
10			100	15.04	90.9	0.74	3.00	16.80
10			125	11.06	93.5	1.12	1.80	18.80
10			160	5.69	95.5	1.69	0.00	21.10
10			200	1.75	96.5	2.43	0.00	22.80
11	3,351	3,357						
11			20	40.78	73.8	0.00	5.60	7.60
11			25	37.42	77.2	0.07	5.40	8.30
11			32	32.88	79.1	0.10	5.20	9.20
11			40	27.91	80.3	0.17	5.00	10.30
11			50	23.95	82.3	0.23	4.70	11.50
11			63	22.21	86.6	0.37	4.30	13.00
11			80	18.65	89.3	0.54	3.70	14.80
11			100	13.84	90.9	0.84	3.00	16.80
11			125	9.81	93.5	1.28	1.80	18.80
11			160	4.37	95.5	1.91	0.00	21.10
11			200	0.33	96.5	2.75	0.00	22.80
12	2,391	2,398						
12			20	43.70	73.8	0.00	5.60	7.60
12			25	40.35	77.2	0.05	5.40	8.30
12			32	35.83	79.1	0.07	5.20	9.20
12			40	30.88	80.3	0.12	5.00	10.30
12			50	26.93	82.3	0.17	4.70	11.50
12			63	25.24	86.6	0.26	4.30	13.00
12			80	21.72	89.3	0.38	3.70	14.80
12			100	17.00	90.9	0.60	3.00	16.80
12			125	13.09	93.5	0.91	1.80	18.80
12			160	7.84	95.5	1.37	0.00	21.10
12			200	4.04	96.5	1.97	0.00	22.80
13	2,813	2,819						
13			20	42.30	73.8	0.00	5.60	7.60
13			25	38.94	77.2	0.06	5.40	8.30
13			32	34.41	79.1	0.08	5.20	9.20
13			40	29.46	80.3	0.14	5.00	10.30
13			50	25.50	82.3	0.20	4.70	11.50
13			63	23.79	86.6	0.31	4.30	13.00
13			80	20.25	89.3	0.45	3.70	14.80
13			100	15.49	90.9	0.70	3.00	16.80
13			125	11.53	93.5	1.07	1.80	18.80
13			160	6.19	95.5	1.61	0.00	21.10
13			200	2.29	96.5	2.31	0.00	22.80
14	4,301	4,306						
14			20	38.62	73.8	0.00	5.60	7.60
14			25	35.23	77.2	0.09	5.40	8.30
14			32	30.69	79.1	0.13	5.20	9.20
14			40	25.70	80.3	0.22	5.00	10.30
14			50	21.72	82.3	0.30	4.70	11.50
14			63	19.95	86.6	0.47	4.30	13.00
14			80	16.33	89.3	0.69	3.70	14.80
14			100	11.44	90.9	1.08	3.00	16.80
14			125	7.28	93.5	1.64	1.80	18.80
14			160	1.66	95.5	2.45	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			200	-2.61	96.5	3.53	0.00	22.80
15	2,246	2,254						
15			20	44.24	73.8	0.00	5.60	7.60
15			25	40.90	77.2	0.05	5.40	8.30
15			32	36.37	79.1	0.07	5.20	9.20
15			40	31.43	80.3	0.11	5.00	10.30
15			50	27.48	82.3	0.16	4.70	11.50
15			63	25.79	86.6	0.25	4.30	13.00
15			80	22.28	89.3	0.36	3.70	14.80
15			100	17.58	90.9	0.56	3.00	16.80
15			125	13.68	93.5	0.86	1.80	18.80
15			160	8.46	95.5	1.28	0.00	21.10
15			200	4.69	96.5	1.85	0.00	22.80
16	2,876	2,883						
16			20	42.10	73.8	0.00	5.60	7.60
16			25	38.75	77.2	0.06	5.40	8.30
16			32	34.22	79.1	0.09	5.20	9.20
16			40	29.26	80.3	0.14	5.00	10.30
16			50	25.30	82.3	0.20	4.70	11.50
16			63	23.59	86.6	0.32	4.30	13.00
16			80	20.04	89.3	0.46	3.70	14.80
16			100	15.28	90.9	0.72	3.00	16.80
16			125	11.31	93.5	1.10	1.80	18.80
16			160	5.96	95.5	1.64	0.00	21.10
16			200	2.04	96.5	2.36	0.00	22.80
17	3,509	3,515						
17			20	40.38	73.8	0.00	5.60	7.60
17			25	37.01	77.2	0.07	5.40	8.30
17			32	32.47	79.1	0.11	5.20	9.20
17			40	27.50	80.3	0.18	5.00	10.30
17			50	23.53	82.3	0.25	4.70	11.50
17			63	21.79	86.6	0.39	4.30	13.00
17			80	18.22	89.3	0.56	3.70	14.80
17			100	13.40	90.9	0.88	3.00	16.80
17			125	9.34	93.5	1.34	1.80	18.80
17			160	3.88	95.5	2.00	0.00	21.10
17			200	-0.20	96.5	2.88	0.00	22.80
18	3,899	3,905						
18			20	39.47	73.8	0.00	5.60	7.60
18			25	36.09	77.2	0.08	5.40	8.30
18			32	31.55	79.1	0.12	5.20	9.20
18			40	26.57	80.3	0.20	5.00	10.30
18			50	22.60	82.3	0.27	4.70	11.50
18			63	20.84	86.6	0.43	4.30	13.00
18			80	17.24	89.3	0.62	3.70	14.80
18			100	12.39	90.9	0.98	3.00	16.80
18			125	8.28	93.5	1.48	1.80	18.80
18			160	2.74	95.5	2.23	0.00	21.10
18			200	-1.43	96.5	3.20	0.00	22.80
19	2,095	2,103						
19			20	44.84	73.8	0.00	5.60	7.60
19			25	41.50	77.2	0.04	5.40	8.30
19			32	36.98	79.1	0.06	5.20	9.20
19			40	32.04	80.3	0.11	5.00	10.30
19			50	28.10	82.3	0.15	4.70	11.50
19			63	26.41	86.6	0.23	4.30	13.00
19			80	22.91	89.3	0.34	3.70	14.80
19			100	18.22	90.9	0.53	3.00	16.80
19			125	14.35	93.5	0.80	1.80	18.80
19			160	9.15	95.5	1.20	0.00	21.10
19			200	5.42	96.5	1.72	0.00	22.80
2	4,846	4,849						
2			20	37.59	73.8	0.00	5.60	7.60
2			25	34.19	77.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			32	29.64	79.1	0.15	5.20	9.20
2			40	24.64	80.3	0.24	5.00	10.30
2			50	20.65	82.3	0.34	4.70	11.50
2			63	18.85	86.6	0.53	4.30	13.00
2			80	15.21	89.3	0.78	3.70	14.80
2			100	10.27	90.9	1.21	3.00	16.80
2			125	6.04	93.5	1.84	1.80	18.80
2			160	0.32	95.5	2.76	0.00	21.10
2			200	-4.09	96.5	3.98	0.00	22.80
20	2,493	2,500						
20			20	43.34	73.8	0.00	5.60	7.60
20			25	39.99	77.2	0.05	5.40	8.30
20			32	35.47	79.1	0.07	5.20	9.20
20			40	30.52	80.3	0.12	5.00	10.30
20			50	26.57	82.3	0.17	4.70	11.50
20			63	24.87	86.6	0.27	4.30	13.00
20			80	21.34	89.3	0.40	3.70	14.80
20			100	16.62	90.9	0.62	3.00	16.80
20			125	12.69	93.5	0.95	1.80	18.80
20			160	7.42	95.5	1.42	0.00	21.10
20			200	3.59	96.5	2.05	0.00	22.80
21	3,997	4,004						
21			20	39.25	73.8	0.00	5.60	7.60
21			25	35.87	77.2	0.08	5.40	8.30
21			32	31.33	79.1	0.12	5.20	9.20
21			40	26.35	80.3	0.20	5.00	10.30
21			50	22.37	82.3	0.28	4.70	11.50
21			63	20.61	86.6	0.44	4.30	13.00
21			80	17.01	89.3	0.64	3.70	14.80
21			100	12.15	90.9	1.00	3.00	16.80
21			125	8.03	93.5	1.52	1.80	18.80
21			160	2.47	95.5	2.28	0.00	21.10
21			200	-1.73	96.5	3.28	0.00	22.80
22	4,512	4,517						
22			20	38.20	73.8	0.00	5.60	7.60
22			25	34.81	77.2	0.09	5.40	8.30
22			32	30.27	79.1	0.14	5.20	9.20
22			40	25.28	80.3	0.23	5.00	10.30
22			50	21.29	82.3	0.32	4.70	11.50
22			63	19.51	86.6	0.50	4.30	13.00
22			80	15.88	89.3	0.72	3.70	14.80
22			100	10.97	90.9	1.13	3.00	16.80
22			125	6.79	93.5	1.72	1.80	18.80
22			160	1.13	95.5	2.57	0.00	21.10
22			200	-3.20	96.5	3.70	0.00	22.80
23	5,116	5,120						
23			20	37.11	73.8	0.00	5.60	7.60
23			25	33.71	77.2	0.10	5.40	8.30
23			32	29.16	79.1	0.15	5.20	9.20
23			40	24.16	80.3	0.26	5.00	10.30
23			50	20.16	82.3	0.36	4.70	11.50
23			63	18.35	86.6	0.56	4.30	13.00
23			80	14.70	89.3	0.82	3.70	14.80
23			100	9.73	90.9	1.28	3.00	16.80
23			125	5.47	93.5	1.95	1.80	18.80
23			160	-0.30	95.5	2.92	0.00	21.10
23			200	-4.78	96.5	4.20	0.00	22.80
24	2,966	2,973						
24			20	41.84	73.8	0.00	5.60	7.60
24			25	38.48	77.2	0.06	5.40	8.30
24			32	33.95	79.1	0.09	5.20	9.20
24			40	28.99	80.3	0.15	5.00	10.30
24			50	25.03	82.3	0.21	4.70	11.50
24			63	23.31	86.6	0.33	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			80	19.76	89.3	0.48	3.70	14.80
24			100	14.99	90.9	0.74	3.00	16.80
24			125	11.01	93.5	1.13	1.80	18.80
24			160	5.64	95.5	1.69	0.00	21.10
24			200	1.70	96.5	2.44	0.00	22.80
25	3,334	3,340						
25			20	40.82	73.8	0.00	5.60	7.60
25			25	37.46	77.2	0.07	5.40	8.30
25			32	32.92	79.1	0.10	5.20	9.20
25			40	27.96	80.3	0.17	5.00	10.30
25			50	23.99	82.3	0.23	4.70	11.50
25			63	22.26	86.6	0.37	4.30	13.00
25			80	18.69	89.3	0.53	3.70	14.80
25			100	13.89	90.9	0.84	3.00	16.80
25			125	9.85	93.5	1.27	1.80	18.80
25			160	4.42	95.5	1.90	0.00	21.10
25			200	0.38	96.5	2.74	0.00	22.80
26	3,795	3,802						
26			20	39.70	73.8	0.00	5.60	7.60
26			25	36.32	77.2	0.08	5.40	8.30
26			32	31.79	79.1	0.11	5.20	9.20
26			40	26.81	80.3	0.19	5.00	10.30
26			50	22.83	82.3	0.27	4.70	11.50
26			63	21.08	86.6	0.42	4.30	13.00
26			80	17.49	89.3	0.61	3.70	14.80
26			100	12.65	90.9	0.95	3.00	16.80
26			125	8.56	93.5	1.44	1.80	18.80
26			160	3.03	95.5	2.17	0.00	21.10
26			200	-1.12	96.5	3.12	0.00	22.80
27	4,285	4,290						
27			20	38.65	73.8	0.00	5.60	7.60
27			25	35.26	77.2	0.09	5.40	8.30
27			32	30.72	79.1	0.13	5.20	9.20
27			40	25.74	80.3	0.21	5.00	10.30
27			50	21.75	82.3	0.30	4.70	11.50
27			63	19.98	86.6	0.47	4.30	13.00
27			80	16.36	89.3	0.69	3.70	14.80
27			100	11.48	90.9	1.07	3.00	16.80
27			125	7.32	93.5	1.63	1.80	18.80
27			160	1.71	95.5	2.45	0.00	21.10
27			200	-2.57	96.5	3.52	0.00	22.80
28	4,912	4,916						
28			20	37.47	73.8	0.00	5.60	7.60
28			25	34.07	77.2	0.10	5.40	8.30
28			32	29.52	79.1	0.15	5.20	9.20
28			40	24.52	80.3	0.25	5.00	10.30
28			50	20.52	82.3	0.34	4.70	11.50
28			63	18.73	86.6	0.54	4.30	13.00
28			80	15.08	89.3	0.79	3.70	14.80
28			100	10.14	90.9	1.23	3.00	16.80
28			125	5.90	93.5	1.87	1.80	18.80
28			160	0.16	95.5	2.80	0.00	21.10
28			200	-4.26	96.5	4.03	0.00	22.80
29	5,565	5,569						
29			20	36.38	73.8	0.00	5.60	7.60
29			25	32.97	77.2	0.11	5.40	8.30
29			32	28.42	79.1	0.17	5.20	9.20
29			40	23.41	80.3	0.28	5.00	10.30
29			50	19.39	82.3	0.39	4.70	11.50
29			63	17.57	86.6	0.61	4.30	13.00
29			80	13.89	89.3	0.89	3.70	14.80
29			100	8.89	90.9	1.39	3.00	16.80
29			125	4.57	93.5	2.12	1.80	18.80
29			160	-1.29	95.5	3.17	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			200	-5.88	96.5	4.57	0.00	22.80
3	5,445	5,449						
3			20	36.57	73.8	0.00	5.60	7.60
3			25	33.17	77.2	0.11	5.40	8.30
3			32	28.61	79.1	0.16	5.20	9.20
3			40	23.60	80.3	0.27	5.00	10.30
3			50	19.59	82.3	0.38	4.70	11.50
3			63	17.77	86.6	0.60	4.30	13.00
3			80	14.10	89.3	0.87	3.70	14.80
3			100	9.11	90.9	1.36	3.00	16.80
3			125	4.80	93.5	2.07	1.80	18.80
3			160	-1.03	95.5	3.11	0.00	21.10
3			200	-5.59	96.5	4.47	0.00	22.80
30	5,958	5,961						
30			20	35.79	73.8	0.00	5.60	7.60
30			25	32.37	77.2	0.12	5.40	8.30
30			32	27.81	79.1	0.18	5.20	9.20
30			40	22.80	80.3	0.30	5.00	10.30
30			50	18.78	82.3	0.42	4.70	11.50
30			63	16.94	86.6	0.66	4.30	13.00
30			80	13.24	89.3	0.95	3.70	14.80
30			100	8.20	90.9	1.49	3.00	16.80
30			125	3.83	93.5	2.27	1.80	18.80
30			160	-2.10	95.5	3.40	0.00	21.10
30			200	-6.79	96.5	4.89	0.00	22.80
31	6,081	6,084						
31			20	35.62	73.8	0.00	5.60	7.60
31			25	32.20	77.2	0.12	5.40	8.30
31			32	27.63	79.1	0.18	5.20	9.20
31			40	22.61	80.3	0.30	5.00	10.30
31			50	18.59	82.3	0.43	4.70	11.50
31			63	16.75	86.6	0.67	4.30	13.00
31			80	13.04	89.3	0.97	3.70	14.80
31			100	8.00	90.9	1.52	3.00	16.80
31			125	3.60	93.5	2.31	1.80	18.80
31			160	-2.35	95.5	3.47	0.00	21.10
31			200	-7.07	96.5	4.99	0.00	22.80
32	6,603	6,606						
32			20	34.90	73.8	0.00	5.60	7.60
32			25	31.47	77.2	0.13	5.40	8.30
32			32	26.90	79.1	0.20	5.20	9.20
32			40	21.87	80.3	0.33	5.00	10.30
32			50	17.84	82.3	0.46	4.70	11.50
32			63	15.97	86.6	0.73	4.30	13.00
32			80	12.24	89.3	1.06	3.70	14.80
32			100	7.15	90.9	1.65	3.00	16.80
32			125	2.69	93.5	2.51	1.80	18.80
32			160	-3.36	95.5	3.77	0.00	21.10
32			200	-8.22	96.5	5.42	0.00	22.80
33	7,045	7,048						
33			20	34.34	73.8	0.00	5.60	7.60
33			25	30.90	77.2	0.14	5.40	8.30
33			32	26.33	79.1	0.21	5.20	9.20
33			40	21.29	80.3	0.35	5.00	10.30
33			50	17.24	82.3	0.49	4.70	11.50
33			63	15.36	86.6	0.78	4.30	13.00
33			80	11.61	89.3	1.13	3.70	14.80
33			100	6.48	90.9	1.76	3.00	16.80
33			125	1.96	93.5	2.68	1.80	18.80
33			160	-4.18	95.5	4.02	0.00	21.10
33			200	-9.14	96.5	5.78	0.00	22.80
4	5,038	5,041						
4			20	37.25	73.8	0.00	5.60	7.60
4			25	33.85	77.2	0.10	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	29.30	79.1	0.15	5.20	9.20
4			40	24.30	80.3	0.25	5.00	10.30
4			50	20.30	82.3	0.35	4.70	11.50
4			63	18.49	86.6	0.55	4.30	13.00
4			80	14.84	89.3	0.81	3.70	14.80
4			100	9.89	90.9	1.26	3.00	16.80
4			125	5.63	93.5	1.92	1.80	18.80
4			160	-0.12	95.5	2.87	0.00	21.10
4			200	-4.58	96.5	4.13	0.00	22.80
5	5,058	5,062						
5			20	37.21	73.8	0.00	5.60	7.60
5			25	33.81	77.2	0.10	5.40	8.30
5			32	29.26	79.1	0.15	5.20	9.20
5			40	24.26	80.3	0.25	5.00	10.30
5			50	20.26	82.3	0.35	4.70	11.50
5			63	18.46	86.6	0.56	4.30	13.00
5			80	14.80	89.3	0.81	3.70	14.80
5			100	9.85	90.9	1.27	3.00	16.80
5			125	5.59	93.5	1.92	1.80	18.80
5			160	-0.17	95.5	2.89	0.00	21.10
5			200	-4.64	96.5	4.15	0.00	22.80
6	3,693	3,698						
6			20	39.94	73.8	0.00	5.60	7.60
6			25	36.57	77.2	0.07	5.40	8.30
6			32	32.03	79.1	0.11	5.20	9.20
6			40	27.05	80.3	0.18	5.00	10.30
6			50	23.08	82.3	0.26	4.70	11.50
6			63	21.33	86.6	0.41	4.30	13.00
6			80	17.75	89.3	0.59	3.70	14.80
6			100	12.92	90.9	0.92	3.00	16.80
6			125	8.83	93.5	1.41	1.80	18.80
6			160	3.33	95.5	2.11	0.00	21.10
6			200	-0.79	96.5	3.03	0.00	22.80
7	3,980	3,985						
7			20	39.29	73.8	0.00	5.60	7.60
7			25	35.91	77.2	0.08	5.40	8.30
7			32	31.37	79.1	0.12	5.20	9.20
7			40	26.39	80.3	0.20	5.00	10.30
7			50	22.41	82.3	0.28	4.70	11.50
7			63	20.65	86.6	0.44	4.30	13.00
7			80	17.05	89.3	0.64	3.70	14.80
7			100	12.20	90.9	1.00	3.00	16.80
7			125	8.08	93.5	1.51	1.80	18.80
7			160	2.52	95.5	2.27	0.00	21.10
7			200	-1.68	96.5	3.27	0.00	22.80
8	4,505	4,509						
8			20	38.22	73.8	0.00	5.60	7.60
8			25	34.83	77.2	0.09	5.40	8.30
8			32	30.28	79.1	0.14	5.20	9.20
8			40	25.29	80.3	0.23	5.00	10.30
8			50	21.30	82.3	0.32	4.70	11.50
8			63	19.52	86.6	0.50	4.30	13.00
8			80	15.90	89.3	0.72	3.70	14.80
8			100	10.99	90.9	1.13	3.00	16.80
8			125	6.80	93.5	1.71	1.80	18.80
8			160	1.15	95.5	2.57	0.00	21.10
8			200	-3.18	96.5	3.70	0.00	22.80
9	4,825	4,829						
9			20	37.62	73.8	0.00	5.60	7.60
9			25	34.23	77.2	0.10	5.40	8.30
9			32	29.68	79.1	0.14	5.20	9.20
9			40	24.68	80.3	0.24	5.00	10.30
9			50	20.68	82.3	0.34	4.70	11.50
9			63	18.89	86.6	0.53	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	15.25	89.3	0.77	3.70	14.80
9			100	10.32	90.9	1.21	3.00	16.80
9			125	6.09	93.5	1.84	1.80	18.80
9			160	0.37	95.5	2.75	0.00	21.10
9			200	-4.04	96.5	3.96	0.00	22.80
Sum								
Sum			20	55.22				
Sum			25	51.85				
Sum			32	47.32				
Sum			40	42.35				
Sum			50	38.38				
Sum			63	36.64				
Sum			80	33.07				
Sum			100	28.26				
Sum			125	24.22				
Sum			160	18.79				
Sum			200	14.77				

Noise sensitive area: RH Koivuniemi Noise sensitive point: Finnish normal frequency - User defined (330)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,700	6,703						
1			20	34.77	73.8	0.00	5.60	7.60
1			25	31.34	77.2	0.13	5.40	8.30
1			32	26.77	79.1	0.20	5.20	9.20
1			40	21.74	80.3	0.34	5.00	10.30
1			50	17.71	82.3	0.47	4.70	11.50
1			63	15.84	86.6	0.74	4.30	13.00
1			80	12.10	89.3	1.07	3.70	14.80
1			100	7.00	90.9	1.68	3.00	16.80
1			125	2.53	93.5	2.55	1.80	18.80
1			160	-3.55	95.5	3.82	0.00	21.10
1			200	-8.42	96.5	5.50	0.00	22.80
10	3,904	3,909						
10			20	39.46	73.8	0.00	5.60	7.60
10			25	36.08	77.2	0.08	5.40	8.30
10			32	31.54	79.1	0.12	5.20	9.20
10			40	26.56	80.3	0.20	5.00	10.30
10			50	22.59	82.3	0.27	4.70	11.50
10			63	20.83	86.6	0.43	4.30	13.00
10			80	17.23	89.3	0.63	3.70	14.80
10			100	12.38	90.9	0.98	3.00	16.80
10			125	8.27	93.5	1.49	1.80	18.80
10			160	2.73	95.5	2.23	0.00	21.10
10			200	-1.45	96.5	3.21	0.00	22.80
11	4,041	4,047						
11			20	39.16	73.8	0.00	5.60	7.60
11			25	35.78	77.2	0.08	5.40	8.30
11			32	31.24	79.1	0.12	5.20	9.20
11			40	26.26	80.3	0.20	5.00	10.30
11			50	22.28	82.3	0.28	4.70	11.50
11			63	20.51	86.6	0.45	4.30	13.00
11			80	16.91	89.3	0.65	3.70	14.80
11			100	12.05	90.9	1.01	3.00	16.80
11			125	7.92	93.5	1.54	1.80	18.80
11			160	2.35	95.5	2.31	0.00	21.10
11			200	-1.86	96.5	3.32	0.00	22.80
12	3,484	3,489						
12			20	40.44	73.8	0.00	5.60	7.60
12			25	37.08	77.2	0.07	5.40	8.30
12			32	32.54	79.1	0.10	5.20	9.20
12			40	27.57	80.3	0.17	5.00	10.30

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	23.60	82.3	0.24	4.70	11.50
12			63	21.86	86.6	0.38	4.30	13.00
12			80	18.29	89.3	0.56	3.70	14.80
12			100	13.47	90.9	0.87	3.00	16.80
12			125	9.42	93.5	1.33	1.80	18.80
12			160	3.96	95.5	1.99	0.00	21.10
12			200	-0.12	96.5	2.86	0.00	22.80
13	3,440	3,446						
13			20	40.55	73.8	0.00	5.60	7.60
13			25	37.18	77.2	0.07	5.40	8.30
13			32	32.65	79.1	0.10	5.20	9.20
13			40	27.68	80.3	0.17	5.00	10.30
13			50	23.71	82.3	0.24	4.70	11.50
13			63	21.97	86.6	0.38	4.30	13.00
13			80	18.40	89.3	0.55	3.70	14.80
13			100	13.59	90.9	0.86	3.00	16.80
13			125	9.54	93.5	1.31	1.80	18.80
13			160	4.09	95.5	1.96	0.00	21.10
13			200	0.03	96.5	2.83	0.00	22.80
14	4,662	4,667						
14			20	37.92	73.8	0.00	5.60	7.60
14			25	34.53	77.2	0.09	5.40	8.30
14			32	29.98	79.1	0.14	5.20	9.20
14			40	24.99	80.3	0.23	5.00	10.30
14			50	20.99	82.3	0.33	4.70	11.50
14			63	19.21	86.6	0.51	4.30	13.00
14			80	15.57	89.3	0.75	3.70	14.80
14			100	10.65	90.9	1.17	3.00	16.80
14			125	6.45	93.5	1.77	1.80	18.80
14			160	0.76	95.5	2.66	0.00	21.10
14			200	-3.61	96.5	3.83	0.00	22.80
15	3,042	3,049						
15			20	41.62	73.8	0.00	5.60	7.60
15			25	38.26	77.2	0.06	5.40	8.30
15			32	33.73	79.1	0.09	5.20	9.20
15			40	28.77	80.3	0.15	5.00	10.30
15			50	24.80	82.3	0.21	4.70	11.50
15			63	23.08	86.6	0.34	4.30	13.00
15			80	19.53	89.3	0.49	3.70	14.80
15			100	14.76	90.9	0.76	3.00	16.80
15			125	10.76	93.5	1.16	1.80	18.80
15			160	5.38	95.5	1.74	0.00	21.10
15			200	1.42	96.5	2.50	0.00	22.80
16	3,183	3,190						
16			20	41.23	73.8	0.00	5.60	7.60
16			25	37.86	77.2	0.06	5.40	8.30
16			32	33.33	79.1	0.10	5.20	9.20
16			40	28.37	80.3	0.16	5.00	10.30
16			50	24.40	82.3	0.22	4.70	11.50
16			63	22.67	86.6	0.35	4.30	13.00
16			80	19.11	89.3	0.51	3.70	14.80
16			100	14.33	90.9	0.80	3.00	16.80
16			125	10.31	93.5	1.21	1.80	18.80
16			160	4.91	95.5	1.82	0.00	21.10
16			200	0.91	96.5	2.62	0.00	22.80
17	3,588	3,595						
17			20	40.19	73.8	0.00	5.60	7.60
17			25	36.81	77.2	0.07	5.40	8.30
17			32	32.28	79.1	0.11	5.20	9.20
17			40	27.31	80.3	0.18	5.00	10.30
17			50	23.33	82.3	0.25	4.70	11.50
17			63	21.59	86.6	0.40	4.30	13.00
17			80	18.01	89.3	0.58	3.70	14.80
17			100	13.19	90.9	0.90	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	9.12	93.5	1.37	1.80	18.80
17			160	3.64	95.5	2.05	0.00	21.10
17			200	-0.46	96.5	2.95	0.00	22.80
18	4,086	4,093						
18			20	39.06	73.8	0.00	5.60	7.60
18			25	35.68	77.2	0.08	5.40	8.30
18			32	31.14	79.1	0.12	5.20	9.20
18			40	26.16	80.3	0.20	5.00	10.30
18			50	22.17	82.3	0.29	4.70	11.50
18			63	20.41	86.6	0.45	4.30	13.00
18			80	16.81	89.3	0.65	3.70	14.80
18			100	11.94	90.9	1.02	3.00	16.80
18			125	7.80	93.5	1.56	1.80	18.80
18			160	2.23	95.5	2.33	0.00	21.10
18			200	-2.00	96.5	3.36	0.00	22.80
19	2,593	2,600						
19			20	43.00	73.8	0.00	5.60	7.60
19			25	39.65	77.2	0.05	5.40	8.30
19			32	35.12	79.1	0.08	5.20	9.20
19			40	30.17	80.3	0.13	5.00	10.30
19			50	26.22	82.3	0.18	4.70	11.50
19			63	24.51	86.6	0.29	4.30	13.00
19			80	20.98	89.3	0.42	3.70	14.80
19			100	16.25	90.9	0.65	3.00	16.80
19			125	12.31	93.5	0.99	1.80	18.80
19			160	7.02	95.5	1.48	0.00	21.10
19			200	3.17	96.5	2.13	0.00	22.80
2	5,657	5,660						
2			20	36.24	73.8	0.00	5.60	7.60
2			25	32.83	77.2	0.11	5.40	8.30
2			32	28.27	79.1	0.17	5.20	9.20
2			40	23.26	80.3	0.28	5.00	10.30
2			50	19.25	82.3	0.40	4.70	11.50
2			63	17.42	86.6	0.62	4.30	13.00
2			80	13.74	89.3	0.91	3.70	14.80
2			100	8.73	90.9	1.42	3.00	16.80
2			125	4.39	93.5	2.15	1.80	18.80
2			160	-1.48	95.5	3.23	0.00	21.10
2			200	-6.10	96.5	4.64	0.00	22.80
20	2,540	2,548						
20			20	43.18	73.8	0.00	5.60	7.60
20			25	39.82	77.2	0.05	5.40	8.30
20			32	35.30	79.1	0.08	5.20	9.20
20			40	30.35	80.3	0.13	5.00	10.30
20			50	26.40	82.3	0.18	4.70	11.50
20			63	24.70	86.6	0.28	4.30	13.00
20			80	21.17	89.3	0.41	3.70	14.80
20			100	16.44	90.9	0.64	3.00	16.80
20			125	12.51	93.5	0.97	1.80	18.80
20			160	7.22	95.5	1.45	0.00	21.10
20			200	3.39	96.5	2.09	0.00	22.80
21	3,834	3,842						
21			20	39.61	73.8	0.00	5.60	7.60
21			25	36.23	77.2	0.08	5.40	8.30
21			32	31.69	79.1	0.12	5.20	9.20
21			40	26.72	80.3	0.19	5.00	10.30
21			50	22.74	82.3	0.27	4.70	11.50
21			63	20.99	86.6	0.42	4.30	13.00
21			80	17.39	89.3	0.61	3.70	14.80
21			100	12.55	90.9	0.96	3.00	16.80
21			125	8.45	93.5	1.46	1.80	18.80
21			160	2.92	95.5	2.19	0.00	21.10
21			200	-1.24	96.5	3.15	0.00	22.80
22	4,179	4,184						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	38.87	73.8	0.00	5.60	7.60
22			25	35.48	77.2	0.08	5.40	8.30
22			32	30.94	79.1	0.13	5.20	9.20
22			40	25.96	80.3	0.21	5.00	10.30
22			50	21.97	82.3	0.29	4.70	11.50
22			63	20.21	86.6	0.46	4.30	13.00
22			80	16.60	89.3	0.67	3.70	14.80
22			100	11.72	90.9	1.05	3.00	16.80
22			125	7.58	93.5	1.59	1.80	18.80
22			160	1.98	95.5	2.39	0.00	21.10
22			200	-2.26	96.5	3.43	0.00	22.80
23	4,819	4,823						
23			20	37.63	73.8	0.00	5.60	7.60
23			25	34.24	77.2	0.10	5.40	8.30
23			32	29.69	79.1	0.14	5.20	9.20
23			40	24.69	80.3	0.24	5.00	10.30
23			50	20.70	82.3	0.34	4.70	11.50
23			63	18.90	86.6	0.53	4.30	13.00
23			80	15.26	89.3	0.77	3.70	14.80
23			100	10.33	90.9	1.21	3.00	16.80
23			125	6.10	93.5	1.83	1.80	18.80
23			160	0.38	95.5	2.75	0.00	21.10
23			200	-4.02	96.5	3.95	0.00	22.80
24	2,572	2,581						
24			20	43.07	73.8	0.00	5.60	7.60
24			25	39.71	77.2	0.05	5.40	8.30
24			32	35.19	79.1	0.08	5.20	9.20
24			40	30.24	80.3	0.13	5.00	10.30
24			50	26.29	82.3	0.18	4.70	11.50
24			63	24.58	86.6	0.28	4.30	13.00
24			80	21.05	89.3	0.41	3.70	14.80
24			100	16.32	90.9	0.65	3.00	16.80
24			125	12.39	93.5	0.98	1.80	18.80
24			160	7.09	95.5	1.47	0.00	21.10
24			200	3.25	96.5	2.12	0.00	22.80
25	3,138	3,145						
25			20	41.35	73.8	0.00	5.60	7.60
25			25	37.98	77.2	0.06	5.40	8.30
25			32	33.45	79.1	0.09	5.20	9.20
25			40	28.49	80.3	0.16	5.00	10.30
25			50	24.53	82.3	0.22	4.70	11.50
25			63	22.80	86.6	0.35	4.30	13.00
25			80	19.24	89.3	0.50	3.70	14.80
25			100	14.46	90.9	0.79	3.00	16.80
25			125	10.45	93.5	1.20	1.80	18.80
25			160	5.05	95.5	1.79	0.00	21.10
25			200	1.07	96.5	2.58	0.00	22.80
26	3,377	3,386						
26			20	40.71	73.8	0.00	5.60	7.60
26			25	37.34	77.2	0.07	5.40	8.30
26			32	32.81	79.1	0.10	5.20	9.20
26			40	27.84	80.3	0.17	5.00	10.30
26			50	23.87	82.3	0.24	4.70	11.50
26			63	22.13	86.6	0.37	4.30	13.00
26			80	18.57	89.3	0.54	3.70	14.80
26			100	13.76	90.9	0.85	3.00	16.80
26			125	9.72	93.5	1.29	1.80	18.80
26			160	4.28	95.5	1.93	0.00	21.10
26			200	0.23	96.5	2.78	0.00	22.80
27	3,765	3,772						
27			20	39.77	73.8	0.00	5.60	7.60
27			25	36.39	77.2	0.08	5.40	8.30
27			32	31.86	79.1	0.11	5.20	9.20
27			40	26.88	80.3	0.19	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			50	22.90	82.3	0.26	4.70	11.50
27			63	21.15	86.6	0.41	4.30	13.00
27			80	17.57	89.3	0.60	3.70	14.80
27			100	12.73	90.9	0.94	3.00	16.80
27			125	8.64	93.5	1.43	1.80	18.80
27			160	3.12	95.5	2.15	0.00	21.10
27			200	-1.02	96.5	3.09	0.00	22.80
28	4,382	4,387						
28			20	38.46	73.8	0.00	5.60	7.60
28			25	35.07	77.2	0.09	5.40	8.30
28			32	30.53	79.1	0.13	5.20	9.20
28			40	25.54	80.3	0.22	5.00	10.30
28			50	21.55	82.3	0.31	4.70	11.50
28			63	19.77	86.6	0.48	4.30	13.00
28			80	16.16	89.3	0.70	3.70	14.80
28			100	11.26	90.9	1.10	3.00	16.80
28			125	7.09	93.5	1.67	1.80	18.80
28			160	1.46	95.5	2.50	0.00	21.10
28			200	-2.84	96.5	3.60	0.00	22.80
29	5,027	5,032						
29			20	37.27	73.8	0.00	5.60	7.60
29			25	33.86	77.2	0.10	5.40	8.30
29			32	29.31	79.1	0.15	5.20	9.20
29			40	24.31	80.3	0.25	5.00	10.30
29			50	20.31	82.3	0.35	4.70	11.50
29			63	18.51	86.6	0.55	4.30	13.00
29			80	14.86	89.3	0.81	3.70	14.80
29			100	9.91	90.9	1.26	3.00	16.80
29			125	5.65	93.5	1.91	1.80	18.80
29			160	-0.10	95.5	2.87	0.00	21.10
29			200	-4.56	96.5	4.13	0.00	22.80
3	6,169	6,172						
3			20	35.49	73.8	0.00	5.60	7.60
3			25	32.07	77.2	0.12	5.40	8.30
3			32	27.51	79.1	0.19	5.20	9.20
3			40	22.48	80.3	0.31	5.00	10.30
3			50	18.46	82.3	0.43	4.70	11.50
3			63	16.61	86.6	0.68	4.30	13.00
3			80	12.90	89.3	0.99	3.70	14.80
3			100	7.85	90.9	1.54	3.00	16.80
3			125	3.45	93.5	2.35	1.80	18.80
3			160	-2.53	95.5	3.52	0.00	21.10
3			200	-7.27	96.5	5.06	0.00	22.80
30	5,569	5,573						
30			20	36.38	73.8	0.00	5.60	7.60
30			25	32.97	77.2	0.11	5.40	8.30
30			32	28.41	79.1	0.17	5.20	9.20
30			40	23.40	80.3	0.28	5.00	10.30
30			50	19.39	82.3	0.39	4.70	11.50
30			63	17.57	86.6	0.61	4.30	13.00
30			80	13.89	89.3	0.89	3.70	14.80
30			100	8.89	90.9	1.39	3.00	16.80
30			125	4.56	93.5	2.12	1.80	18.80
30			160	-1.30	95.5	3.18	0.00	21.10
30			200	-5.89	96.5	4.57	0.00	22.80
31	5,486	5,489						
31			20	36.51	73.8	0.00	5.60	7.60
31			25	33.10	77.2	0.11	5.40	8.30
31			32	28.54	79.1	0.16	5.20	9.20
31			40	23.54	80.3	0.27	5.00	10.30
31			50	19.53	82.3	0.38	4.70	11.50
31			63	17.71	86.6	0.60	4.30	13.00
31			80	14.03	89.3	0.88	3.70	14.80
31			100	9.04	90.9	1.37	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			125	4.72	93.5	2.09	1.80	18.80
31			160	-1.12	95.5	3.13	0.00	21.10
31			200	-5.69	96.5	4.50	0.00	22.80
32	6,184	6,187						
32			20	35.47	73.8	0.00	5.60	7.60
32			25	32.05	77.2	0.12	5.40	8.30
32			32	27.48	79.1	0.19	5.20	9.20
32			40	22.46	80.3	0.31	5.00	10.30
32			50	18.44	82.3	0.43	4.70	11.50
32			63	16.59	86.6	0.68	4.30	13.00
32			80	12.88	89.3	0.99	3.70	14.80
32			100	7.82	90.9	1.55	3.00	16.80
32			125	3.42	93.5	2.35	1.80	18.80
32			160	-2.56	95.5	3.53	0.00	21.10
32			200	-7.30	96.5	5.07	0.00	22.80
33	6,750	6,753						
33			20	34.71	73.8	0.00	5.60	7.60
33			25	31.27	77.2	0.14	5.40	8.30
33			32	26.71	79.1	0.20	5.20	9.20
33			40	21.67	80.3	0.34	5.00	10.30
33			50	17.64	82.3	0.47	4.70	11.50
33			63	15.77	86.6	0.74	4.30	13.00
33			80	12.03	89.3	1.08	3.70	14.80
33			100	6.92	90.9	1.69	3.00	16.80
33			125	2.44	93.5	2.57	1.80	18.80
33			160	-3.64	95.5	3.85	0.00	21.10
33			200	-8.53	96.5	5.54	0.00	22.80
4	5,663	5,666						
4			20	36.23	73.8	0.00	5.60	7.60
4			25	32.82	77.2	0.11	5.40	8.30
4			32	28.26	79.1	0.17	5.20	9.20
4			40	23.25	80.3	0.28	5.00	10.30
4			50	19.24	82.3	0.40	4.70	11.50
4			63	17.41	86.6	0.62	4.30	13.00
4			80	13.73	89.3	0.91	3.70	14.80
4			100	8.72	90.9	1.42	3.00	16.80
4			125	4.38	93.5	2.15	1.80	18.80
4			160	-1.50	95.5	3.23	0.00	21.10
4			200	-6.11	96.5	4.65	0.00	22.80
5	5,498	5,501						
5			20	36.49	73.8	0.00	5.60	7.60
5			25	33.08	77.2	0.11	5.40	8.30
5			32	28.53	79.1	0.17	5.20	9.20
5			40	23.52	80.3	0.28	5.00	10.30
5			50	19.51	82.3	0.39	4.70	11.50
5			63	17.69	86.6	0.61	4.30	13.00
5			80	14.01	89.3	0.88	3.70	14.80
5			100	9.02	90.9	1.38	3.00	16.80
5			125	4.70	93.5	2.09	1.80	18.80
5			160	-1.15	95.5	3.14	0.00	21.10
5			200	-5.72	96.5	4.51	0.00	22.80
6	4,588	4,592						
6			20	38.06	73.8	0.00	5.60	7.60
6			25	34.67	77.2	0.09	5.40	8.30
6			32	30.12	79.1	0.14	5.20	9.20
6			40	25.13	80.3	0.23	5.00	10.30
6			50	21.14	82.3	0.32	4.70	11.50
6			63	19.35	86.6	0.51	4.30	13.00
6			80	15.72	89.3	0.73	3.70	14.80
6			100	10.81	90.9	1.15	3.00	16.80
6			125	6.61	93.5	1.75	1.80	18.80
6			160	0.94	95.5	2.62	0.00	21.10
6			200	-3.41	96.5	3.77	0.00	22.80
7	4,619	4,624						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			20	38.00	73.8	0.00	5.60	7.60
7			25	34.61	77.2	0.09	5.40	8.30
7			32	30.06	79.1	0.14	5.20	9.20
7			40	25.07	80.3	0.23	5.00	10.30
7			50	21.08	82.3	0.32	4.70	11.50
7			63	19.29	86.6	0.51	4.30	13.00
7			80	15.66	89.3	0.74	3.70	14.80
7			100	10.74	90.9	1.16	3.00	16.80
7			125	6.54	93.5	1.76	1.80	18.80
7			160	0.87	95.5	2.64	0.00	21.10
7			200	-3.49	96.5	3.79	0.00	22.80
8	5,026	5,031						
8			20	37.27	73.8	0.00	5.60	7.60
8			25	33.87	77.2	0.10	5.40	8.30
8			32	29.32	79.1	0.15	5.20	9.20
8			40	24.32	80.3	0.25	5.00	10.30
8			50	20.32	82.3	0.35	4.70	11.50
8			63	18.51	86.6	0.55	4.30	13.00
8			80	14.86	89.3	0.80	3.70	14.80
8			100	9.91	90.9	1.26	3.00	16.80
8			125	5.66	93.5	1.91	1.80	18.80
8			160	-0.10	95.5	2.87	0.00	21.10
8			200	-4.56	96.5	4.13	0.00	22.80
9	5,100	5,104						
9			20	37.14	73.8	0.00	5.60	7.60
9			25	33.74	77.2	0.10	5.40	8.30
9			32	29.19	79.1	0.15	5.20	9.20
9			40	24.19	80.3	0.26	5.00	10.30
9			50	20.19	82.3	0.36	4.70	11.50
9			63	18.38	86.6	0.56	4.30	13.00
9			80	14.73	89.3	0.82	3.70	14.80
9			100	9.77	90.9	1.28	3.00	16.80
9			125	5.50	93.5	1.94	1.80	18.80
9			160	-0.27	95.5	2.91	0.00	21.10
9			200	-4.74	96.5	4.18	0.00	22.80
Sum								
Sum			20	54.48				
Sum			25	51.11				
Sum			32	46.57				
Sum			40	41.59				
Sum			50	37.62				
Sum			63	35.86				
Sum			80	32.27				
Sum			100	27.43				
Sum			125	23.34				
Sum			160	17.84				
Sum			200	13.72				

Noise sensitive area: RH Kotiranta Noise sensitive point: Finnish normal frequency - User defined (312)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,094	2,105						
1			20	44.83	73.8	0.00	5.60	7.60
1			25	41.49	77.2	0.04	5.40	8.30
1			32	36.97	79.1	0.06	5.20	9.20
1			40	32.03	80.3	0.11	5.00	10.30
1			50	28.09	82.3	0.15	4.70	11.50
1			63	26.40	86.6	0.23	4.30	13.00
1			80	22.90	89.3	0.34	3.70	14.80
1			100	18.21	90.9	0.53	3.00	16.80
1			125	14.33	93.5	0.80	1.80	18.80
1			160	9.13	95.5	1.20	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			200	5.41	96.5	1.73	0.00	22.80
10	4,085	4,091						
10			20	39.06	73.8	0.00	5.60	7.60
10			25	35.68	77.2	0.08	5.40	8.30
10			32	31.14	79.1	0.12	5.20	9.20
10			40	26.16	80.3	0.20	5.00	10.30
10			50	22.18	82.3	0.29	4.70	11.50
10			63	20.41	86.6	0.45	4.30	13.00
10			80	16.81	89.3	0.65	3.70	14.80
10			100	11.94	90.9	1.02	3.00	16.80
10			125	7.81	93.5	1.55	1.80	18.80
10			160	2.23	95.5	2.33	0.00	21.10
10			200	-1.99	96.5	3.35	0.00	22.80
11	3,551	3,558						
11			20	40.28	73.8	0.00	5.60	7.60
11			25	36.90	77.2	0.07	5.40	8.30
11			32	32.37	79.1	0.11	5.20	9.20
11			40	27.40	80.3	0.18	5.00	10.30
11			50	23.43	82.3	0.25	4.70	11.50
11			63	21.68	86.6	0.39	4.30	13.00
11			80	18.11	89.3	0.57	3.70	14.80
11			100	13.29	90.9	0.89	3.00	16.80
11			125	9.22	93.5	1.35	1.80	18.80
11			160	3.75	95.5	2.03	0.00	21.10
11			200	-0.34	96.5	2.92	0.00	22.80
12	4,653	4,658						
12			20	37.94	73.8	0.00	5.60	7.60
12			25	34.54	77.2	0.09	5.40	8.30
12			32	30.00	79.1	0.14	5.20	9.20
12			40	25.00	80.3	0.23	5.00	10.30
12			50	21.01	82.3	0.33	4.70	11.50
12			63	19.22	86.6	0.51	4.30	13.00
12			80	15.59	89.3	0.75	3.70	14.80
12			100	10.67	90.9	1.16	3.00	16.80
12			125	6.47	93.5	1.77	1.80	18.80
12			160	0.78	95.5	2.66	0.00	21.10
12			200	-3.58	96.5	3.82	0.00	22.80
13	4,047	4,053						
13			20	39.14	73.8	0.00	5.60	7.60
13			25	35.76	77.2	0.08	5.40	8.30
13			32	31.22	79.1	0.12	5.20	9.20
13			40	26.24	80.3	0.20	5.00	10.30
13			50	22.26	82.3	0.28	4.70	11.50
13			63	20.50	86.6	0.45	4.30	13.00
13			80	16.90	89.3	0.65	3.70	14.80
13			100	12.03	90.9	1.01	3.00	16.80
13			125	7.90	93.5	1.54	1.80	18.80
13			160	2.33	95.5	2.31	0.00	21.10
13			200	-1.88	96.5	3.32	0.00	22.80
14	2,562	2,572						
14			20	43.09	73.8	0.00	5.60	7.60
14			25	39.74	77.2	0.05	5.40	8.30
14			32	35.22	79.1	0.08	5.20	9.20
14			40	30.27	80.3	0.13	5.00	10.30
14			50	26.31	82.3	0.18	4.70	11.50
14			63	24.61	86.6	0.28	4.30	13.00
14			80	21.08	89.3	0.41	3.70	14.80
14			100	16.35	90.9	0.64	3.00	16.80
14			125	12.42	93.5	0.98	1.80	18.80
14			160	7.13	95.5	1.47	0.00	21.10
14			200	3.29	96.5	2.11	0.00	22.80
15	4,621	4,626						
15			20	38.00	73.8	0.00	5.60	7.60
15			25	34.60	77.2	0.09	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			32	30.06	79.1	0.14	5.20	9.20
15			40	25.06	80.3	0.23	5.00	10.30
15			50	21.07	82.3	0.32	4.70	11.50
15			63	19.29	86.6	0.51	4.30	13.00
15			80	15.66	89.3	0.74	3.70	14.80
15			100	10.74	90.9	1.16	3.00	16.80
15			125	6.54	93.5	1.76	1.80	18.80
15			160	0.86	95.5	2.64	0.00	21.10
15			200	-3.50	96.5	3.79	0.00	22.80
16	4,050	4,056						
16			20	39.14	73.8	0.00	5.60	7.60
16			25	35.76	77.2	0.08	5.40	8.30
16			32	31.22	79.1	0.12	5.20	9.20
16			40	26.24	80.3	0.20	5.00	10.30
16			50	22.25	82.3	0.28	4.70	11.50
16			63	20.49	86.6	0.45	4.30	13.00
16			80	16.89	89.3	0.65	3.70	14.80
16			100	12.02	90.9	1.01	3.00	16.80
16			125	7.90	93.5	1.54	1.80	18.80
16			160	2.33	95.5	2.31	0.00	21.10
16			200	-1.89	96.5	3.33	0.00	22.80
17	3,551	3,559						
17			20	40.27	73.8	0.00	5.60	7.60
17			25	36.90	77.2	0.07	5.40	8.30
17			32	32.37	79.1	0.11	5.20	9.20
17			40	27.39	80.3	0.18	5.00	10.30
17			50	23.42	82.3	0.25	4.70	11.50
17			63	21.68	86.6	0.39	4.30	13.00
17			80	18.10	89.3	0.57	3.70	14.80
17			100	13.28	90.9	0.89	3.00	16.80
17			125	9.22	93.5	1.35	1.80	18.80
17			160	3.74	95.5	2.03	0.00	21.10
17			200	-0.35	96.5	2.92	0.00	22.80
18	3,063	3,073						
18			20	41.55	73.8	0.00	5.60	7.60
18			25	38.19	77.2	0.06	5.40	8.30
18			32	33.66	79.1	0.09	5.20	9.20
18			40	28.70	80.3	0.15	5.00	10.30
18			50	24.73	82.3	0.22	4.70	11.50
18			63	23.01	86.6	0.34	4.30	13.00
18			80	19.46	89.3	0.49	3.70	14.80
18			100	14.68	90.9	0.77	3.00	16.80
18			125	10.68	93.5	1.17	1.80	18.80
18			160	5.30	95.5	1.75	0.00	21.10
18			200	1.33	96.5	2.52	0.00	22.80
19	4,802	4,807						
19			20	37.66	73.8	0.00	5.60	7.60
19			25	34.27	77.2	0.10	5.40	8.30
19			32	29.72	79.1	0.14	5.20	9.20
19			40	24.72	80.3	0.24	5.00	10.30
19			50	20.73	82.3	0.34	4.70	11.50
19			63	18.93	86.6	0.53	4.30	13.00
19			80	15.29	89.3	0.77	3.70	14.80
19			100	10.36	90.9	1.20	3.00	16.80
19			125	6.14	93.5	1.83	1.80	18.80
19			160	0.42	95.5	2.74	0.00	21.10
19			200	-3.98	96.5	3.94	0.00	22.80
2	2,533	2,543						
2			20	43.19	73.8	0.00	5.60	7.60
2			25	39.84	77.2	0.05	5.40	8.30
2			32	35.32	79.1	0.08	5.20	9.20
2			40	30.37	80.3	0.13	5.00	10.30
2			50	26.42	82.3	0.18	4.70	11.50
2			63	24.71	86.6	0.28	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			80	21.19	89.3	0.41	3.70	14.80
2			100	16.46	90.9	0.64	3.00	16.80
2			125	12.53	93.5	0.97	1.80	18.80
2			160	7.24	95.5	1.45	0.00	21.10
2			200	3.41	96.5	2.08	0.00	22.80
20	4,625	4,630						
20			20	37.99	73.8	0.00	5.60	7.60
20			25	34.60	77.2	0.09	5.40	8.30
20			32	30.05	79.1	0.14	5.20	9.20
20			40	25.06	80.3	0.23	5.00	10.30
20			50	21.06	82.3	0.32	4.70	11.50
20			63	19.28	86.6	0.51	4.30	13.00
20			80	15.65	89.3	0.74	3.70	14.80
20			100	10.73	90.9	1.16	3.00	16.80
20			125	6.53	93.5	1.76	1.80	18.80
20			160	0.85	95.5	2.64	0.00	21.10
20			200	-3.51	96.5	3.80	0.00	22.80
21	3,369	3,380						
21			20	40.72	73.8	0.00	5.60	7.60
21			25	37.35	77.2	0.07	5.40	8.30
21			32	32.82	79.1	0.10	5.20	9.20
21			40	27.85	80.3	0.17	5.00	10.30
21			50	23.89	82.3	0.24	4.70	11.50
21			63	22.15	86.6	0.37	4.30	13.00
21			80	18.58	89.3	0.54	3.70	14.80
21			100	13.78	90.9	0.84	3.00	16.80
21			125	9.74	93.5	1.28	1.80	18.80
21			160	4.30	95.5	1.93	0.00	21.10
21			200	0.25	96.5	2.77	0.00	22.80
22	3,244	3,252						
22			20	41.06	73.8	0.00	5.60	7.60
22			25	37.69	77.2	0.07	5.40	8.30
22			32	33.16	79.1	0.10	5.20	9.20
22			40	28.19	80.3	0.16	5.00	10.30
22			50	24.23	82.3	0.23	4.70	11.50
22			63	22.50	86.6	0.36	4.30	13.00
22			80	18.94	89.3	0.52	3.70	14.80
22			100	14.14	90.9	0.81	3.00	16.80
22			125	10.12	93.5	1.24	1.80	18.80
22			160	4.70	95.5	1.85	0.00	21.10
22			200	0.69	96.5	2.67	0.00	22.80
23	2,749	2,758						
23			20	42.49	73.8	0.00	5.60	7.60
23			25	39.13	77.2	0.06	5.40	8.30
23			32	34.61	79.1	0.08	5.20	9.20
23			40	29.65	80.3	0.14	5.00	10.30
23			50	25.70	82.3	0.19	4.70	11.50
23			63	23.99	86.6	0.30	4.30	13.00
23			80	20.45	89.3	0.44	3.70	14.80
23			100	15.70	90.9	0.69	3.00	16.80
23			125	11.74	93.5	1.05	1.80	18.80
23			160	6.42	95.5	1.57	0.00	21.10
23			200	2.53	96.5	2.26	0.00	22.80
24	4,608	4,614						
24			20	38.02	73.8	0.00	5.60	7.60
24			25	34.63	77.2	0.09	5.40	8.30
24			32	30.08	79.1	0.14	5.20	9.20
24			40	25.09	80.3	0.23	5.00	10.30
24			50	21.10	82.3	0.32	4.70	11.50
24			63	19.31	86.6	0.51	4.30	13.00
24			80	15.68	89.3	0.74	3.70	14.80
24			100	10.77	90.9	1.15	3.00	16.80
24			125	6.57	93.5	1.75	1.80	18.80
24			160	0.89	95.5	2.63	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			200	-3.46	96.5	3.78	0.00	22.80
25	4,022	4,029						
25			20	39.20	73.8	0.00	5.60	7.60
25			25	35.82	77.2	0.08	5.40	8.30
25			32	31.28	79.1	0.12	5.20	9.20
25			40	26.29	80.3	0.20	5.00	10.30
25			50	22.31	82.3	0.28	4.70	11.50
25			63	20.55	86.6	0.44	4.30	13.00
25			80	16.95	89.3	0.64	3.70	14.80
25			100	12.09	90.9	1.01	3.00	16.80
25			125	7.96	93.5	1.53	1.80	18.80
25			160	2.40	95.5	2.30	0.00	21.10
25			200	-1.81	96.5	3.30	0.00	22.80
26	3,944	3,953						
26			20	39.36	73.8	0.00	5.60	7.60
26			25	35.98	77.2	0.08	5.40	8.30
26			32	31.44	79.1	0.12	5.20	9.20
26			40	26.46	80.3	0.20	5.00	10.30
26			50	22.48	82.3	0.28	4.70	11.50
26			63	20.73	86.6	0.43	4.30	13.00
26			80	17.13	89.3	0.63	3.70	14.80
26			100	12.27	90.9	0.99	3.00	16.80
26			125	8.16	93.5	1.50	1.80	18.80
26			160	2.61	95.5	2.25	0.00	21.10
26			200	-1.58	96.5	3.24	0.00	22.80
27	3,783	3,791						
27			20	39.72	73.8	0.00	5.60	7.60
27			25	36.35	77.2	0.08	5.40	8.30
27			32	31.81	79.1	0.11	5.20	9.20
27			40	26.84	80.3	0.19	5.00	10.30
27			50	22.86	82.3	0.27	4.70	11.50
27			63	21.11	86.6	0.42	4.30	13.00
27			80	17.52	89.3	0.61	3.70	14.80
27			100	12.68	90.9	0.95	3.00	16.80
27			125	8.58	93.5	1.44	1.80	18.80
27			160	3.06	95.5	2.16	0.00	21.10
27			200	-1.08	96.5	3.11	0.00	22.80
28	3,442	3,450						
28			20	40.54	73.8	0.00	5.60	7.60
28			25	37.17	77.2	0.07	5.40	8.30
28			32	32.64	79.1	0.10	5.20	9.20
28			40	27.67	80.3	0.17	5.00	10.30
28			50	23.70	82.3	0.24	4.70	11.50
28			63	21.96	86.6	0.38	4.30	13.00
28			80	18.39	89.3	0.55	3.70	14.80
28			100	13.58	90.9	0.86	3.00	16.80
28			125	9.53	93.5	1.31	1.80	18.80
28			160	4.08	95.5	1.97	0.00	21.10
28			200	0.01	96.5	2.83	0.00	22.80
29	3,184	3,193						
29			20	41.22	73.8	0.00	5.60	7.60
29			25	37.85	77.2	0.06	5.40	8.30
29			32	33.32	79.1	0.10	5.20	9.20
29			40	28.36	80.3	0.16	5.00	10.30
29			50	24.39	82.3	0.22	4.70	11.50
29			63	22.66	86.6	0.35	4.30	13.00
29			80	19.10	89.3	0.51	3.70	14.80
29			100	14.32	90.9	0.80	3.00	16.80
29			125	10.30	93.5	1.21	1.80	18.80
29			160	4.90	95.5	1.82	0.00	21.10
29			200	0.90	96.5	2.62	0.00	22.80
3	1,990	2,003						
3			20	45.27	73.8	0.00	5.60	7.60
3			25	41.93	77.2	0.04	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			32	37.41	79.1	0.06	5.20	9.20
3			40	32.47	80.3	0.10	5.00	10.30
3			50	28.53	82.3	0.14	4.70	11.50
3			63	26.85	86.6	0.22	4.30	13.00
3			80	23.35	89.3	0.32	3.70	14.80
3			100	18.67	90.9	0.50	3.00	16.80
3			125	14.81	93.5	0.76	1.80	18.80
3			160	9.63	95.5	1.14	0.00	21.10
3			200	5.93	96.5	1.64	0.00	22.80
30	2,599	2,608						
30			20	42.97	73.8	0.00	5.60	7.60
30			25	39.62	77.2	0.05	5.40	8.30
30			32	35.10	79.1	0.08	5.20	9.20
30			40	30.14	80.3	0.13	5.00	10.30
30			50	26.19	82.3	0.18	4.70	11.50
30			63	24.49	86.6	0.29	4.30	13.00
30			80	20.96	89.3	0.42	3.70	14.80
30			100	16.22	90.9	0.65	3.00	16.80
30			125	12.28	93.5	0.99	1.80	18.80
30			160	6.99	95.5	1.49	0.00	21.10
30			200	3.14	96.5	2.14	0.00	22.80
31	3,240	3,248						
31			20	41.07	73.8	0.00	5.60	7.60
31			25	37.70	77.2	0.06	5.40	8.30
31			32	33.17	79.1	0.10	5.20	9.20
31			40	28.21	80.3	0.16	5.00	10.30
31			50	24.24	82.3	0.23	4.70	11.50
31			63	22.51	86.6	0.36	4.30	13.00
31			80	18.95	89.3	0.52	3.70	14.80
31			100	14.16	90.9	0.81	3.00	16.80
31			125	10.13	93.5	1.23	1.80	18.80
31			160	4.72	95.5	1.85	0.00	21.10
31			200	0.71	96.5	2.66	0.00	22.80
32	2,584	2,593						
32			20	43.02	73.8	0.00	5.60	7.60
32			25	39.67	77.2	0.05	5.40	8.30
32			32	35.14	79.1	0.08	5.20	9.20
32			40	30.19	80.3	0.13	5.00	10.30
32			50	26.24	82.3	0.18	4.70	11.50
32			63	24.54	86.6	0.29	4.30	13.00
32			80	21.01	89.3	0.41	3.70	14.80
32			100	16.27	90.9	0.65	3.00	16.80
32			125	12.34	93.5	0.99	1.80	18.80
32			160	7.04	95.5	1.48	0.00	21.10
32			200	3.20	96.5	2.13	0.00	22.80
33	2,146	2,160						
33			20	44.61	73.8	0.00	5.60	7.60
33			25	41.27	77.2	0.04	5.40	8.30
33			32	36.74	79.1	0.06	5.20	9.20
33			40	31.80	80.3	0.11	5.00	10.30
33			50	27.86	82.3	0.15	4.70	11.50
33			63	26.17	86.6	0.24	4.30	13.00
33			80	22.66	89.3	0.35	3.70	14.80
33			100	17.97	90.9	0.54	3.00	16.80
33			125	14.09	93.5	0.82	1.80	18.80
33			160	8.88	95.5	1.23	0.00	21.10
33			200	5.14	96.5	1.77	0.00	22.80
4	2,038	2,051						
4			20	45.06	73.8	0.00	5.60	7.60
4			25	41.72	77.2	0.04	5.40	8.30
4			32	37.20	79.1	0.06	5.20	9.20
4			40	32.26	80.3	0.10	5.00	10.30
4			50	28.32	82.3	0.14	4.70	11.50
4			63	26.63	86.6	0.23	4.30	13.00

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			80	23.13	89.3	0.33	3.70	14.80
4			100	18.45	90.9	0.51	3.00	16.80
4			125	14.58	93.5	0.78	1.80	18.80
4			160	9.39	95.5	1.17	0.00	21.10
4			200	5.68	96.5	1.68	0.00	22.80
5	1,820	1,834						
5			20	46.03	73.8	0.00	5.60	7.60
5			25	42.70	77.2	0.04	5.40	8.30
5			32	38.18	79.1	0.06	5.20	9.20
5			40	33.24	80.3	0.09	5.00	10.30
5			50	29.30	82.3	0.13	4.70	11.50
5			63	27.63	86.6	0.20	4.30	13.00
5			80	24.14	89.3	0.29	3.70	14.80
5			100	19.47	90.9	0.46	3.00	16.80
5			125	15.64	93.5	0.70	1.80	18.80
5			160	10.49	95.5	1.05	0.00	21.10
5			200	6.83	96.5	1.50	0.00	22.80
6	3,452	3,459						
6			20	40.52	73.8	0.00	5.60	7.60
6			25	37.15	77.2	0.07	5.40	8.30
6			32	32.62	79.1	0.10	5.20	9.20
6			40	27.65	80.3	0.17	5.00	10.30
6			50	23.68	82.3	0.24	4.70	11.50
6			63	21.94	86.6	0.38	4.30	13.00
6			80	18.37	89.3	0.55	3.70	14.80
6			100	13.56	90.9	0.86	3.00	16.80
6			125	9.51	93.5	1.31	1.80	18.80
6			160	4.05	95.5	1.97	0.00	21.10
6			200	-0.02	96.5	2.84	0.00	22.80
7	2,946	2,955						
7			20	41.89	73.8	0.00	5.60	7.60
7			25	38.53	77.2	0.06	5.40	8.30
7			32	34.00	79.1	0.09	5.20	9.20
7			40	29.04	80.3	0.15	5.00	10.30
7			50	25.08	82.3	0.21	4.70	11.50
7			63	23.36	86.6	0.33	4.30	13.00
7			80	19.82	89.3	0.47	3.70	14.80
7			100	15.05	90.9	0.74	3.00	16.80
7			125	11.07	93.5	1.12	1.80	18.80
7			160	5.71	95.5	1.68	0.00	21.10
7			200	1.77	96.5	2.42	0.00	22.80
8	2,388	2,398						
8			20	43.70	73.8	0.00	5.60	7.60
8			25	40.35	77.2	0.05	5.40	8.30
8			32	35.83	79.1	0.07	5.20	9.20
8			40	30.88	80.3	0.12	5.00	10.30
8			50	26.93	82.3	0.17	4.70	11.50
8			63	25.24	86.6	0.26	4.30	13.00
8			80	21.72	89.3	0.38	3.70	14.80
8			100	17.00	90.9	0.60	3.00	16.80
8			125	13.09	93.5	0.91	1.80	18.80
8			160	7.84	95.5	1.37	0.00	21.10
8			200	4.04	96.5	1.97	0.00	22.80
9	2,060	2,072						
9			20	44.97	73.8	0.00	5.60	7.60
9			25	41.63	77.2	0.04	5.40	8.30
9			32	37.11	79.1	0.06	5.20	9.20
9			40	32.17	80.3	0.10	5.00	10.30
9			50	28.23	82.3	0.15	4.70	11.50
9			63	26.55	86.6	0.23	4.30	13.00
9			80	23.04	89.3	0.33	3.70	14.80
9			100	18.36	90.9	0.52	3.00	16.80
9			125	14.49	93.5	0.79	1.80	18.80
9			160	9.29	95.5	1.18	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			200	5.57	96.5	1.70	0.00	22.80
Sum								
Sum			20	57.20				
Sum			25	53.85				
Sum			32	49.32				
Sum			40	44.36				
Sum			50	40.41				
Sum			63	38.69				
Sum			80	35.16				
Sum			100	30.41				
Sum			125	26.45				
Sum			160	21.13				
Sum			200	17.26				

Noise sensitive area: RH Leväniemi Noise sensitive point: Finnish normal frequency - User defined (325)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,016	6,020						
1			20	35.71	73.8	0.00	5.60	7.60
1			25	32.29	77.2	0.12	5.40	8.30
1			32	27.73	79.1	0.18	5.20	9.20
1			40	22.71	80.3	0.30	5.00	10.30
1			50	18.69	82.3	0.42	4.70	11.50
1			63	16.85	86.6	0.66	4.30	13.00
1			80	13.14	89.3	0.96	3.70	14.80
1			100	8.10	90.9	1.51	3.00	16.80
1			125	3.72	93.5	2.29	1.80	18.80
1			160	-2.22	95.5	3.43	0.00	21.10
1			200	-6.93	96.5	4.94	0.00	22.80
10	6,685	6,690						
10			20	34.79	73.8	0.00	5.60	7.60
10			25	31.36	77.2	0.13	5.40	8.30
10			32	26.79	79.1	0.20	5.20	9.20
10			40	21.76	80.3	0.33	5.00	10.30
10			50	17.72	82.3	0.47	4.70	11.50
10			63	15.86	86.6	0.74	4.30	13.00
10			80	12.12	89.3	1.07	3.70	14.80
10			100	7.02	90.9	1.67	3.00	16.80
10			125	2.55	93.5	2.54	1.80	18.80
10			160	-3.52	95.5	3.81	0.00	21.10
10			200	-8.39	96.5	5.49	0.00	22.80
11	6,071	6,076						
11			20	35.63	73.8	0.00	5.60	7.60
11			25	32.21	77.2	0.12	5.40	8.30
11			32	27.65	79.1	0.18	5.20	9.20
11			40	22.62	80.3	0.30	5.00	10.30
11			50	18.60	82.3	0.43	4.70	11.50
11			63	16.76	86.6	0.67	4.30	13.00
11			80	13.06	89.3	0.97	3.70	14.80
11			100	8.01	90.9	1.52	3.00	16.80
11			125	3.62	93.5	2.31	1.80	18.80
11			160	-2.34	95.5	3.46	0.00	21.10
11			200	-7.05	96.5	4.98	0.00	22.80
12	7,091	7,095						
12			20	34.28	73.8	0.00	5.60	7.60
12			25	30.84	77.2	0.14	5.40	8.30
12			32	26.27	79.1	0.21	5.20	9.20
12			40	21.23	80.3	0.35	5.00	10.30
12			50	17.18	82.3	0.50	4.70	11.50
12			63	15.30	86.6	0.78	4.30	13.00
12			80	11.55	89.3	1.14	3.70	14.80
12			100	6.41	90.9	1.77	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			125	1.89	93.5	2.70	1.80	18.80
12			160	-4.26	95.5	4.04	0.00	21.10
12			200	-9.24	96.5	5.82	0.00	22.80
13	6,231	6,236						
13			20	35.40	73.8	0.00	5.60	7.60
13			25	31.98	77.2	0.12	5.40	8.30
13			32	27.42	79.1	0.19	5.20	9.20
13			40	22.39	80.3	0.31	5.00	10.30
13			50	18.37	82.3	0.44	4.70	11.50
13			63	16.52	86.6	0.69	4.30	13.00
13			80	12.80	89.3	1.00	3.70	14.80
13			100	7.74	90.9	1.56	3.00	16.80
13			125	3.33	93.5	2.37	1.80	18.80
13			160	-2.65	95.5	3.55	0.00	21.10
13			200	-7.41	96.5	5.11	0.00	22.80
14	5,038	5,044						
14			20	37.25	73.8	0.00	5.60	7.60
14			25	33.84	77.2	0.10	5.40	8.30
14			32	29.29	79.1	0.15	5.20	9.20
14			40	24.29	80.3	0.25	5.00	10.30
14			50	20.29	82.3	0.35	4.70	11.50
14			63	18.49	86.6	0.55	4.30	13.00
14			80	14.84	89.3	0.81	3.70	14.80
14			100	9.88	90.9	1.26	3.00	16.80
14			125	5.63	93.5	1.92	1.80	18.80
14			160	-0.13	95.5	2.87	0.00	21.10
14			200	-4.59	96.5	4.14	0.00	22.80
15	6,726	6,730						
15			20	34.74	73.8	0.00	5.60	7.60
15			25	31.30	77.2	0.13	5.40	8.30
15			32	26.74	79.1	0.20	5.20	9.20
15			40	21.70	80.3	0.34	5.00	10.30
15			50	17.67	82.3	0.47	4.70	11.50
15			63	15.80	86.6	0.74	4.30	13.00
15			80	12.06	89.3	1.08	3.70	14.80
15			100	6.96	90.9	1.68	3.00	16.80
15			125	2.48	93.5	2.56	1.80	18.80
15			160	-3.60	95.5	3.84	0.00	21.10
15			200	-8.48	96.5	5.52	0.00	22.80
16	5,862	5,866						
16			20	35.93	73.8	0.00	5.60	7.60
16			25	32.52	77.2	0.12	5.40	8.30
16			32	27.96	79.1	0.18	5.20	9.20
16			40	22.94	80.3	0.29	5.00	10.30
16			50	18.92	82.3	0.41	4.70	11.50
16			63	17.09	86.6	0.65	4.30	13.00
16			80	13.39	89.3	0.94	3.70	14.80
16			100	8.37	90.9	1.47	3.00	16.80
16			125	4.00	93.5	2.23	1.80	18.80
16			160	-1.91	95.5	3.34	0.00	21.10
16			200	-6.58	96.5	4.81	0.00	22.80
17	5,190	5,197						
17			20	36.99	73.8	0.00	5.60	7.60
17			25	33.58	77.2	0.10	5.40	8.30
17			32	29.03	79.1	0.16	5.20	9.20
17			40	24.03	80.3	0.26	5.00	10.30
17			50	20.02	82.3	0.36	4.70	11.50
17			63	18.21	86.6	0.57	4.30	13.00
17			80	14.55	89.3	0.83	3.70	14.80
17			100	9.59	90.9	1.30	3.00	16.80
17			125	5.31	93.5	1.97	1.80	18.80
17			160	-0.48	95.5	2.96	0.00	21.10
17			200	-4.98	96.5	4.26	0.00	22.80
18	5,008	5,015						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			20	37.29	73.8	0.00	5.60	7.60
18			25	33.89	77.2	0.10	5.40	8.30
18			32	29.34	79.1	0.15	5.20	9.20
18			40	24.34	80.3	0.25	5.00	10.30
18			50	20.34	82.3	0.35	4.70	11.50
18			63	18.54	86.6	0.55	4.30	13.00
18			80	14.89	89.3	0.80	3.70	14.80
18			100	9.94	90.9	1.25	3.00	16.80
18			125	5.69	93.5	1.91	1.80	18.80
18			160	-0.06	95.5	2.86	0.00	21.10
18			200	-4.52	96.5	4.11	0.00	22.80
19	6,569	6,574						
19			20	34.94	73.8	0.00	5.60	7.60
19			25	31.51	77.2	0.13	5.40	8.30
19			32	26.95	79.1	0.20	5.20	9.20
19			40	21.92	80.3	0.33	5.00	10.30
19			50	17.88	82.3	0.46	4.70	11.50
19			63	16.02	86.6	0.72	4.30	13.00
19			80	12.29	89.3	1.05	3.70	14.80
19			100	7.20	90.9	1.64	3.00	16.80
19			125	2.75	93.5	2.50	1.80	18.80
19			160	-3.30	95.5	3.75	0.00	21.10
19			200	-8.15	96.5	5.39	0.00	22.80
2	6,008	6,012						
2			20	35.72	73.8	0.00	5.60	7.60
2			25	32.30	77.2	0.12	5.40	8.30
2			32	27.74	79.1	0.18	5.20	9.20
2			40	22.72	80.3	0.30	5.00	10.30
2			50	18.70	82.3	0.42	4.70	11.50
2			63	16.86	86.6	0.66	4.30	13.00
2			80	13.16	89.3	0.96	3.70	14.80
2			100	8.12	90.9	1.50	3.00	16.80
2			125	3.73	93.5	2.28	1.80	18.80
2			160	-2.21	95.5	3.43	0.00	21.10
2			200	-6.91	96.5	4.93	0.00	22.80
20	6,049	6,054						
20			20	35.66	73.8	0.00	5.60	7.60
20			25	32.24	77.2	0.12	5.40	8.30
20			32	27.68	79.1	0.18	5.20	9.20
20			40	22.66	80.3	0.30	5.00	10.30
20			50	18.64	82.3	0.42	4.70	11.50
20			63	16.79	86.6	0.67	4.30	13.00
20			80	13.09	89.3	0.97	3.70	14.80
20			100	8.05	90.9	1.51	3.00	16.80
20			125	3.66	93.5	2.30	1.80	18.80
20			160	-2.29	95.5	3.45	0.00	21.10
20			200	-7.00	96.5	4.96	0.00	22.80
21	4,602	4,611						
21			20	38.02	73.8	0.00	5.60	7.60
21			25	34.63	77.2	0.09	5.40	8.30
21			32	30.09	79.1	0.14	5.20	9.20
21			40	25.09	80.3	0.23	5.00	10.30
21			50	21.10	82.3	0.32	4.70	11.50
21			63	19.32	86.6	0.51	4.30	13.00
21			80	15.69	89.3	0.74	3.70	14.80
21			100	10.77	90.9	1.15	3.00	16.80
21			125	6.57	93.5	1.75	1.80	18.80
21			160	0.90	95.5	2.63	0.00	21.10
21			200	-3.46	96.5	3.78	0.00	22.80
22	4,040	4,048						
22			20	39.16	73.8	0.00	5.60	7.60
22			25	35.77	77.2	0.08	5.40	8.30
22			32	31.23	79.1	0.12	5.20	9.20
22			40	26.25	80.3	0.20	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			50	22.27	82.3	0.28	4.70	11.50
22			63	20.51	86.6	0.45	4.30	13.00
22			80	16.91	89.3	0.65	3.70	14.80
22			100	12.04	90.9	1.01	3.00	16.80
22			125	7.92	93.5	1.54	1.80	18.80
22			160	2.35	95.5	2.31	0.00	21.10
22			200	-1.86	96.5	3.32	0.00	22.80
23	3,507	3,515						
23			20	40.38	73.8	0.00	5.60	7.60
23			25	37.01	77.2	0.07	5.40	8.30
23			32	32.48	79.1	0.11	5.20	9.20
23			40	27.51	80.3	0.18	5.00	10.30
23			50	23.54	82.3	0.25	4.70	11.50
23			63	21.80	86.6	0.39	4.30	13.00
23			80	18.22	89.3	0.56	3.70	14.80
23			100	13.40	90.9	0.88	3.00	16.80
23			125	9.35	93.5	1.34	1.80	18.80
23			160	3.88	95.5	2.00	0.00	21.10
23			200	-0.20	96.5	2.88	0.00	22.80
24	5,560	5,566						
24			20	36.39	73.8	0.00	5.60	7.60
24			25	32.98	77.2	0.11	5.40	8.30
24			32	28.42	79.1	0.17	5.20	9.20
24			40	23.41	80.3	0.28	5.00	10.30
24			50	19.40	82.3	0.39	4.70	11.50
24			63	17.58	86.6	0.61	4.30	13.00
24			80	13.90	89.3	0.89	3.70	14.80
24			100	8.90	90.9	1.39	3.00	16.80
24			125	4.57	93.5	2.11	1.80	18.80
24			160	-1.28	95.5	3.17	0.00	21.10
24			200	-5.87	96.5	4.56	0.00	22.80
25	5,201	5,207						
25			20	36.97	73.8	0.00	5.60	7.60
25			25	33.56	77.2	0.10	5.40	8.30
25			32	29.01	79.1	0.16	5.20	9.20
25			40	24.01	80.3	0.26	5.00	10.30
25			50	20.00	82.3	0.36	4.70	11.50
25			63	18.20	86.6	0.57	4.30	13.00
25			80	14.53	89.3	0.83	3.70	14.80
25			100	9.57	90.9	1.30	3.00	16.80
25			125	5.29	93.5	1.98	1.80	18.80
25			160	-0.50	95.5	2.97	0.00	21.10
25			200	-5.00	96.5	4.27	0.00	22.80
26	4,722	4,730						
26			20	37.80	73.8	0.00	5.60	7.60
26			25	34.41	77.2	0.09	5.40	8.30
26			32	29.86	79.1	0.14	5.20	9.20
26			40	24.87	80.3	0.24	5.00	10.30
26			50	20.87	82.3	0.33	4.70	11.50
26			63	19.08	86.6	0.52	4.30	13.00
26			80	15.45	89.3	0.76	3.70	14.80
26			100	10.52	90.9	1.18	3.00	16.80
26			125	6.31	93.5	1.80	1.80	18.80
26			160	0.61	95.5	2.70	0.00	21.10
26			200	-3.78	96.5	3.88	0.00	22.80
27	4,235	4,244						
27			20	38.75	73.8	0.00	5.60	7.60
27			25	35.36	77.2	0.08	5.40	8.30
27			32	30.82	79.1	0.13	5.20	9.20
27			40	25.83	80.3	0.21	5.00	10.30
27			50	21.85	82.3	0.30	4.70	11.50
27			63	20.08	86.6	0.47	4.30	13.00
27			80	16.47	89.3	0.68	3.70	14.80
27			100	11.58	90.9	1.06	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			125	7.43	93.5	1.61	1.80	18.80
27			160	1.83	95.5	2.42	0.00	21.10
27			200	-2.43	96.5	3.48	0.00	22.80
28	3,605	3,614						
28			20	40.14	73.8	0.00	5.60	7.60
28			25	36.77	77.2	0.07	5.40	8.30
28			32	32.23	79.1	0.11	5.20	9.20
28			40	27.26	80.3	0.18	5.00	10.30
28			50	23.29	82.3	0.25	4.70	11.50
28			63	21.54	86.6	0.40	4.30	13.00
28			80	17.96	89.3	0.58	3.70	14.80
28			100	13.14	90.9	0.90	3.00	16.80
28			125	9.07	93.5	1.37	1.80	18.80
28			160	3.58	95.5	2.06	0.00	21.10
28			200	-0.52	96.5	2.96	0.00	22.80
29	2,954	2,966						
29			20	41.86	73.8	0.00	5.60	7.60
29			25	38.50	77.2	0.06	5.40	8.30
29			32	33.97	79.1	0.09	5.20	9.20
29			40	29.01	80.3	0.15	5.00	10.30
29			50	25.05	82.3	0.21	4.70	11.50
29			63	23.33	86.6	0.33	4.30	13.00
29			80	19.78	89.3	0.47	3.70	14.80
29			100	15.02	90.9	0.74	3.00	16.80
29			125	11.03	93.5	1.13	1.80	18.80
29			160	5.67	95.5	1.69	0.00	21.10
29			200	1.73	96.5	2.43	0.00	22.80
3	5,699	5,705						
3			20	36.18	73.8	0.00	5.60	7.60
3			25	32.76	77.2	0.11	5.40	8.30
3			32	28.20	79.1	0.17	5.20	9.20
3			40	23.19	80.3	0.29	5.00	10.30
3			50	19.18	82.3	0.40	4.70	11.50
3			63	17.35	86.6	0.63	4.30	13.00
3			80	13.66	89.3	0.91	3.70	14.80
3			100	8.65	90.9	1.43	3.00	16.80
3			125	4.31	93.5	2.17	1.80	18.80
3			160	-1.58	95.5	3.25	0.00	21.10
3			200	-6.20	96.5	4.68	0.00	22.80
30	2,669	2,680						
30			20	42.74	73.8	0.00	5.60	7.60
30			25	39.38	77.2	0.05	5.40	8.30
30			32	34.86	79.1	0.08	5.20	9.20
30			40	29.90	80.3	0.13	5.00	10.30
30			50	25.95	82.3	0.19	4.70	11.50
30			63	24.24	86.6	0.29	4.30	13.00
30			80	20.71	89.3	0.43	3.70	14.80
30			100	15.97	90.9	0.67	3.00	16.80
30			125	12.02	93.5	1.02	1.80	18.80
30			160	6.71	95.5	1.53	0.00	21.10
30			200	2.84	96.5	2.20	0.00	22.80
31	2,436	2,447						
31			20	43.53	73.8	0.00	5.60	7.60
31			25	40.18	77.2	0.05	5.40	8.30
31			32	35.65	79.1	0.07	5.20	9.20
31			40	30.70	80.3	0.12	5.00	10.30
31			50	26.76	82.3	0.17	4.70	11.50
31			63	25.06	86.6	0.27	4.30	13.00
31			80	21.53	89.3	0.39	3.70	14.80
31			100	16.81	90.9	0.61	3.00	16.80
31			125	12.90	93.5	0.93	1.80	18.80
31			160	7.63	95.5	1.39	0.00	21.10
31			200	3.82	96.5	2.01	0.00	22.80
32	2,072	2,086						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			20	44.91	73.8	0.00	5.60	7.60
32			25	41.57	77.2	0.04	5.40	8.30
32			32	37.05	79.1	0.06	5.20	9.20
32			40	32.11	80.3	0.10	5.00	10.30
32			50	28.17	82.3	0.15	4.70	11.50
32			63	26.48	86.6	0.23	4.30	13.00
32			80	22.98	89.3	0.33	3.70	14.80
32			100	18.29	90.9	0.52	3.00	16.80
32			125	14.42	93.5	0.79	1.80	18.80
32			160	9.22	95.5	1.19	0.00	21.10
32			200	5.50	96.5	1.71	0.00	22.80
33	2,036	2,052						
33			20	45.05	73.8	0.00	5.60	7.60
33			25	41.71	77.2	0.04	5.40	8.30
33			32	37.19	79.1	0.06	5.20	9.20
33			40	32.25	80.3	0.10	5.00	10.30
33			50	28.31	82.3	0.14	4.70	11.50
33			63	26.63	86.6	0.23	4.30	13.00
33			80	23.13	89.3	0.33	3.70	14.80
33			100	18.44	90.9	0.51	3.00	16.80
33			125	14.57	93.5	0.78	1.80	18.80
33			160	9.39	95.5	1.17	0.00	21.10
33			200	5.67	96.5	1.68	0.00	22.80
4	5,426	5,432						
4			20	36.60	73.8	0.00	5.60	7.60
4			25	33.19	77.2	0.11	5.40	8.30
4			32	28.64	79.1	0.16	5.20	9.20
4			40	23.63	80.3	0.27	5.00	10.30
4			50	19.62	82.3	0.38	4.70	11.50
4			63	17.80	86.6	0.60	4.30	13.00
4			80	14.13	89.3	0.87	3.70	14.80
4			100	9.14	90.9	1.36	3.00	16.80
4			125	4.84	93.5	2.06	1.80	18.80
4			160	-0.99	95.5	3.10	0.00	21.10
4			200	-5.55	96.5	4.45	0.00	22.80
5	4,906	4,912						
5			20	37.48	73.8	0.00	5.60	7.60
5			25	34.08	77.2	0.10	5.40	8.30
5			32	29.53	79.1	0.15	5.20	9.20
5			40	24.53	80.3	0.25	5.00	10.30
5			50	20.53	82.3	0.34	4.70	11.50
5			63	18.74	86.6	0.54	4.30	13.00
5			80	15.09	89.3	0.79	3.70	14.80
5			100	10.15	90.9	1.23	3.00	16.80
5			125	5.91	93.5	1.87	1.80	18.80
5			160	0.18	95.5	2.80	0.00	21.10
5			200	-4.25	96.5	4.03	0.00	22.80
6	6,388	6,393						
6			20	35.19	73.8	0.00	5.60	7.60
6			25	31.76	77.2	0.13	5.40	8.30
6			32	27.19	79.1	0.19	5.20	9.20
6			40	22.17	80.3	0.32	5.00	10.30
6			50	18.14	82.3	0.45	4.70	11.50
6			63	16.28	86.6	0.70	4.30	13.00
6			80	12.56	89.3	1.02	3.70	14.80
6			100	7.49	90.9	1.60	3.00	16.80
6			125	3.06	93.5	2.43	1.80	18.80
6			160	-2.96	95.5	3.64	0.00	21.10
6			200	-7.76	96.5	5.24	0.00	22.80
7	5,733	5,738						
7			20	36.12	73.8	0.00	5.60	7.60
7			25	32.71	77.2	0.11	5.40	8.30
7			32	28.15	79.1	0.17	5.20	9.20
7			40	23.14	80.3	0.29	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			50	19.12	82.3	0.40	4.70	11.50
7			63	17.29	86.6	0.63	4.30	13.00
7			80	13.61	89.3	0.92	3.70	14.80
7			100	8.59	90.9	1.43	3.00	16.80
7			125	4.24	93.5	2.18	1.80	18.80
7			160	-1.65	95.5	3.27	0.00	21.10
7			200	-6.28	96.5	4.71	0.00	22.80
8	5,289	5,294						
8			20	36.82	73.8	0.00	5.60	7.60
8			25	33.42	77.2	0.11	5.40	8.30
8			32	28.86	79.1	0.16	5.20	9.20
8			40	23.86	80.3	0.26	5.00	10.30
8			50	19.85	82.3	0.37	4.70	11.50
8			63	18.04	86.6	0.58	4.30	13.00
8			80	14.38	89.3	0.85	3.70	14.80
8			100	9.40	90.9	1.32	3.00	16.80
8			125	5.11	93.5	2.01	1.80	18.80
8			160	-0.69	95.5	3.02	0.00	21.10
8			200	-5.22	96.5	4.34	0.00	22.80
9	4,604	4,610						
9			20	38.03	73.8	0.00	5.60	7.60
9			25	34.63	77.2	0.09	5.40	8.30
9			32	30.09	79.1	0.14	5.20	9.20
9			40	25.10	80.3	0.23	5.00	10.30
9			50	21.10	82.3	0.32	4.70	11.50
9			63	19.32	86.6	0.51	4.30	13.00
9			80	15.69	89.3	0.74	3.70	14.80
9			100	10.77	90.9	1.15	3.00	16.80
9			125	6.57	93.5	1.75	1.80	18.80
9			160	0.90	95.5	2.63	0.00	21.10
9			200	-3.45	96.5	3.78	0.00	22.80
Sum								
Sum			20	54.16				
Sum			25	50.79				
Sum			32	46.25				
Sum			40	41.27				
Sum			50	37.30				
Sum			63	35.55				
Sum			80	31.96				
Sum			100	27.12				
Sum			125	23.05				
Sum			160	17.57				
Sum			200	13.50				

Noise sensitive area: RH Mäkelä Noise sensitive point: Finnish normal frequency - User defined (315)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,778	1,793						
1			20	46.23	73.8	0.00	5.60	7.60
1			25	42.89	77.2	0.04	5.40	8.30
1			32	38.38	79.1	0.05	5.20	9.20
1			40	33.44	80.3	0.09	5.00	10.30
1			50	29.50	82.3	0.13	4.70	11.50
1			63	27.83	86.6	0.20	4.30	13.00
1			80	24.34	89.3	0.29	3.70	14.80
1			100	19.68	90.9	0.45	3.00	16.80
1			125	15.85	93.5	0.68	1.80	18.80
1			160	10.71	95.5	1.02	0.00	21.10
1			200	7.06	96.5	1.47	0.00	22.80
10	4,266	4,272						
10			20	38.69	73.8	0.00	5.60	7.60
10			25	35.30	77.2	0.09	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			32	30.76	79.1	0.13	5.20	9.20
10			40	25.77	80.3	0.21	5.00	10.30
10			50	21.79	82.3	0.30	4.70	11.50
10			63	20.02	86.6	0.47	4.30	13.00
10			80	16.40	89.3	0.68	3.70	14.80
10			100	11.52	90.9	1.07	3.00	16.80
10			125	7.36	93.5	1.62	1.80	18.80
10			160	1.75	95.5	2.44	0.00	21.10
10			200	-2.52	96.5	3.50	0.00	22.80
11	3,798	3,806						
11			20	39.69	73.8	0.00	5.60	7.60
11			25	36.32	77.2	0.08	5.40	8.30
11			32	31.78	79.1	0.11	5.20	9.20
11			40	26.80	80.3	0.19	5.00	10.30
11			50	22.82	82.3	0.27	4.70	11.50
11			63	21.07	86.6	0.42	4.30	13.00
11			80	17.48	89.3	0.61	3.70	14.80
11			100	12.64	90.9	0.95	3.00	16.80
11			125	8.55	93.5	1.45	1.80	18.80
11			160	3.02	95.5	2.17	0.00	21.10
11			200	-1.13	96.5	3.12	0.00	22.80
12	4,846	4,852						
12			20	37.58	73.8	0.00	5.60	7.60
12			25	34.18	77.2	0.10	5.40	8.30
12			32	29.64	79.1	0.15	5.20	9.20
12			40	24.64	80.3	0.24	5.00	10.30
12			50	20.64	82.3	0.34	4.70	11.50
12			63	18.85	86.6	0.53	4.30	13.00
12			80	15.21	89.3	0.78	3.70	14.80
12			100	10.27	90.9	1.21	3.00	16.80
12			125	6.04	93.5	1.84	1.80	18.80
12			160	0.32	95.5	2.77	0.00	21.10
12			200	-4.10	96.5	3.98	0.00	22.80
13	4,347	4,353						
13			20	38.52	73.8	0.00	5.60	7.60
13			25	35.14	77.2	0.09	5.40	8.30
13			32	30.59	79.1	0.13	5.20	9.20
13			40	25.61	80.3	0.22	5.00	10.30
13			50	21.62	82.3	0.30	4.70	11.50
13			63	19.84	86.6	0.48	4.30	13.00
13			80	16.23	89.3	0.70	3.70	14.80
13			100	11.33	90.9	1.09	3.00	16.80
13			125	7.17	93.5	1.65	1.80	18.80
13			160	1.54	95.5	2.48	0.00	21.10
13			200	-2.75	96.5	3.57	0.00	22.80
14	2,936	2,945						
14			20	41.92	73.8	0.00	5.60	7.60
14			25	38.56	77.2	0.06	5.40	8.30
14			32	34.03	79.1	0.09	5.20	9.20
14			40	29.07	80.3	0.15	5.00	10.30
14			50	25.11	82.3	0.21	4.70	11.50
14			63	23.39	86.6	0.32	4.30	13.00
14			80	19.85	89.3	0.47	3.70	14.80
14			100	15.08	90.9	0.74	3.00	16.80
14			125	11.10	93.5	1.12	1.80	18.80
14			160	5.74	95.5	1.68	0.00	21.10
14			200	1.80	96.5	2.42	0.00	22.80
15	4,903	4,908						
15			20	37.48	73.8	0.00	5.60	7.60
15			25	34.08	77.2	0.10	5.40	8.30
15			32	29.53	79.1	0.15	5.20	9.20
15			40	24.54	80.3	0.25	5.00	10.30
15			50	20.54	82.3	0.34	4.70	11.50
15			63	18.74	86.6	0.54	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			80	15.10	89.3	0.79	3.70	14.80
15			100	10.15	90.9	1.23	3.00	16.80
15			125	5.92	93.5	1.87	1.80	18.80
15			160	0.18	95.5	2.80	0.00	21.10
15			200	-4.24	96.5	4.02	0.00	22.80
16	4,438	4,444						
16			20	38.35	73.8	0.00	5.60	7.60
16			25	34.96	77.2	0.09	5.40	8.30
16			32	30.41	79.1	0.13	5.20	9.20
16			40	25.42	80.3	0.22	5.00	10.30
16			50	21.43	82.3	0.31	4.70	11.50
16			63	19.66	86.6	0.49	4.30	13.00
16			80	16.03	89.3	0.71	3.70	14.80
16			100	11.13	90.9	1.11	3.00	16.80
16			125	6.96	93.5	1.69	1.80	18.80
16			160	1.31	95.5	2.53	0.00	21.10
16			200	-3.00	96.5	3.64	0.00	22.80
17	4,014	4,022						
17			20	39.21	73.8	0.00	5.60	7.60
17			25	35.83	77.2	0.08	5.40	8.30
17			32	31.29	79.1	0.12	5.20	9.20
17			40	26.31	80.3	0.20	5.00	10.30
17			50	22.33	82.3	0.28	4.70	11.50
17			63	20.57	86.6	0.44	4.30	13.00
17			80	16.97	89.3	0.64	3.70	14.80
17			100	12.11	90.9	1.01	3.00	16.80
17			125	7.98	93.5	1.53	1.80	18.80
17			160	2.42	95.5	2.29	0.00	21.10
17			200	-1.79	96.5	3.30	0.00	22.80
18	3,509	3,518						
18			20	40.37	73.8	0.00	5.60	7.60
18			25	37.00	77.2	0.07	5.40	8.30
18			32	32.47	79.1	0.11	5.20	9.20
18			40	27.50	80.3	0.18	5.00	10.30
18			50	23.53	82.3	0.25	4.70	11.50
18			63	21.79	86.6	0.39	4.30	13.00
18			80	18.21	89.3	0.56	3.70	14.80
18			100	13.39	90.9	0.88	3.00	16.80
18			125	9.34	93.5	1.34	1.80	18.80
18			160	3.87	95.5	2.01	0.00	21.10
18			200	-0.21	96.5	2.88	0.00	22.80
19	5,152	5,157						
19			20	37.05	73.8	0.00	5.60	7.60
19			25	33.65	77.2	0.10	5.40	8.30
19			32	29.10	79.1	0.15	5.20	9.20
19			40	24.09	80.3	0.26	5.00	10.30
19			50	20.09	82.3	0.36	4.70	11.50
19			63	18.28	86.6	0.57	4.30	13.00
19			80	14.63	89.3	0.83	3.70	14.80
19			100	9.66	90.9	1.29	3.00	16.80
19			125	5.39	93.5	1.96	1.80	18.80
19			160	-0.39	95.5	2.94	0.00	21.10
19			200	-4.88	96.5	4.23	0.00	22.80
2	2,507	2,518						
2			20	43.28	73.8	0.00	5.60	7.60
2			25	39.93	77.2	0.05	5.40	8.30
2			32	35.40	79.1	0.08	5.20	9.20
2			40	30.45	80.3	0.13	5.00	10.30
2			50	26.50	82.3	0.18	4.70	11.50
2			63	24.80	86.6	0.28	4.30	13.00
2			80	21.28	89.3	0.40	3.70	14.80
2			100	16.55	90.9	0.63	3.00	16.80
2			125	12.62	93.5	0.96	1.80	18.80
2			160	7.34	95.5	1.44	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			200	3.51	96.5	2.06	0.00	22.80
20	5,054	5,059						
20			20	37.22	73.8	0.00	5.60	7.60
20			25	33.82	77.2	0.10	5.40	8.30
20			32	29.27	79.1	0.15	5.20	9.20
20			40	24.27	80.3	0.25	5.00	10.30
20			50	20.26	82.3	0.35	4.70	11.50
20			63	18.46	86.6	0.56	4.30	13.00
20			80	14.81	89.3	0.81	3.70	14.80
20			100	9.85	90.9	1.26	3.00	16.80
20			125	5.60	93.5	1.92	1.80	18.80
20			160	-0.17	95.5	2.88	0.00	21.10
20			200	-4.63	96.5	4.15	0.00	22.80
21	3,922	3,931						
21			20	39.41	73.8	0.00	5.60	7.60
21			25	36.03	77.2	0.08	5.40	8.30
21			32	31.49	79.1	0.12	5.20	9.20
21			40	26.51	80.3	0.20	5.00	10.30
21			50	22.53	82.3	0.28	4.70	11.50
21			63	20.78	86.6	0.43	4.30	13.00
21			80	17.18	89.3	0.63	3.70	14.80
21			100	12.33	90.9	0.98	3.00	16.80
21			125	8.22	93.5	1.49	1.80	18.80
21			160	2.67	95.5	2.24	0.00	21.10
21			200	-1.51	96.5	3.22	0.00	22.80
22	3,870	3,878						
22			20	39.53	73.8	0.00	5.60	7.60
22			25	36.15	77.2	0.08	5.40	8.30
22			32	31.61	79.1	0.12	5.20	9.20
22			40	26.63	80.3	0.19	5.00	10.30
22			50	22.66	82.3	0.27	4.70	11.50
22			63	20.90	86.6	0.43	4.30	13.00
22			80	17.31	89.3	0.62	3.70	14.80
22			100	12.46	90.9	0.97	3.00	16.80
22			125	8.35	93.5	1.47	1.80	18.80
22			160	2.82	95.5	2.21	0.00	21.10
22			200	-1.35	96.5	3.18	0.00	22.80
23	3,424	3,432						
23			20	40.59	73.8	0.00	5.60	7.60
23			25	37.22	77.2	0.07	5.40	8.30
23			32	32.69	79.1	0.10	5.20	9.20
23			40	27.72	80.3	0.17	5.00	10.30
23			50	23.75	82.3	0.24	4.70	11.50
23			63	22.01	86.6	0.38	4.30	13.00
23			80	18.44	89.3	0.55	3.70	14.80
23			100	13.63	90.9	0.86	3.00	16.80
23			125	9.59	93.5	1.30	1.80	18.80
23			160	4.13	95.5	1.96	0.00	21.10
23			200	0.08	96.5	2.81	0.00	22.80
24	5,120	5,125						
24			20	37.11	73.8	0.00	5.60	7.60
24			25	33.70	77.2	0.10	5.40	8.30
24			32	29.15	79.1	0.15	5.20	9.20
24			40	24.15	80.3	0.26	5.00	10.30
24			50	20.15	82.3	0.36	4.70	11.50
24			63	18.34	86.6	0.56	4.30	13.00
24			80	14.69	89.3	0.82	3.70	14.80
24			100	9.72	90.9	1.28	3.00	16.80
24			125	5.46	93.5	1.95	1.80	18.80
24			160	-0.32	95.5	2.92	0.00	21.10
24			200	-4.80	96.5	4.20	0.00	22.80
25	4,533	4,539						
25			20	38.16	73.8	0.00	5.60	7.60
25			25	34.77	77.2	0.09	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			32	30.22	79.1	0.14	5.20	9.20
25			40	25.23	80.3	0.23	5.00	10.30
25			50	21.24	82.3	0.32	4.70	11.50
25			63	19.46	86.6	0.50	4.30	13.00
25			80	15.83	89.3	0.73	3.70	14.80
25			100	10.93	90.9	1.13	3.00	16.80
25			125	6.74	93.5	1.72	1.80	18.80
25			160	1.07	95.5	2.59	0.00	21.10
25			200	-3.26	96.5	3.72	0.00	22.80
26	4,521	4,529						
26			20	38.18	73.8	0.00	5.60	7.60
26			25	34.79	77.2	0.09	5.40	8.30
26			32	30.24	79.1	0.14	5.20	9.20
26			40	25.25	80.3	0.23	5.00	10.30
26			50	21.26	82.3	0.32	4.70	11.50
26			63	19.48	86.6	0.50	4.30	13.00
26			80	15.85	89.3	0.72	3.70	14.80
26			100	10.95	90.9	1.13	3.00	16.80
26			125	6.76	93.5	1.72	1.80	18.80
26			160	1.10	95.5	2.58	0.00	21.10
26			200	-3.23	96.5	3.71	0.00	22.80
27	4,411	4,419						
27			20	38.39	73.8	0.00	5.60	7.60
27			25	35.01	77.2	0.09	5.40	8.30
27			32	30.46	79.1	0.13	5.20	9.20
27			40	25.47	80.3	0.22	5.00	10.30
27			50	21.48	82.3	0.31	4.70	11.50
27			63	19.71	86.6	0.49	4.30	13.00
27			80	16.09	89.3	0.71	3.70	14.80
27			100	11.19	90.9	1.10	3.00	16.80
27			125	7.01	93.5	1.68	1.80	18.80
27			160	1.38	95.5	2.52	0.00	21.10
27			200	-2.93	96.5	3.62	0.00	22.80
28	4,122	4,129						
28			20	38.98	73.8	0.00	5.60	7.60
28			25	35.60	77.2	0.08	5.40	8.30
28			32	31.06	79.1	0.12	5.20	9.20
28			40	26.08	80.3	0.21	5.00	10.30
28			50	22.09	82.3	0.29	4.70	11.50
28			63	20.33	86.6	0.45	4.30	13.00
28			80	16.72	89.3	0.66	3.70	14.80
28			100	11.85	90.9	1.03	3.00	16.80
28			125	7.71	93.5	1.57	1.80	18.80
28			160	2.13	95.5	2.35	0.00	21.10
28			200	-2.10	96.5	3.39	0.00	22.80
29	3,907	3,915						
29			20	39.44	73.8	0.00	5.60	7.60
29			25	36.07	77.2	0.08	5.40	8.30
29			32	31.53	79.1	0.12	5.20	9.20
29			40	26.55	80.3	0.20	5.00	10.30
29			50	22.57	82.3	0.27	4.70	11.50
29			63	20.81	86.6	0.43	4.30	13.00
29			80	17.22	89.3	0.63	3.70	14.80
29			100	12.37	90.9	0.98	3.00	16.80
29			125	8.26	93.5	1.49	1.80	18.80
29			160	2.71	95.5	2.23	0.00	21.10
29			200	-1.47	96.5	3.21	0.00	22.80
3	1,889	1,903						
3			20	45.71	73.8	0.00	5.60	7.60
3			25	42.37	77.2	0.04	5.40	8.30
3			32	37.85	79.1	0.06	5.20	9.20
3			40	32.92	80.3	0.10	5.00	10.30
3			50	28.98	82.3	0.13	4.70	11.50
3			63	27.30	86.6	0.21	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	23.81	89.3	0.30	3.70	14.80
3			100	19.13	90.9	0.48	3.00	16.80
3			125	15.29	93.5	0.72	1.80	18.80
3			160	10.13	95.5	1.08	0.00	21.10
3			200	6.45	96.5	1.56	0.00	22.80
30	3,338	3,346						
30			20	40.81	73.8	0.00	5.60	7.60
30			25	37.44	77.2	0.07	5.40	8.30
30			32	32.91	79.1	0.10	5.20	9.20
30			40	27.94	80.3	0.17	5.00	10.30
30			50	23.98	82.3	0.23	4.70	11.50
30			63	22.24	86.6	0.37	4.30	13.00
30			80	18.68	89.3	0.54	3.70	14.80
30			100	13.87	90.9	0.84	3.00	16.80
30			125	9.84	93.5	1.27	1.80	18.80
30			160	4.40	95.5	1.91	0.00	21.10
30			200	0.37	96.5	2.74	0.00	22.80
31	3,985	3,991						
31			20	39.28	73.8	0.00	5.60	7.60
31			25	35.90	77.2	0.08	5.40	8.30
31			32	31.36	79.1	0.12	5.20	9.20
31			40	26.38	80.3	0.20	5.00	10.30
31			50	22.40	82.3	0.28	4.70	11.50
31			63	20.64	86.6	0.44	4.30	13.00
31			80	17.04	89.3	0.64	3.70	14.80
31			100	12.18	90.9	1.00	3.00	16.80
31			125	8.06	93.5	1.52	1.80	18.80
31			160	2.50	95.5	2.27	0.00	21.10
31			200	-1.69	96.5	3.27	0.00	22.80
32	3,333	3,341						
32			20	40.82	73.8	0.00	5.60	7.60
32			25	37.46	77.2	0.07	5.40	8.30
32			32	32.92	79.1	0.10	5.20	9.20
32			40	27.96	80.3	0.17	5.00	10.30
32			50	23.99	82.3	0.23	4.70	11.50
32			63	22.26	86.6	0.37	4.30	13.00
32			80	18.69	89.3	0.53	3.70	14.80
32			100	13.89	90.9	0.84	3.00	16.80
32			125	9.85	93.5	1.27	1.80	18.80
32			160	4.42	95.5	1.90	0.00	21.10
32			200	0.38	96.5	2.74	0.00	22.80
33	2,875	2,886						
33			20	42.09	73.8	0.00	5.60	7.60
33			25	38.74	77.2	0.06	5.40	8.30
33			32	34.21	79.1	0.09	5.20	9.20
33			40	29.25	80.3	0.14	5.00	10.30
33			50	25.29	82.3	0.20	4.70	11.50
33			63	23.58	86.6	0.32	4.30	13.00
33			80	20.03	89.3	0.46	3.70	14.80
33			100	15.27	90.9	0.72	3.00	16.80
33			125	11.30	93.5	1.10	1.80	18.80
33			160	5.95	95.5	1.64	0.00	21.10
33			200	2.03	96.5	2.37	0.00	22.80
4	2,138	2,151						
4			20	44.65	73.8	0.00	5.60	7.60
4			25	41.30	77.2	0.04	5.40	8.30
4			32	36.78	79.1	0.06	5.20	9.20
4			40	31.84	80.3	0.11	5.00	10.30
4			50	27.90	82.3	0.15	4.70	11.50
4			63	26.21	86.6	0.24	4.30	13.00
4			80	22.70	89.3	0.34	3.70	14.80
4			100	18.01	90.9	0.54	3.00	16.80
4			125	14.13	93.5	0.82	1.80	18.80
4			160	8.92	95.5	1.23	0.00	21.10

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			200	5.18	96.5	1.76	0.00	22.80
5	2,114	2,127						
5			20	44.74	73.8	0.00	5.60	7.60
5			25	41.40	77.2	0.04	5.40	8.30
5			32	36.88	79.1	0.06	5.20	9.20
5			40	31.94	80.3	0.11	5.00	10.30
5			50	28.00	82.3	0.15	4.70	11.50
5			63	26.31	86.6	0.23	4.30	13.00
5			80	22.80	89.3	0.34	3.70	14.80
5			100	18.11	90.9	0.53	3.00	16.80
5			125	14.24	93.5	0.81	1.80	18.80
5			160	9.03	95.5	1.21	0.00	21.10
5			200	5.30	96.5	1.74	0.00	22.80
6	3,571	3,579						
6			20	40.23	73.8	0.00	5.60	7.60
6			25	36.85	77.2	0.07	5.40	8.30
6			32	32.32	79.1	0.11	5.20	9.20
6			40	27.35	80.3	0.18	5.00	10.30
6			50	23.38	82.3	0.25	4.70	11.50
6			63	21.63	86.6	0.39	4.30	13.00
6			80	18.05	89.3	0.57	3.70	14.80
6			100	13.23	90.9	0.89	3.00	16.80
6			125	9.17	93.5	1.36	1.80	18.80
6			160	3.69	95.5	2.04	0.00	21.10
6			200	-0.41	96.5	2.93	0.00	22.80
7	3,170	3,178						
7			20	41.26	73.8	0.00	5.60	7.60
7			25	37.89	77.2	0.06	5.40	8.30
7			32	33.36	79.1	0.10	5.20	9.20
7			40	28.40	80.3	0.16	5.00	10.30
7			50	24.43	82.3	0.22	4.70	11.50
7			63	22.71	86.6	0.35	4.30	13.00
7			80	19.15	89.3	0.51	3.70	14.80
7			100	14.36	90.9	0.79	3.00	16.80
7			125	10.35	93.5	1.21	1.80	18.80
7			160	4.94	95.5	1.81	0.00	21.10
7			200	0.95	96.5	2.61	0.00	22.80
8	2,647	2,657						
8			20	42.81	73.8	0.00	5.60	7.60
8			25	39.46	77.2	0.05	5.40	8.30
8			32	34.93	79.1	0.08	5.20	9.20
8			40	29.98	80.3	0.13	5.00	10.30
8			50	26.03	82.3	0.19	4.70	11.50
8			63	24.32	86.6	0.29	4.30	13.00
8			80	20.79	89.3	0.43	3.70	14.80
8			100	16.05	90.9	0.66	3.00	16.80
8			125	12.10	93.5	1.01	1.80	18.80
8			160	6.80	95.5	1.51	0.00	21.10
8			200	2.93	96.5	2.18	0.00	22.80
9	2,499	2,509						
9			20	43.31	73.8	0.00	5.60	7.60
9			25	39.96	77.2	0.05	5.40	8.30
9			32	35.43	79.1	0.08	5.20	9.20
9			40	30.48	80.3	0.13	5.00	10.30
9			50	26.53	82.3	0.18	4.70	11.50
9			63	24.83	86.6	0.28	4.30	13.00
9			80	21.31	89.3	0.40	3.70	14.80
9			100	16.58	90.9	0.63	3.00	16.80
9			125	12.66	93.5	0.95	1.80	18.80
9			160	7.38	95.5	1.43	0.00	21.10
9			200	3.55	96.5	2.06	0.00	22.80
Sum								
Sum			20	56.34				
Sum			25	52.98				

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			32	48.45				
Sum			40	43.49				
Sum			50	39.53				
Sum			63	37.81				
Sum			80	34.26				
Sum			100	29.49				
Sum			125	25.50				
Sum			160	20.14				
Sum			200	16.21				

Noise sensitive area: RH Mäntylä Noise sensitive point: Finnish normal frequency - User defined (317)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,973	3,979						
1			20	39.30	73.8	0.00	5.60	7.60
1			25	35.92	77.2	0.08	5.40	8.30
1			32	31.38	79.1	0.12	5.20	9.20
1			40	26.41	80.3	0.20	5.00	10.30
1			50	22.43	82.3	0.28	4.70	11.50
1			63	20.67	86.6	0.44	4.30	13.00
1			80	17.07	89.3	0.64	3.70	14.80
1			100	12.21	90.9	0.99	3.00	16.80
1			125	8.09	93.5	1.51	1.80	18.80
1			160	2.54	95.5	2.27	0.00	21.10
1			200	-1.66	96.5	3.26	0.00	22.80
10	1,824	1,838						
10			20	46.01	73.8	0.00	5.60	7.60
10			25	42.68	77.2	0.04	5.40	8.30
10			32	38.16	79.1	0.06	5.20	9.20
10			40	33.22	80.3	0.09	5.00	10.30
10			50	29.29	82.3	0.13	4.70	11.50
10			63	27.61	86.6	0.20	4.30	13.00
10			80	24.12	89.3	0.29	3.70	14.80
10			100	19.45	90.9	0.46	3.00	16.80
10			125	15.62	93.5	0.70	1.80	18.80
10			160	10.47	95.5	1.05	0.00	21.10
10			200	6.81	96.5	1.51	0.00	22.80
11	2,433	2,444						
11			20	43.54	73.8	0.00	5.60	7.60
11			25	40.19	77.2	0.05	5.40	8.30
11			32	35.66	79.1	0.07	5.20	9.20
11			40	30.72	80.3	0.12	5.00	10.30
11			50	26.77	82.3	0.17	4.70	11.50
11			63	25.07	86.6	0.27	4.30	13.00
11			80	21.55	89.3	0.39	3.70	14.80
11			100	16.83	90.9	0.61	3.00	16.80
11			125	12.91	93.5	0.93	1.80	18.80
11			160	7.64	95.5	1.39	0.00	21.10
11			200	3.83	96.5	2.00	0.00	22.80
12	1,543	1,559						
12			20	47.44	73.8	0.00	5.60	7.60
12			25	44.11	77.2	0.03	5.40	8.30
12			32	39.60	79.1	0.05	5.20	9.20
12			40	34.66	80.3	0.08	5.00	10.30
12			50	30.73	82.3	0.11	4.70	11.50
12			63	29.07	86.6	0.17	4.30	13.00
12			80	25.59	89.3	0.25	3.70	14.80
12			100	20.95	90.9	0.39	3.00	16.80
12			125	17.15	93.5	0.59	1.80	18.80
12			160	12.05	95.5	0.89	0.00	21.10
12			200	8.46	96.5	1.28	0.00	22.80
13	2,391	2,402						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			20	43.69	73.8	0.00	5.60	7.60
13			25	40.34	77.2	0.05	5.40	8.30
13			32	35.82	79.1	0.07	5.20	9.20
13			40	30.87	80.3	0.12	5.00	10.30
13			50	26.92	82.3	0.17	4.70	11.50
13			63	25.23	86.6	0.26	4.30	13.00
13			80	21.71	89.3	0.38	3.70	14.80
13			100	16.99	90.9	0.60	3.00	16.80
13			125	13.08	93.5	0.91	1.80	18.80
13			160	7.82	95.5	1.37	0.00	21.10
13			200	4.02	96.5	1.97	0.00	22.80
14	3,489	3,496						
14			20	40.43	73.8	0.00	5.60	7.60
14			25	37.06	77.2	0.07	5.40	8.30
14			32	32.52	79.1	0.10	5.20	9.20
14			40	27.55	80.3	0.17	5.00	10.30
14			50	23.58	82.3	0.24	4.70	11.50
14			63	21.84	86.6	0.38	4.30	13.00
14			80	18.27	89.3	0.56	3.70	14.80
14			100	13.45	90.9	0.87	3.00	16.80
14			125	9.40	93.5	1.33	1.80	18.80
14			160	3.94	95.5	1.99	0.00	21.10
14			200	-0.14	96.5	2.87	0.00	22.80
15	2,100	2,112						
15			20	44.81	73.8	0.00	5.60	7.60
15			25	41.46	77.2	0.04	5.40	8.30
15			32	36.94	79.1	0.06	5.20	9.20
15			40	32.00	80.3	0.11	5.00	10.30
15			50	28.06	82.3	0.15	4.70	11.50
15			63	26.37	86.6	0.23	4.30	13.00
15			80	22.87	89.3	0.34	3.70	14.80
15			100	18.18	90.9	0.53	3.00	16.80
15			125	14.30	93.5	0.80	1.80	18.80
15			160	9.10	95.5	1.20	0.00	21.10
15			200	5.38	96.5	1.73	0.00	22.80
16	2,904	2,912						
16			20	42.02	73.8	0.00	5.60	7.60
16			25	38.66	77.2	0.06	5.40	8.30
16			32	34.13	79.1	0.09	5.20	9.20
16			40	29.17	80.3	0.15	5.00	10.30
16			50	25.21	82.3	0.20	4.70	11.50
16			63	23.50	86.6	0.32	4.30	13.00
16			80	19.95	89.3	0.47	3.70	14.80
16			100	15.19	90.9	0.73	3.00	16.80
16			125	11.21	93.5	1.11	1.80	18.80
16			160	5.86	95.5	1.66	0.00	21.10
16			200	1.93	96.5	2.39	0.00	22.80
17	3,479	3,488						
17			20	40.45	73.8	0.00	5.60	7.60
17			25	37.08	77.2	0.07	5.40	8.30
17			32	32.54	79.1	0.10	5.20	9.20
17			40	27.57	80.3	0.17	5.00	10.30
17			50	23.60	82.3	0.24	4.70	11.50
17			63	21.87	86.6	0.38	4.30	13.00
17			80	18.29	89.3	0.56	3.70	14.80
17			100	13.48	90.9	0.87	3.00	16.80
17			125	9.42	93.5	1.33	1.80	18.80
17			160	3.96	95.5	1.99	0.00	21.10
17			200	-0.11	96.5	2.86	0.00	22.80
18	3,522	3,531						
18			20	40.34	73.8	0.00	5.60	7.60
18			25	36.97	77.2	0.07	5.40	8.30
18			32	32.44	79.1	0.11	5.20	9.20
18			40	27.47	80.3	0.18	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			50	23.50	82.3	0.25	4.70	11.50
18			63	21.75	86.6	0.39	4.30	13.00
18			80	18.18	89.3	0.56	3.70	14.80
18			100	13.36	90.9	0.88	3.00	16.80
18			125	9.30	93.5	1.34	1.80	18.80
18			160	3.83	95.5	2.01	0.00	21.10
18			200	-0.25	96.5	2.90	0.00	22.80
19	2,557	2,566						
19			20	43.11	73.8	0.00	5.60	7.60
19			25	39.76	77.2	0.05	5.40	8.30
19			32	35.24	79.1	0.08	5.20	9.20
19			40	30.29	80.3	0.13	5.00	10.30
19			50	26.34	82.3	0.18	4.70	11.50
19			63	24.63	86.6	0.28	4.30	13.00
19			80	21.10	89.3	0.41	3.70	14.80
19			100	16.37	90.9	0.64	3.00	16.80
19			125	12.44	93.5	0.98	1.80	18.80
19			160	7.15	95.5	1.46	0.00	21.10
19			200	3.31	96.5	2.10	0.00	22.80
2	3,111	3,118						
2			20	41.42	73.8	0.00	5.60	7.60
2			25	38.06	77.2	0.06	5.40	8.30
2			32	33.53	79.1	0.09	5.20	9.20
2			40	28.57	80.3	0.16	5.00	10.30
2			50	24.60	82.3	0.22	4.70	11.50
2			63	22.88	86.6	0.34	4.30	13.00
2			80	19.32	89.3	0.50	3.70	14.80
2			100	14.54	90.9	0.78	3.00	16.80
2			125	10.54	93.5	1.19	1.80	18.80
2			160	5.14	95.5	1.78	0.00	21.10
2			200	1.16	96.5	2.56	0.00	22.80
20	3,161	3,168						
20			20	41.28	73.8	0.00	5.60	7.60
20			25	37.92	77.2	0.06	5.40	8.30
20			32	33.39	79.1	0.10	5.20	9.20
20			40	28.42	80.3	0.16	5.00	10.30
20			50	24.46	82.3	0.22	4.70	11.50
20			63	22.73	86.6	0.35	4.30	13.00
20			80	19.18	89.3	0.51	3.70	14.80
20			100	14.39	90.9	0.79	3.00	16.80
20			125	10.38	93.5	1.20	1.80	18.80
20			160	4.98	95.5	1.81	0.00	21.10
20			200	0.99	96.5	2.60	0.00	22.80
21	4,093	4,102						
21			20	39.04	73.8	0.00	5.60	7.60
21			25	35.66	77.2	0.08	5.40	8.30
21			32	31.12	79.1	0.12	5.20	9.20
21			40	26.14	80.3	0.21	5.00	10.30
21			50	22.15	82.3	0.29	4.70	11.50
21			63	20.39	86.6	0.45	4.30	13.00
21			80	16.78	89.3	0.66	3.70	14.80
21			100	11.92	90.9	1.03	3.00	16.80
21			125	7.78	93.5	1.56	1.80	18.80
21			160	2.20	95.5	2.34	0.00	21.10
21			200	-2.02	96.5	3.36	0.00	22.80
22	4,666	4,672						
22			20	37.91	73.8	0.00	5.60	7.60
22			25	34.52	77.2	0.09	5.40	8.30
22			32	29.97	79.1	0.14	5.20	9.20
22			40	24.98	80.3	0.23	5.00	10.30
22			50	20.98	82.3	0.33	4.70	11.50
22			63	19.20	86.6	0.51	4.30	13.00
22			80	15.56	89.3	0.75	3.70	14.80
22			100	10.64	90.9	1.17	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			125	6.43	93.5	1.78	1.80	18.80
22			160	0.75	95.5	2.66	0.00	21.10
22			200	-3.62	96.5	3.83	0.00	22.80
23	5,053	5,058						
23			20	37.22	73.8	0.00	5.60	7.60
23			25	33.82	77.2	0.10	5.40	8.30
23			32	29.27	79.1	0.15	5.20	9.20
23			40	24.27	80.3	0.25	5.00	10.30
23			50	20.27	82.3	0.35	4.70	11.50
23			63	18.46	86.6	0.56	4.30	13.00
23			80	14.81	89.3	0.81	3.70	14.80
23			100	9.86	90.9	1.26	3.00	16.80
23			125	5.60	93.5	1.92	1.80	18.80
23			160	-0.16	95.5	2.88	0.00	21.10
23			200	-4.63	96.5	4.15	0.00	22.80
24	3,843	3,851						
24			20	39.59	73.8	0.00	5.60	7.60
24			25	36.21	77.2	0.08	5.40	8.30
24			32	31.67	79.1	0.12	5.20	9.20
24			40	26.70	80.3	0.19	5.00	10.30
24			50	22.72	82.3	0.27	4.70	11.50
24			63	20.97	86.6	0.42	4.30	13.00
24			80	17.37	89.3	0.62	3.70	14.80
24			100	12.53	90.9	0.96	3.00	16.80
24			125	8.43	93.5	1.46	1.80	18.80
24			160	2.89	95.5	2.19	0.00	21.10
24			200	-1.27	96.5	3.16	0.00	22.80
25	3,772	3,779						
25			20	39.75	73.8	0.00	5.60	7.60
25			25	36.38	77.2	0.08	5.40	8.30
25			32	31.84	79.1	0.11	5.20	9.20
25			40	26.86	80.3	0.19	5.00	10.30
25			50	22.89	82.3	0.26	4.70	11.50
25			63	21.14	86.6	0.42	4.30	13.00
25			80	17.55	89.3	0.60	3.70	14.80
25			100	12.71	90.9	0.94	3.00	16.80
25			125	8.62	93.5	1.44	1.80	18.80
25			160	3.10	95.5	2.15	0.00	21.10
25			200	-1.05	96.5	3.10	0.00	22.80
26	4,313	4,321						
26			20	38.59	73.8	0.00	5.60	7.60
26			25	35.20	77.2	0.09	5.40	8.30
26			32	30.66	79.1	0.13	5.20	9.20
26			40	25.67	80.3	0.22	5.00	10.30
26			50	21.69	82.3	0.30	4.70	11.50
26			63	19.91	86.6	0.48	4.30	13.00
26			80	16.30	89.3	0.69	3.70	14.80
26			100	11.41	90.9	1.08	3.00	16.80
26			125	7.25	93.5	1.64	1.80	18.80
26			160	1.63	95.5	2.46	0.00	21.10
26			200	-2.65	96.5	3.54	0.00	22.80
27	4,764	4,770						
27			20	37.73	73.8	0.00	5.60	7.60
27			25	34.33	77.2	0.10	5.40	8.30
27			32	29.79	79.1	0.14	5.20	9.20
27			40	24.79	80.3	0.24	5.00	10.30
27			50	20.79	82.3	0.33	4.70	11.50
27			63	19.00	86.6	0.52	4.30	13.00
27			80	15.37	89.3	0.76	3.70	14.80
27			100	10.44	90.9	1.19	3.00	16.80
27			125	6.22	93.5	1.81	1.80	18.80
27			160	0.51	95.5	2.72	0.00	21.10
27			200	-3.88	96.5	3.91	0.00	22.80
28	5,230	5,235						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			20	36.92	73.8	0.00	5.60	7.60
28			25	33.52	77.2	0.10	5.40	8.30
28			32	28.96	79.1	0.16	5.20	9.20
28			40	23.96	80.3	0.26	5.00	10.30
28			50	19.95	82.3	0.37	4.70	11.50
28			63	18.14	86.6	0.58	4.30	13.00
28			80	14.48	89.3	0.84	3.70	14.80
28			100	9.51	90.9	1.31	3.00	16.80
28			125	5.23	93.5	1.99	1.80	18.80
28			160	-0.56	95.5	2.98	0.00	21.10
28			200	-5.07	96.5	4.29	0.00	22.80
29	5,747	5,752						
29			20	36.10	73.8	0.00	5.60	7.60
29			25	32.69	77.2	0.12	5.40	8.30
29			32	28.13	79.1	0.17	5.20	9.20
29			40	23.12	80.3	0.29	5.00	10.30
29			50	19.10	82.3	0.40	4.70	11.50
29			63	17.27	86.6	0.63	4.30	13.00
29			80	13.58	89.3	0.92	3.70	14.80
29			100	8.57	90.9	1.44	3.00	16.80
29			125	4.22	93.5	2.19	1.80	18.80
29			160	-1.67	95.5	3.28	0.00	21.10
29			200	-6.31	96.5	4.72	0.00	22.80
3	3,727	3,734						
3			20	39.86	73.8	0.00	5.60	7.60
3			25	36.48	77.2	0.07	5.40	8.30
3			32	31.95	79.1	0.11	5.20	9.20
3			40	26.97	80.3	0.19	5.00	10.30
3			50	23.00	82.3	0.26	4.70	11.50
3			63	21.25	86.6	0.41	4.30	13.00
3			80	17.66	89.3	0.60	3.70	14.80
3			100	12.82	90.9	0.93	3.00	16.80
3			125	8.74	93.5	1.42	1.80	18.80
3			160	3.23	95.5	2.13	0.00	21.10
3			200	-0.90	96.5	3.06	0.00	22.80
30	5,849	5,853						
30			20	35.95	73.8	0.00	5.60	7.60
30			25	32.54	77.2	0.12	5.40	8.30
30			32	27.98	79.1	0.18	5.20	9.20
30			40	22.96	80.3	0.29	5.00	10.30
30			50	18.94	82.3	0.41	4.70	11.50
30			63	17.11	86.6	0.64	4.30	13.00
30			80	13.42	89.3	0.94	3.70	14.80
30			100	8.39	90.9	1.46	3.00	16.80
30			125	4.03	93.5	2.22	1.80	18.80
30			160	-1.88	95.5	3.34	0.00	21.10
30			200	-6.55	96.5	4.80	0.00	22.80
31	6,250	6,254						
31			20	35.38	73.8	0.00	5.60	7.60
31			25	31.95	77.2	0.13	5.40	8.30
31			32	27.39	79.1	0.19	5.20	9.20
31			40	22.36	80.3	0.31	5.00	10.30
31			50	18.34	82.3	0.44	4.70	11.50
31			63	16.49	86.6	0.69	4.30	13.00
31			80	12.78	89.3	1.00	3.70	14.80
31			100	7.71	90.9	1.56	3.00	16.80
31			125	3.30	93.5	2.38	1.80	18.80
31			160	-2.69	95.5	3.56	0.00	21.10
31			200	-7.45	96.5	5.13	0.00	22.80
32	6,432	6,435						
32			20	35.13	73.8	0.00	5.60	7.60
32			25	31.70	77.2	0.13	5.40	8.30
32			32	27.14	79.1	0.19	5.20	9.20
32			40	22.11	80.3	0.32	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			50	18.08	82.3	0.45	4.70	11.50
32			63	16.22	86.6	0.71	4.30	13.00
32			80	12.50	89.3	1.03	3.70	14.80
32			100	7.42	90.9	1.61	3.00	16.80
32			125	2.98	93.5	2.45	1.80	18.80
32			160	-3.04	95.5	3.67	0.00	21.10
32			200	-7.85	96.5	5.28	0.00	22.80
33	6,627	6,632						
33			20	34.87	73.8	0.00	5.60	7.60
33			25	31.44	77.2	0.13	5.40	8.30
33			32	26.87	79.1	0.20	5.20	9.20
33			40	21.84	80.3	0.33	5.00	10.30
33			50	17.80	82.3	0.46	4.70	11.50
33			63	15.94	86.6	0.73	4.30	13.00
33			80	12.21	89.3	1.06	3.70	14.80
33			100	7.11	90.9	1.66	3.00	16.80
33			125	2.65	93.5	2.52	1.80	18.80
33			160	-3.41	95.5	3.78	0.00	21.10
33			200	-8.27	96.5	5.44	0.00	22.80
4	3,567	3,574						
4			20	40.24	73.8	0.00	5.60	7.60
4			25	36.86	77.2	0.07	5.40	8.30
4			32	32.33	79.1	0.11	5.20	9.20
4			40	27.36	80.3	0.18	5.00	10.30
4			50	23.39	82.3	0.25	4.70	11.50
4			63	21.64	86.6	0.39	4.30	13.00
4			80	18.06	89.3	0.57	3.70	14.80
4			100	13.24	90.9	0.89	3.00	16.80
4			125	9.18	93.5	1.36	1.80	18.80
4			160	3.70	95.5	2.04	0.00	21.10
4			200	-0.40	96.5	2.93	0.00	22.80
5	3,885	3,892						
5			20	39.50	73.8	0.00	5.60	7.60
5			25	36.12	77.2	0.08	5.40	8.30
5			32	31.58	79.1	0.12	5.20	9.20
5			40	26.60	80.3	0.19	5.00	10.30
5			50	22.62	82.3	0.27	4.70	11.50
5			63	20.87	86.6	0.43	4.30	13.00
5			80	17.27	89.3	0.62	3.70	14.80
5			100	12.42	90.9	0.97	3.00	16.80
5			125	8.32	93.5	1.48	1.80	18.80
5			160	2.78	95.5	2.22	0.00	21.10
5			200	-1.39	96.5	3.19	0.00	22.80
6	2,205	2,217						
6			20	44.39	73.8	0.00	5.60	7.60
6			25	41.04	77.2	0.04	5.40	8.30
6			32	36.52	79.1	0.07	5.20	9.20
6			40	31.57	80.3	0.11	5.00	10.30
6			50	27.63	82.3	0.16	4.70	11.50
6			63	25.94	86.6	0.24	4.30	13.00
6			80	22.43	89.3	0.35	3.70	14.80
6			100	17.73	90.9	0.55	3.00	16.80
6			125	13.84	93.5	0.84	1.80	18.80
6			160	8.62	95.5	1.26	0.00	21.10
6			200	4.87	96.5	1.82	0.00	22.80
7	2,830	2,838						
7			20	42.24	73.8	0.00	5.60	7.60
7			25	38.88	77.2	0.06	5.40	8.30
7			32	34.35	79.1	0.09	5.20	9.20
7			40	29.40	80.3	0.14	5.00	10.30
7			50	25.44	82.3	0.20	4.70	11.50
7			63	23.73	86.6	0.31	4.30	13.00
7			80	20.18	89.3	0.45	3.70	14.80
7			100	15.43	90.9	0.71	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	11.46	93.5	1.08	1.80	18.80
7			160	6.12	95.5	1.62	0.00	21.10
7			200	2.21	96.5	2.33	0.00	22.80
8	3,359	3,366						
8			20	40.76	73.8	0.00	5.60	7.60
8			25	37.39	77.2	0.07	5.40	8.30
8			32	32.86	79.1	0.10	5.20	9.20
8			40	27.89	80.3	0.17	5.00	10.30
8			50	23.92	82.3	0.24	4.70	11.50
8			63	22.19	86.6	0.37	4.30	13.00
8			80	18.62	89.3	0.54	3.70	14.80
8			100	13.82	90.9	0.84	3.00	16.80
8			125	9.78	93.5	1.28	1.80	18.80
8			160	4.34	95.5	1.92	0.00	21.10
8			200	0.30	96.5	2.76	0.00	22.80
9	3,980	3,986						
9			20	39.29	73.8	0.00	5.60	7.60
9			25	35.91	77.2	0.08	5.40	8.30
9			32	31.37	79.1	0.12	5.20	9.20
9			40	26.39	80.3	0.20	5.00	10.30
9			50	22.41	82.3	0.28	4.70	11.50
9			63	20.65	86.6	0.44	4.30	13.00
9			80	17.05	89.3	0.64	3.70	14.80
9			100	12.19	90.9	1.00	3.00	16.80
9			125	8.07	93.5	1.51	1.80	18.80
9			160	2.52	95.5	2.27	0.00	21.10
9			200	-1.68	96.5	3.27	0.00	22.80
Sum								
Sum			20	56.48				
Sum			25	53.12				
Sum			32	48.59				
Sum			40	43.63				
Sum			50	39.67				
Sum			63	37.95				
Sum			80	34.41				
Sum			100	29.65				
Sum			125	25.68				
Sum			160	20.34				
Sum			200	16.45				

Noise sensitive area: RH Mikkola Noise sensitive point: Finnish normal frequency - User defined (328)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,376	5,381						
1			20	36.68	73.8	0.00	5.60	7.60
1			25	33.27	77.2	0.11	5.40	8.30
1			32	28.72	79.1	0.16	5.20	9.20
1			40	23.71	80.3	0.27	5.00	10.30
1			50	19.71	82.3	0.38	4.70	11.50
1			63	17.89	86.6	0.59	4.30	13.00
1			80	14.22	89.3	0.86	3.70	14.80
1			100	9.24	90.9	1.35	3.00	16.80
1			125	4.94	93.5	2.04	1.80	18.80
1			160	-0.88	95.5	3.07	0.00	21.10
1			200	-5.43	96.5	4.41	0.00	22.80
10	6,131	6,136						
10			20	35.54	73.8	0.00	5.60	7.60
10			25	32.12	77.2	0.12	5.40	8.30
10			32	27.56	79.1	0.18	5.20	9.20
10			40	22.54	80.3	0.31	5.00	10.30
10			50	18.51	82.3	0.43	4.70	11.50
10			63	16.67	86.6	0.67	4.30	13.00

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wpd AG
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DE-28211 Bremen
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Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	12.96	89.3	0.98	3.70	14.80
10			100	7.91	90.9	1.53	3.00	16.80
10			125	3.51	93.5	2.33	1.80	18.80
10			160	-2.45	95.5	3.50	0.00	21.10
10			200	-7.19	96.5	5.03	0.00	22.80
11	5,513	5,519						
11			20	36.46	73.8	0.00	5.60	7.60
11			25	33.05	77.2	0.11	5.40	8.30
11			32	28.50	79.1	0.17	5.20	9.20
11			40	23.49	80.3	0.28	5.00	10.30
11			50	19.48	82.3	0.39	4.70	11.50
11			63	17.66	86.6	0.61	4.30	13.00
11			80	13.98	89.3	0.88	3.70	14.80
11			100	8.98	90.9	1.38	3.00	16.80
11			125	4.67	93.5	2.10	1.80	18.80
11			160	-1.18	95.5	3.15	0.00	21.10
11			200	-5.76	96.5	4.53	0.00	22.80
12	6,557	6,562						
12			20	34.96	73.8	0.00	5.60	7.60
12			25	31.53	77.2	0.13	5.40	8.30
12			32	26.96	79.1	0.20	5.20	9.20
12			40	21.93	80.3	0.33	5.00	10.30
12			50	17.90	82.3	0.46	4.70	11.50
12			63	16.04	86.6	0.72	4.30	13.00
12			80	12.31	89.3	1.05	3.70	14.80
12			100	7.22	90.9	1.64	3.00	16.80
12			125	2.77	93.5	2.49	1.80	18.80
12			160	-3.28	95.5	3.74	0.00	21.10
12			200	-8.12	96.5	5.38	0.00	22.80
13	5,707	5,712						
13			20	36.16	73.8	0.00	5.60	7.60
13			25	32.75	77.2	0.11	5.40	8.30
13			32	28.19	79.1	0.17	5.20	9.20
13			40	23.18	80.3	0.29	5.00	10.30
13			50	19.16	82.3	0.40	4.70	11.50
13			63	17.34	86.6	0.63	4.30	13.00
13			80	13.65	89.3	0.91	3.70	14.80
13			100	8.64	90.9	1.43	3.00	16.80
13			125	4.29	93.5	2.17	1.80	18.80
13			160	-1.59	95.5	3.26	0.00	21.10
13			200	-6.22	96.5	4.68	0.00	22.80
14	4,461	4,467						
14			20	38.30	73.8	0.00	5.60	7.60
14			25	34.91	77.2	0.09	5.40	8.30
14			32	30.37	79.1	0.13	5.20	9.20
14			40	25.38	80.3	0.22	5.00	10.30
14			50	21.39	82.3	0.31	4.70	11.50
14			63	19.61	86.6	0.49	4.30	13.00
14			80	15.98	89.3	0.71	3.70	14.80
14			100	11.08	90.9	1.12	3.00	16.80
14			125	6.90	93.5	1.70	1.80	18.80
14			160	1.25	95.5	2.55	0.00	21.10
14			200	-3.06	96.5	3.66	0.00	22.80
15	6,220	6,224						
15			20	35.42	73.8	0.00	5.60	7.60
15			25	31.99	77.2	0.12	5.40	8.30
15			32	27.43	79.1	0.19	5.20	9.20
15			40	22.41	80.3	0.31	5.00	10.30
15			50	18.38	82.3	0.44	4.70	11.50
15			63	16.53	86.6	0.68	4.30	13.00
15			80	12.82	89.3	1.00	3.70	14.80
15			100	7.76	90.9	1.56	3.00	16.80
15			125	3.35	93.5	2.37	1.80	18.80
15			160	-2.63	95.5	3.55	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	-7.39	96.5	5.10	0.00	22.80
16	5,366	5,372						
16			20	36.70	73.8	0.00	5.60	7.60
16			25	33.29	77.2	0.11	5.40	8.30
16			32	28.74	79.1	0.16	5.20	9.20
16			40	23.73	80.3	0.27	5.00	10.30
16			50	19.72	82.3	0.38	4.70	11.50
16			63	17.91	86.6	0.59	4.30	13.00
16			80	14.24	89.3	0.86	3.70	14.80
16			100	9.25	90.9	1.34	3.00	16.80
16			125	4.96	93.5	2.04	1.80	18.80
16			160	-0.86	95.5	3.06	0.00	21.10
16			200	-5.41	96.5	4.40	0.00	22.80
17	4,692	4,699						
17			20	37.86	73.8	0.00	5.60	7.60
17			25	34.47	77.2	0.09	5.40	8.30
17			32	29.92	79.1	0.14	5.20	9.20
17			40	24.92	80.3	0.23	5.00	10.30
17			50	20.93	82.3	0.33	4.70	11.50
17			63	19.14	86.6	0.52	4.30	13.00
17			80	15.51	89.3	0.75	3.70	14.80
17			100	10.58	90.9	1.17	3.00	16.80
17			125	6.37	93.5	1.79	1.80	18.80
17			160	0.68	95.5	2.68	0.00	21.10
17			200	-3.69	96.5	3.85	0.00	22.80
18	4,474	4,482						
18			20	38.27	73.8	0.00	5.60	7.60
18			25	34.88	77.2	0.09	5.40	8.30
18			32	30.34	79.1	0.13	5.20	9.20
18			40	25.35	80.3	0.22	5.00	10.30
18			50	21.36	82.3	0.31	4.70	11.50
18			63	19.58	86.6	0.49	4.30	13.00
18			80	15.95	89.3	0.72	3.70	14.80
18			100	11.05	90.9	1.12	3.00	16.80
18			125	6.87	93.5	1.70	1.80	18.80
18			160	1.22	95.5	2.55	0.00	21.10
18			200	-3.10	96.5	3.67	0.00	22.80
19	6,096	6,100						
19			20	35.59	73.8	0.00	5.60	7.60
19			25	32.17	77.2	0.12	5.40	8.30
19			32	27.61	79.1	0.18	5.20	9.20
19			40	22.59	80.3	0.31	5.00	10.30
19			50	18.57	82.3	0.43	4.70	11.50
19			63	16.72	86.6	0.67	4.30	13.00
19			80	13.02	89.3	0.98	3.70	14.80
19			100	7.97	90.9	1.53	3.00	16.80
19			125	3.58	93.5	2.32	1.80	18.80
19			160	-2.38	95.5	3.48	0.00	21.10
19			200	-7.11	96.5	5.00	0.00	22.80
2	5,385	5,390						
2			20	36.67	73.8	0.00	5.60	7.60
2			25	33.26	77.2	0.11	5.40	8.30
2			32	28.71	79.1	0.16	5.20	9.20
2			40	23.70	80.3	0.27	5.00	10.30
2			50	19.69	82.3	0.38	4.70	11.50
2			63	17.88	86.6	0.59	4.30	13.00
2			80	14.21	89.3	0.86	3.70	14.80
2			100	9.22	90.9	1.35	3.00	16.80
2			125	4.92	93.5	2.05	1.80	18.80
2			160	-0.90	95.5	3.07	0.00	21.10
2			200	-5.45	96.5	4.42	0.00	22.80
20	5,602	5,607						
20			20	36.33	73.8	0.00	5.60	7.60
20			25	32.91	77.2	0.11	5.40	8.30

To be continued on next page...

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DE-28211 Bremen
+49 7142 77810
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	28.36	79.1	0.17	5.20	9.20
20			40	23.34	80.3	0.28	5.00	10.30
20			50	19.33	82.3	0.39	4.70	11.50
20			63	17.51	86.6	0.62	4.30	13.00
20			80	13.83	89.3	0.90	3.70	14.80
20			100	8.82	90.9	1.40	3.00	16.80
20			125	4.49	93.5	2.13	1.80	18.80
20			160	-1.37	95.5	3.20	0.00	21.10
20			200	-5.97	96.5	4.60	0.00	22.80
21	4,123	4,133						
21			20	38.97	73.8	0.00	5.60	7.60
21			25	35.59	77.2	0.08	5.40	8.30
21			32	31.05	79.1	0.12	5.20	9.20
21			40	26.07	80.3	0.21	5.00	10.30
21			50	22.08	82.3	0.29	4.70	11.50
21			63	20.32	86.6	0.45	4.30	13.00
21			80	16.71	89.3	0.66	3.70	14.80
21			100	11.84	90.9	1.03	3.00	16.80
21			125	7.70	93.5	1.57	1.80	18.80
21			160	2.12	95.5	2.36	0.00	21.10
21			200	-2.11	96.5	3.39	0.00	22.80
22	3,580	3,589						
22			20	40.20	73.8	0.00	5.60	7.60
22			25	36.83	77.2	0.07	5.40	8.30
22			32	32.29	79.1	0.11	5.20	9.20
22			40	27.32	80.3	0.18	5.00	10.30
22			50	23.35	82.3	0.25	4.70	11.50
22			63	21.61	86.6	0.39	4.30	13.00
22			80	18.03	89.3	0.57	3.70	14.80
22			100	13.20	90.9	0.90	3.00	16.80
22			125	9.14	93.5	1.36	1.80	18.80
22			160	3.66	95.5	2.05	0.00	21.10
22			200	-0.44	96.5	2.94	0.00	22.80
23	3,008	3,017						
23			20	41.71	73.8	0.00	5.60	7.60
23			25	38.35	77.2	0.06	5.40	8.30
23			32	33.82	79.1	0.09	5.20	9.20
23			40	28.86	80.3	0.15	5.00	10.30
23			50	24.90	82.3	0.21	4.70	11.50
23			63	23.18	86.6	0.33	4.30	13.00
23			80	19.62	89.3	0.48	3.70	14.80
23			100	14.85	90.9	0.75	3.00	16.80
23			125	10.86	93.5	1.15	1.80	18.80
23			160	5.49	95.5	1.72	0.00	21.10
23			200	1.53	96.5	2.47	0.00	22.80
24	5,155	5,162						
24			20	37.04	73.8	0.00	5.60	7.60
24			25	33.64	77.2	0.10	5.40	8.30
24			32	29.09	79.1	0.15	5.20	9.20
24			40	24.09	80.3	0.26	5.00	10.30
24			50	20.08	82.3	0.36	4.70	11.50
24			63	18.28	86.6	0.57	4.30	13.00
24			80	14.62	89.3	0.83	3.70	14.80
24			100	9.65	90.9	1.29	3.00	16.80
24			125	5.38	93.5	1.96	1.80	18.80
24			160	-0.40	95.5	2.94	0.00	21.10
24			200	-4.89	96.5	4.23	0.00	22.80
25	4,755	4,762						
25			20	37.74	73.8	0.00	5.60	7.60
25			25	34.35	77.2	0.10	5.40	8.30
25			32	29.80	79.1	0.14	5.20	9.20
25			40	24.81	80.3	0.24	5.00	10.30
25			50	20.81	82.3	0.33	4.70	11.50
25			63	19.02	86.6	0.52	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			80	15.38	89.3	0.76	3.70	14.80
25			100	10.45	90.9	1.19	3.00	16.80
25			125	6.23	93.5	1.81	1.80	18.80
25			160	0.53	95.5	2.71	0.00	21.10
25			200	-3.86	96.5	3.90	0.00	22.80
26	4,305	4,314						
26			20	38.60	73.8	0.00	5.60	7.60
26			25	35.22	77.2	0.09	5.40	8.30
26			32	30.67	79.1	0.13	5.20	9.20
26			40	25.69	80.3	0.22	5.00	10.30
26			50	21.70	82.3	0.30	4.70	11.50
26			63	19.93	86.6	0.47	4.30	13.00
26			80	16.31	89.3	0.69	3.70	14.80
26			100	11.42	90.9	1.08	3.00	16.80
26			125	7.26	93.5	1.64	1.80	18.80
26			160	1.64	95.5	2.46	0.00	21.10
26			200	-2.64	96.5	3.54	0.00	22.80
27	3,835	3,844						
27			20	39.60	73.8	0.00	5.60	7.60
27			25	36.23	77.2	0.08	5.40	8.30
27			32	31.69	79.1	0.12	5.20	9.20
27			40	26.71	80.3	0.19	5.00	10.30
27			50	22.73	82.3	0.27	4.70	11.50
27			63	20.98	86.6	0.42	4.30	13.00
27			80	17.39	89.3	0.62	3.70	14.80
27			100	12.54	90.9	0.96	3.00	16.80
27			125	8.44	93.5	1.46	1.80	18.80
27			160	2.91	95.5	2.19	0.00	21.10
27			200	-1.25	96.5	3.15	0.00	22.80
28	3,199	3,208						
28			20	41.17	73.8	0.00	5.60	7.60
28			25	37.81	77.2	0.06	5.40	8.30
28			32	33.28	79.1	0.10	5.20	9.20
28			40	28.31	80.3	0.16	5.00	10.30
28			50	24.35	82.3	0.22	4.70	11.50
28			63	22.62	86.6	0.35	4.30	13.00
28			80	19.06	89.3	0.51	3.70	14.80
28			100	14.27	90.9	0.80	3.00	16.80
28			125	10.25	93.5	1.22	1.80	18.80
28			160	4.85	95.5	1.83	0.00	21.10
28			200	0.84	96.5	2.63	0.00	22.80
29	2,539	2,552						
29			20	43.16	73.8	0.00	5.60	7.60
29			25	39.81	77.2	0.05	5.40	8.30
29			32	35.29	79.1	0.08	5.20	9.20
29			40	30.33	80.3	0.13	5.00	10.30
29			50	26.38	82.3	0.18	4.70	11.50
29			63	24.68	86.6	0.28	4.30	13.00
29			80	21.15	89.3	0.41	3.70	14.80
29			100	16.42	90.9	0.64	3.00	16.80
29			125	12.49	93.5	0.97	1.80	18.80
29			160	7.21	95.5	1.45	0.00	21.10
29			200	3.37	96.5	2.09	0.00	22.80
3	5,065	5,071						
3			20	37.20	73.8	0.00	5.60	7.60
3			25	33.80	77.2	0.10	5.40	8.30
3			32	29.25	79.1	0.15	5.20	9.20
3			40	24.25	80.3	0.25	5.00	10.30
3			50	20.24	82.3	0.35	4.70	11.50
3			63	18.44	86.6	0.56	4.30	13.00
3			80	14.79	89.3	0.81	3.70	14.80
3			100	9.83	90.9	1.27	3.00	16.80
3			125	5.57	93.5	1.93	1.80	18.80
3			160	-0.19	95.5	2.89	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			200	-4.66	96.5	4.16	0.00	22.80
30	2,157	2,170						
30			20	44.57	73.8	0.00	5.60	7.60
30			25	41.23	77.2	0.04	5.40	8.30
30			32	36.71	79.1	0.07	5.20	9.20
30			40	31.76	80.3	0.11	5.00	10.30
30			50	27.82	82.3	0.15	4.70	11.50
30			63	26.13	86.6	0.24	4.30	13.00
30			80	22.62	89.3	0.35	3.70	14.80
30			100	17.93	90.9	0.54	3.00	16.80
30			125	14.05	93.5	0.82	1.80	18.80
30			160	8.83	95.5	1.24	0.00	21.10
30			200	5.09	96.5	1.78	0.00	22.80
31	2,049	2,062						
31			20	45.01	73.8	0.00	5.60	7.60
31			25	41.67	77.2	0.04	5.40	8.30
31			32	37.15	79.1	0.06	5.20	9.20
31			40	32.21	80.3	0.10	5.00	10.30
31			50	28.27	82.3	0.14	4.70	11.50
31			63	26.59	86.6	0.23	4.30	13.00
31			80	23.08	89.3	0.33	3.70	14.80
31			100	18.40	90.9	0.52	3.00	16.80
31			125	14.53	93.5	0.78	1.80	18.80
31			160	9.34	95.5	1.18	0.00	21.10
31			200	5.62	96.5	1.69	0.00	22.80
32	1,527	1,545						
32			20	47.52	73.8	0.00	5.60	7.60
32			25	44.19	77.2	0.03	5.40	8.30
32			32	39.67	79.1	0.05	5.20	9.20
32			40	34.74	80.3	0.08	5.00	10.30
32			50	30.81	82.3	0.11	4.70	11.50
32			63	29.15	86.6	0.17	4.30	13.00
32			80	25.67	89.3	0.25	3.70	14.80
32			100	21.03	90.9	0.39	3.00	16.80
32			125	17.23	93.5	0.59	1.80	18.80
32			160	12.14	95.5	0.88	0.00	21.10
32			200	8.55	96.5	1.27	0.00	22.80
33	1,403	1,427						
33			20	48.21	73.8	0.00	5.60	7.60
33			25	44.88	77.2	0.03	5.40	8.30
33			32	40.37	79.1	0.04	5.20	9.20
33			40	35.44	80.3	0.07	5.00	10.30
33			50	31.51	82.3	0.10	4.70	11.50
33			63	29.85	86.6	0.16	4.30	13.00
33			80	26.38	89.3	0.23	3.70	14.80
33			100	21.75	90.9	0.36	3.00	16.80
33			125	17.97	93.5	0.54	1.80	18.80
33			160	12.90	95.5	0.81	0.00	21.10
33			200	9.34	96.5	1.17	0.00	22.80
4	4,802	4,808						
4			20	37.66	73.8	0.00	5.60	7.60
4			25	34.26	77.2	0.10	5.40	8.30
4			32	29.72	79.1	0.14	5.20	9.20
4			40	24.72	80.3	0.24	5.00	10.30
4			50	20.72	82.3	0.34	4.70	11.50
4			63	18.93	86.6	0.53	4.30	13.00
4			80	15.29	89.3	0.77	3.70	14.80
4			100	10.36	90.9	1.20	3.00	16.80
4			125	6.13	93.5	1.83	1.80	18.80
4			160	0.42	95.5	2.74	0.00	21.10
4			200	-3.98	96.5	3.94	0.00	22.80
5	4,289	4,295						
5			20	38.64	73.8	0.00	5.60	7.60
5			25	35.25	77.2	0.09	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			32	30.71	79.1	0.13	5.20	9.20
5			40	25.73	80.3	0.21	5.00	10.30
5			50	21.74	82.3	0.30	4.70	11.50
5			63	19.97	86.6	0.47	4.30	13.00
5			80	16.35	89.3	0.69	3.70	14.80
5			100	11.47	90.9	1.07	3.00	16.80
5			125	7.31	93.5	1.63	1.80	18.80
5			160	1.69	95.5	2.45	0.00	21.10
5			200	-2.58	96.5	3.52	0.00	22.80
6	5,803	5,808						
6			20	36.02	73.8	0.00	5.60	7.60
6			25	32.60	77.2	0.12	5.40	8.30
6			32	28.05	79.1	0.17	5.20	9.20
6			40	23.03	80.3	0.29	5.00	10.30
6			50	19.01	82.3	0.41	4.70	11.50
6			63	17.18	86.6	0.64	4.30	13.00
6			80	13.49	89.3	0.93	3.70	14.80
6			100	8.47	90.9	1.45	3.00	16.80
6			125	4.11	93.5	2.21	1.80	18.80
6			160	-1.79	95.5	3.31	0.00	21.10
6			200	-6.44	96.5	4.76	0.00	22.80
7	5,149	5,155						
7			20	37.06	73.8	0.00	5.60	7.60
7			25	33.65	77.2	0.10	5.40	8.30
7			32	29.10	79.1	0.15	5.20	9.20
7			40	24.10	80.3	0.26	5.00	10.30
7			50	20.10	82.3	0.36	4.70	11.50
7			63	18.29	86.6	0.57	4.30	13.00
7			80	14.63	89.3	0.82	3.70	14.80
7			100	9.67	90.9	1.29	3.00	16.80
7			125	5.40	93.5	1.96	1.80	18.80
7			160	-0.38	95.5	2.94	0.00	21.10
7			200	-4.87	96.5	4.23	0.00	22.80
8	4,689	4,695						
8			20	37.87	73.8	0.00	5.60	7.60
8			25	34.47	77.2	0.09	5.40	8.30
8			32	29.93	79.1	0.14	5.20	9.20
8			40	24.93	80.3	0.23	5.00	10.30
8			50	20.94	82.3	0.33	4.70	11.50
8			63	19.15	86.6	0.52	4.30	13.00
8			80	15.52	89.3	0.75	3.70	14.80
8			100	10.59	90.9	1.17	3.00	16.80
8			125	6.38	93.5	1.78	1.80	18.80
8			160	0.69	95.5	2.68	0.00	21.10
8			200	-3.68	96.5	3.85	0.00	22.80
9	4,009	4,016						
9			20	39.22	73.8	0.00	5.60	7.60
9			25	35.84	77.2	0.08	5.40	8.30
9			32	31.30	79.1	0.12	5.20	9.20
9			40	26.32	80.3	0.20	5.00	10.30
9			50	22.34	82.3	0.28	4.70	11.50
9			63	20.58	86.6	0.44	4.30	13.00
9			80	16.98	89.3	0.64	3.70	14.80
9			100	12.12	90.9	1.00	3.00	16.80
9			125	8.00	93.5	1.53	1.80	18.80
9			160	2.43	95.5	2.29	0.00	21.10
9			200	-1.77	96.5	3.29	0.00	22.80
Sum								
Sum			20	55.79				
Sum			25	52.43				
Sum			32	47.90				
Sum			40	42.94				
Sum			50	38.98				
Sum			63	37.26				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			80	33.71				
Sum			100	28.95				
Sum			125	24.97				
Sum			160	19.64				
Sum			200	15.76				

Noise sensitive area: RH Niskala Noise sensitive point: Finnish normal frequency - User defined (326)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,872	2,879						
1			20	42.11	73.8	0.00	5.60	7.60
1			25	38.76	77.2	0.06	5.40	8.30
1			32	34.23	79.1	0.09	5.20	9.20
1			40	29.27	80.3	0.14	5.00	10.30
1			50	25.31	82.3	0.20	4.70	11.50
1			63	23.60	86.6	0.32	4.30	13.00
1			80	20.05	89.3	0.46	3.70	14.80
1			100	15.30	90.9	0.72	3.00	16.80
1			125	11.32	93.5	1.09	1.80	18.80
1			160	5.97	95.5	1.64	0.00	21.10
1			200	2.05	96.5	2.36	0.00	22.80
10	1,626	1,639						
10			20	47.01	73.8	0.00	5.60	7.60
10			25	43.67	77.2	0.03	5.40	8.30
10			32	39.16	79.1	0.05	5.20	9.20
10			40	34.23	80.3	0.08	5.00	10.30
10			50	30.29	82.3	0.11	4.70	11.50
10			63	28.63	86.6	0.18	4.30	13.00
10			80	25.14	89.3	0.26	3.70	14.80
10			100	20.50	90.9	0.41	3.00	16.80
10			125	16.68	93.5	0.62	1.80	18.80
10			160	11.57	95.5	0.93	0.00	21.10
10			200	7.96	96.5	1.34	0.00	22.80
11	2,071	2,082						
11			20	44.93	73.8	0.00	5.60	7.60
11			25	41.59	77.2	0.04	5.40	8.30
11			32	37.07	79.1	0.06	5.20	9.20
11			40	32.13	80.3	0.10	5.00	10.30
11			50	28.19	82.3	0.15	4.70	11.50
11			63	26.50	86.6	0.23	4.30	13.00
11			80	23.00	89.3	0.33	3.70	14.80
11			100	18.31	90.9	0.52	3.00	16.80
11			125	14.44	93.5	0.79	1.80	18.80
11			160	9.24	95.5	1.19	0.00	21.10
11			200	5.52	96.5	1.71	0.00	22.80
12	1,746	1,758						
12			20	46.40	73.8	0.00	5.60	7.60
12			25	43.06	77.2	0.04	5.40	8.30
12			32	38.55	79.1	0.05	5.20	9.20
12			40	33.61	80.3	0.09	5.00	10.30
12			50	29.68	82.3	0.12	4.70	11.50
12			63	28.00	86.6	0.19	4.30	13.00
12			80	24.52	89.3	0.28	3.70	14.80
12			100	19.86	90.9	0.44	3.00	16.80
12			125	16.03	93.5	0.67	1.80	18.80
12			160	10.90	95.5	1.00	0.00	21.10
12			200	7.26	96.5	1.44	0.00	22.80
13	2,326	2,335						
13			20	43.93	73.8	0.00	5.60	7.60
13			25	40.59	77.2	0.05	5.40	8.30
13			32	36.06	79.1	0.07	5.20	9.20
13			40	31.12	80.3	0.12	5.00	10.30

To be continued on next page...

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			50	27.17	82.3	0.16	4.70	11.50
13			63	25.48	86.6	0.26	4.30	13.00
13			80	21.96	89.3	0.37	3.70	14.80
13			100	17.25	90.9	0.58	3.00	16.80
13			125	13.35	93.5	0.89	1.80	18.80
13			160	8.10	95.5	1.33	0.00	21.10
13			200	4.32	96.5	1.91	0.00	22.80
14	2,917	2,925						
14			20	41.98	73.8	0.00	5.60	7.60
14			25	38.62	77.2	0.06	5.40	8.30
14			32	34.09	79.1	0.09	5.20	9.20
14			40	29.13	80.3	0.15	5.00	10.30
14			50	25.17	82.3	0.20	4.70	11.50
14			63	23.46	86.6	0.32	4.30	13.00
14			80	19.91	89.3	0.47	3.70	14.80
14			100	15.15	90.9	0.73	3.00	16.80
14			125	11.17	93.5	1.11	1.80	18.80
14			160	5.81	95.5	1.67	0.00	21.10
14			200	1.88	96.5	2.40	0.00	22.80
15	2,322	2,330						
15			20	43.95	73.8	0.00	5.60	7.60
15			25	40.60	77.2	0.05	5.40	8.30
15			32	36.08	79.1	0.07	5.20	9.20
15			40	31.13	80.3	0.12	5.00	10.30
15			50	27.19	82.3	0.16	4.70	11.50
15			63	25.49	86.6	0.26	4.30	13.00
15			80	21.98	89.3	0.37	3.70	14.80
15			100	17.27	90.9	0.58	3.00	16.80
15			125	13.37	93.5	0.89	1.80	18.80
15			160	8.12	95.5	1.33	0.00	21.10
15			200	4.34	96.5	1.91	0.00	22.80
16	2,881	2,888						
16			20	42.09	73.8	0.00	5.60	7.60
16			25	38.73	77.2	0.06	5.40	8.30
16			32	34.20	79.1	0.09	5.20	9.20
16			40	29.24	80.3	0.14	5.00	10.30
16			50	25.29	82.3	0.20	4.70	11.50
16			63	23.57	86.6	0.32	4.30	13.00
16			80	20.03	89.3	0.46	3.70	14.80
16			100	15.27	90.9	0.72	3.00	16.80
16			125	11.29	93.5	1.10	1.80	18.80
16			160	5.94	95.5	1.65	0.00	21.10
16			200	2.02	96.5	2.37	0.00	22.80
17	3,286	3,295						
17			20	40.94	73.8	0.00	5.60	7.60
17			25	37.58	77.2	0.07	5.40	8.30
17			32	33.05	79.1	0.10	5.20	9.20
17			40	28.08	80.3	0.16	5.00	10.30
17			50	24.11	82.3	0.23	4.70	11.50
17			63	22.38	86.6	0.36	4.30	13.00
17			80	18.82	89.3	0.53	3.70	14.80
17			100	14.02	90.9	0.82	3.00	16.80
17			125	9.99	93.5	1.25	1.80	18.80
17			160	4.57	95.5	1.88	0.00	21.10
17			200	0.54	96.5	2.70	0.00	22.80
18	3,157	3,165						
18			20	41.29	73.8	0.00	5.60	7.60
18			25	37.93	77.2	0.06	5.40	8.30
18			32	33.40	79.1	0.09	5.20	9.20
18			40	28.43	80.3	0.16	5.00	10.30
18			50	24.47	82.3	0.22	4.70	11.50
18			63	22.74	86.6	0.35	4.30	13.00
18			80	19.18	89.3	0.51	3.70	14.80
18			100	14.40	90.9	0.79	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			125	10.39	93.5	1.20	1.80	18.80
18			160	4.99	95.5	1.80	0.00	21.10
18			200	1.00	96.5	2.60	0.00	22.80
19	2,851	2,858						
19			20	42.18	73.8	0.00	5.60	7.60
19			25	38.82	77.2	0.06	5.40	8.30
19			32	34.29	79.1	0.09	5.20	9.20
19			40	29.34	80.3	0.14	5.00	10.30
19			50	25.38	82.3	0.20	4.70	11.50
19			63	23.67	86.6	0.31	4.30	13.00
19			80	20.12	89.3	0.46	3.70	14.80
19			100	15.37	90.9	0.71	3.00	16.80
19			125	11.39	93.5	1.09	1.80	18.80
19			160	6.05	95.5	1.63	0.00	21.10
19			200	2.14	96.5	2.34	0.00	22.80
2	2,135	2,145						
2			20	44.67	73.8	0.00	5.60	7.60
2			25	41.33	77.2	0.04	5.40	8.30
2			32	36.81	79.1	0.06	5.20	9.20
2			40	31.87	80.3	0.11	5.00	10.30
2			50	27.92	82.3	0.15	4.70	11.50
2			63	26.24	86.6	0.24	4.30	13.00
2			80	22.73	89.3	0.34	3.70	14.80
2			100	18.04	90.9	0.54	3.00	16.80
2			125	14.16	93.5	0.81	1.80	18.80
2			160	8.95	95.5	1.22	0.00	21.10
2			200	5.21	96.5	1.76	0.00	22.80
20	3,350	3,357						
20			20	40.78	73.8	0.00	5.60	7.60
20			25	37.41	77.2	0.07	5.40	8.30
20			32	32.88	79.1	0.10	5.20	9.20
20			40	27.91	80.3	0.17	5.00	10.30
20			50	23.95	82.3	0.23	4.70	11.50
20			63	22.21	86.6	0.37	4.30	13.00
20			80	18.64	89.3	0.54	3.70	14.80
20			100	13.84	90.9	0.84	3.00	16.80
20			125	9.81	93.5	1.28	1.80	18.80
20			160	4.37	95.5	1.91	0.00	21.10
20			200	0.33	96.5	2.75	0.00	22.80
21	3,851	3,859						
21			20	39.57	73.8	0.00	5.60	7.60
21			25	36.19	77.2	0.08	5.40	8.30
21			32	31.65	79.1	0.12	5.20	9.20
21			40	26.68	80.3	0.19	5.00	10.30
21			50	22.70	82.3	0.27	4.70	11.50
21			63	20.95	86.6	0.42	4.30	13.00
21			80	17.35	89.3	0.62	3.70	14.80
21			100	12.51	90.9	0.96	3.00	16.80
21			125	8.40	93.5	1.47	1.80	18.80
21			160	2.87	95.5	2.20	0.00	21.10
21			200	-1.29	96.5	3.16	0.00	22.80
22	4,377	4,382						
22			20	38.47	73.8	0.00	5.60	7.60
22			25	35.08	77.2	0.09	5.40	8.30
22			32	30.54	79.1	0.13	5.20	9.20
22			40	25.55	80.3	0.22	5.00	10.30
22			50	21.56	82.3	0.31	4.70	11.50
22			63	19.78	86.6	0.48	4.30	13.00
22			80	16.17	89.3	0.70	3.70	14.80
22			100	11.27	90.9	1.10	3.00	16.80
22			125	7.10	93.5	1.67	1.80	18.80
22			160	1.47	95.5	2.50	0.00	21.10
22			200	-2.83	96.5	3.59	0.00	22.80
23	4,631	4,635						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			20	37.98	73.8	0.00	5.60	7.60
23			25	34.59	77.2	0.09	5.40	8.30
23			32	30.04	79.1	0.14	5.20	9.20
23			40	25.05	80.3	0.23	5.00	10.30
23			50	21.05	82.3	0.32	4.70	11.50
23			63	19.27	86.6	0.51	4.30	13.00
23			80	15.64	89.3	0.74	3.70	14.80
23			100	10.72	90.9	1.16	3.00	16.80
23			125	6.52	93.5	1.76	1.80	18.80
23			160	0.84	95.5	2.64	0.00	21.10
23			200	-3.52	96.5	3.80	0.00	22.80
24	3,977	3,983						
24			20	39.30	73.8	0.00	5.60	7.60
24			25	35.92	77.2	0.08	5.40	8.30
24			32	31.38	79.1	0.12	5.20	9.20
24			40	26.40	80.3	0.20	5.00	10.30
24			50	22.42	82.3	0.28	4.70	11.50
24			63	20.66	86.6	0.44	4.30	13.00
24			80	17.06	89.3	0.64	3.70	14.80
24			100	12.20	90.9	1.00	3.00	16.80
24			125	8.08	93.5	1.51	1.80	18.80
24			160	2.52	95.5	2.27	0.00	21.10
24			200	-1.67	96.5	3.27	0.00	22.80
25	3,732	3,739						
25			20	39.85	73.8	0.00	5.60	7.60
25			25	36.47	77.2	0.07	5.40	8.30
25			32	31.93	79.1	0.11	5.20	9.20
25			40	26.96	80.3	0.19	5.00	10.30
25			50	22.98	82.3	0.26	4.70	11.50
25			63	21.23	86.6	0.41	4.30	13.00
25			80	17.65	89.3	0.60	3.70	14.80
25			100	12.81	90.9	0.93	3.00	16.80
25			125	8.73	93.5	1.42	1.80	18.80
25			160	3.21	95.5	2.13	0.00	21.10
25			200	-0.92	96.5	3.07	0.00	22.80
26	4,224	4,231						
26			20	38.77	73.8	0.00	5.60	7.60
26			25	35.39	77.2	0.08	5.40	8.30
26			32	30.84	79.1	0.13	5.20	9.20
26			40	25.86	80.3	0.21	5.00	10.30
26			50	21.88	82.3	0.30	4.70	11.50
26			63	20.11	86.6	0.47	4.30	13.00
26			80	16.49	89.3	0.68	3.70	14.80
26			100	11.61	90.9	1.06	3.00	16.80
26			125	7.46	93.5	1.61	1.80	18.80
26			160	1.86	95.5	2.41	0.00	21.10
26			200	-2.40	96.5	3.47	0.00	22.80
27	4,604	4,610						
27			20	38.03	73.8	0.00	5.60	7.60
27			25	34.63	77.2	0.09	5.40	8.30
27			32	30.09	79.1	0.14	5.20	9.20
27			40	25.10	80.3	0.23	5.00	10.30
27			50	21.10	82.3	0.32	4.70	11.50
27			63	19.32	86.6	0.51	4.30	13.00
27			80	15.69	89.3	0.74	3.70	14.80
27			100	10.77	90.9	1.15	3.00	16.80
27			125	6.57	93.5	1.75	1.80	18.80
27			160	0.90	95.5	2.63	0.00	21.10
27			200	-3.45	96.5	3.78	0.00	22.80
28	4,955	4,960						
28			20	37.39	73.8	0.00	5.60	7.60
28			25	33.99	77.2	0.10	5.40	8.30
28			32	29.44	79.1	0.15	5.20	9.20
28			40	24.44	80.3	0.25	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			50	20.44	82.3	0.35	4.70	11.50
28			63	18.64	86.6	0.55	4.30	13.00
28			80	15.00	89.3	0.79	3.70	14.80
28			100	10.05	90.9	1.24	3.00	16.80
28			125	5.81	93.5	1.88	1.80	18.80
28			160	0.06	95.5	2.83	0.00	21.10
28			200	-4.38	96.5	4.07	0.00	22.80
29	5,373	5,378						
29			20	36.69	73.8	0.00	5.60	7.60
29			25	33.28	77.2	0.11	5.40	8.30
29			32	28.73	79.1	0.16	5.20	9.20
29			40	23.72	80.3	0.27	5.00	10.30
29			50	19.71	82.3	0.38	4.70	11.50
29			63	17.90	86.6	0.59	4.30	13.00
29			80	14.23	89.3	0.86	3.70	14.80
29			100	9.24	90.9	1.34	3.00	16.80
29			125	4.94	93.5	2.04	1.80	18.80
29			160	-0.88	95.5	3.07	0.00	21.10
29			200	-5.42	96.5	4.41	0.00	22.80
3	2,708	2,716						
3			20	42.62	73.8	0.00	5.60	7.60
3			25	39.27	77.2	0.05	5.40	8.30
3			32	34.74	79.1	0.08	5.20	9.20
3			40	29.79	80.3	0.14	5.00	10.30
3			50	25.83	82.3	0.19	4.70	11.50
3			63	24.12	86.6	0.30	4.30	13.00
3			80	20.59	89.3	0.43	3.70	14.80
3			100	15.84	90.9	0.68	3.00	16.80
3			125	11.89	93.5	1.03	1.80	18.80
3			160	6.57	95.5	1.55	0.00	21.10
3			200	2.69	96.5	2.23	0.00	22.80
30	5,347	5,351						
30			20	36.73	73.8	0.00	5.60	7.60
30			25	33.32	77.2	0.11	5.40	8.30
30			32	28.77	79.1	0.16	5.20	9.20
30			40	23.76	80.3	0.27	5.00	10.30
30			50	19.76	82.3	0.37	4.70	11.50
30			63	17.94	86.6	0.59	4.30	13.00
30			80	14.28	89.3	0.86	3.70	14.80
30			100	9.29	90.9	1.34	3.00	16.80
30			125	5.00	93.5	2.03	1.80	18.80
30			160	-0.82	95.5	3.05	0.00	21.10
30			200	-5.36	96.5	4.39	0.00	22.80
31	5,839	5,843						
31			20	35.97	73.8	0.00	5.60	7.60
31			25	32.55	77.2	0.12	5.40	8.30
31			32	27.99	79.1	0.18	5.20	9.20
31			40	22.98	80.3	0.29	5.00	10.30
31			50	18.96	82.3	0.41	4.70	11.50
31			63	17.13	86.6	0.64	4.30	13.00
31			80	13.43	89.3	0.93	3.70	14.80
31			100	8.41	90.9	1.46	3.00	16.80
31			125	4.05	93.5	2.22	1.80	18.80
31			160	-1.86	95.5	3.33	0.00	21.10
31			200	-6.52	96.5	4.79	0.00	22.80
32	5,871	5,874						
32			20	35.92	73.8	0.00	5.60	7.60
32			25	32.50	77.2	0.12	5.40	8.30
32			32	27.94	79.1	0.18	5.20	9.20
32			40	22.93	80.3	0.29	5.00	10.30
32			50	18.91	82.3	0.41	4.70	11.50
32			63	17.07	86.6	0.65	4.30	13.00
32			80	13.38	89.3	0.94	3.70	14.80
32			100	8.35	90.9	1.47	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			125	3.99	93.5	2.23	1.80	18.80
32			160	-1.93	95.5	3.35	0.00	21.10
32			200	-6.60	96.5	4.82	0.00	22.80
33	5,959	5,964						
33			20	35.79	73.8	0.00	5.60	7.60
33			25	32.37	77.2	0.12	5.40	8.30
33			32	27.81	79.1	0.18	5.20	9.20
33			40	22.79	80.3	0.30	5.00	10.30
33			50	18.77	82.3	0.42	4.70	11.50
33			63	16.93	86.6	0.66	4.30	13.00
33			80	13.24	89.3	0.95	3.70	14.80
33			100	8.20	90.9	1.49	3.00	16.80
33			125	3.82	93.5	2.27	1.80	18.80
33			160	-2.11	95.5	3.40	0.00	21.10
33			200	-6.80	96.5	4.89	0.00	22.80
4	2,667	2,675						
4			20	42.75	73.8	0.00	5.60	7.60
4			25	39.40	77.2	0.05	5.40	8.30
4			32	34.87	79.1	0.08	5.20	9.20
4			40	29.92	80.3	0.13	5.00	10.30
4			50	25.96	82.3	0.19	4.70	11.50
4			63	24.26	86.6	0.29	4.30	13.00
4			80	20.72	89.3	0.43	3.70	14.80
4			100	15.98	90.9	0.67	3.00	16.80
4			125	12.04	93.5	1.02	1.80	18.80
4			160	6.73	95.5	1.53	0.00	21.10
4			200	2.86	96.5	2.19	0.00	22.80
5	3,088	3,095						
5			20	41.49	73.8	0.00	5.60	7.60
5			25	38.12	77.2	0.06	5.40	8.30
5			32	33.59	79.1	0.09	5.20	9.20
5			40	28.63	80.3	0.15	5.00	10.30
5			50	24.67	82.3	0.22	4.70	11.50
5			63	22.95	86.6	0.34	4.30	13.00
5			80	19.39	89.3	0.50	3.70	14.80
5			100	14.61	90.9	0.77	3.00	16.80
5			125	10.61	93.5	1.18	1.80	18.80
5			160	5.22	95.5	1.76	0.00	21.10
5			200	1.25	96.5	2.54	0.00	22.80
6	1,565	1,579						
6			20	47.33	73.8	0.00	5.60	7.60
6			25	44.00	77.2	0.03	5.40	8.30
6			32	39.48	79.1	0.05	5.20	9.20
6			40	34.55	80.3	0.08	5.00	10.30
6			50	30.62	82.3	0.11	4.70	11.50
6			63	28.96	86.6	0.17	4.30	13.00
6			80	25.48	89.3	0.25	3.70	14.80
6			100	20.84	90.9	0.39	3.00	16.80
6			125	17.03	93.5	0.60	1.80	18.80
6			160	11.93	95.5	0.90	0.00	21.10
6			200	8.34	96.5	1.29	0.00	22.80
7	2,212	2,222						
7			20	44.37	73.8	0.00	5.60	7.60
7			25	41.02	77.2	0.04	5.40	8.30
7			32	36.50	79.1	0.07	5.20	9.20
7			40	31.55	80.3	0.11	5.00	10.30
7			50	27.61	82.3	0.16	4.70	11.50
7			63	25.92	86.6	0.24	4.30	13.00
7			80	22.41	89.3	0.36	3.70	14.80
7			100	17.71	90.9	0.56	3.00	16.80
7			125	13.82	93.5	0.84	1.80	18.80
7			160	8.60	95.5	1.27	0.00	21.10
7			200	4.84	96.5	1.82	0.00	22.80
8	2,642	2,650						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			20	42.84	73.8	0.00	5.60	7.60
8			25	39.48	77.2	0.05	5.40	8.30
8			32	34.96	79.1	0.08	5.20	9.20
8			40	30.00	80.3	0.13	5.00	10.30
8			50	26.05	82.3	0.19	4.70	11.50
8			63	24.34	86.6	0.29	4.30	13.00
8			80	20.81	89.3	0.42	3.70	14.80
8			100	16.07	90.9	0.66	3.00	16.80
8			125	12.13	93.5	1.01	1.80	18.80
8			160	6.83	95.5	1.51	0.00	21.10
8			200	2.96	96.5	2.17	0.00	22.80
9	3,323	3,329						
9			20	40.85	73.8	0.00	5.60	7.60
9			25	37.49	77.2	0.07	5.40	8.30
9			32	32.95	79.1	0.10	5.20	9.20
9			40	27.99	80.3	0.17	5.00	10.30
9			50	24.02	82.3	0.23	4.70	11.50
9			63	22.29	86.6	0.37	4.30	13.00
9			80	18.72	89.3	0.53	3.70	14.80
9			100	13.92	90.9	0.83	3.00	16.80
9			125	9.89	93.5	1.27	1.80	18.80
9			160	4.45	95.5	1.90	0.00	21.10
9			200	0.42	96.5	2.73	0.00	22.80
Sum								
Sum			20	57.41				
Sum			25	54.06				
Sum			32	49.53				
Sum			40	44.58				
Sum			50	40.63				
Sum			63	38.92				
Sum			80	35.39				
Sum			100	30.66				
Sum			125	26.72				
Sum			160	21.43				
Sum			200	17.61				

Noise sensitive area: RH Pajaniemi Noise sensitive point: Finnish normal frequency - User defined (316)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,249	2,259						
1			20	44.22	73.8	0.00	5.60	7.60
1			25	40.88	77.2	0.05	5.40	8.30
1			32	36.35	79.1	0.07	5.20	9.20
1			40	31.41	80.3	0.11	5.00	10.30
1			50	27.46	82.3	0.16	4.70	11.50
1			63	25.77	86.6	0.25	4.30	13.00
1			80	22.26	89.3	0.36	3.70	14.80
1			100	17.56	90.9	0.56	3.00	16.80
1			125	13.66	93.5	0.86	1.80	18.80
1			160	8.43	95.5	1.29	0.00	21.10
1			200	4.67	96.5	1.85	0.00	22.80
10	4,313	4,318						
10			20	38.59	73.8	0.00	5.60	7.60
10			25	35.21	77.2	0.09	5.40	8.30
10			32	30.66	79.1	0.13	5.20	9.20
10			40	25.68	80.3	0.22	5.00	10.30
10			50	21.69	82.3	0.30	4.70	11.50
10			63	19.92	86.6	0.48	4.30	13.00
10			80	16.30	89.3	0.69	3.70	14.80
10			100	11.41	90.9	1.08	3.00	16.80
10			125	7.25	93.5	1.64	1.80	18.80
10			160	1.63	95.5	2.46	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			200	-2.65	96.5	3.54	0.00	22.80
11	3,780	3,787						
11			20	39.73	73.8	0.00	5.60	7.60
11			25	36.36	77.2	0.08	5.40	8.30
11			32	31.82	79.1	0.11	5.20	9.20
11			40	26.85	80.3	0.19	5.00	10.30
11			50	22.87	82.3	0.27	4.70	11.50
11			63	21.12	86.6	0.42	4.30	13.00
11			80	17.53	89.3	0.61	3.70	14.80
11			100	12.69	90.9	0.95	3.00	16.80
11			125	8.60	93.5	1.44	1.80	18.80
11			160	3.08	95.5	2.16	0.00	21.10
11			200	-1.07	96.5	3.11	0.00	22.80
12	4,882	4,887						
12			20	37.52	73.8	0.00	5.60	7.60
12			25	34.12	77.2	0.10	5.40	8.30
12			32	29.57	79.1	0.15	5.20	9.20
12			40	24.58	80.3	0.24	5.00	10.30
12			50	20.58	82.3	0.34	4.70	11.50
12			63	18.78	86.6	0.54	4.30	13.00
12			80	15.14	89.3	0.78	3.70	14.80
12			100	10.20	90.9	1.22	3.00	16.80
12			125	5.96	93.5	1.86	1.80	18.80
12			160	0.23	95.5	2.79	0.00	21.10
12			200	-4.19	96.5	4.01	0.00	22.80
13	4,276	4,282						
13			20	38.67	73.8	0.00	5.60	7.60
13			25	35.28	77.2	0.09	5.40	8.30
13			32	30.74	79.1	0.13	5.20	9.20
13			40	25.75	80.3	0.21	5.00	10.30
13			50	21.77	82.3	0.30	4.70	11.50
13			63	20.00	86.6	0.47	4.30	13.00
13			80	16.38	89.3	0.69	3.70	14.80
13			100	11.50	90.9	1.07	3.00	16.80
13			125	7.34	93.5	1.63	1.80	18.80
13			160	1.73	95.5	2.44	0.00	21.10
13			200	-2.54	96.5	3.51	0.00	22.80
14	2,790	2,799						
14			20	42.36	73.8	0.00	5.60	7.60
14			25	39.01	77.2	0.06	5.40	8.30
14			32	34.48	79.1	0.08	5.20	9.20
14			40	29.52	80.3	0.14	5.00	10.30
14			50	25.57	82.3	0.20	4.70	11.50
14			63	23.85	86.6	0.31	4.30	13.00
14			80	20.31	89.3	0.45	3.70	14.80
14			100	15.56	90.9	0.70	3.00	16.80
14			125	11.60	93.5	1.06	1.80	18.80
14			160	6.27	95.5	1.60	0.00	21.10
14			200	2.37	96.5	2.29	0.00	22.80
15	4,850	4,855						
15			20	37.58	73.8	0.00	5.60	7.60
15			25	34.18	77.2	0.10	5.40	8.30
15			32	29.63	79.1	0.15	5.20	9.20
15			40	24.63	80.3	0.24	5.00	10.30
15			50	20.64	82.3	0.34	4.70	11.50
15			63	18.84	86.6	0.53	4.30	13.00
15			80	15.20	89.3	0.78	3.70	14.80
15			100	10.26	90.9	1.21	3.00	16.80
15			125	6.03	93.5	1.84	1.80	18.80
15			160	0.31	95.5	2.77	0.00	21.10
15			200	-4.10	96.5	3.98	0.00	22.80
16	4,275	4,281						
16			20	38.67	73.8	0.00	5.60	7.60
16			25	35.28	77.2	0.09	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			32	30.74	79.1	0.13	5.20	9.20
16			40	25.76	80.3	0.21	5.00	10.30
16			50	21.77	82.3	0.30	4.70	11.50
16			63	20.00	86.6	0.47	4.30	13.00
16			80	16.38	89.3	0.68	3.70	14.80
16			100	11.50	90.9	1.07	3.00	16.80
16			125	7.34	93.5	1.63	1.80	18.80
16			160	1.73	95.5	2.44	0.00	21.10
16			200	-2.54	96.5	3.51	0.00	22.80
17	3,769	3,777						
17			20	39.76	73.8	0.00	5.60	7.60
17			25	36.38	77.2	0.08	5.40	8.30
17			32	31.84	79.1	0.11	5.20	9.20
17			40	26.87	80.3	0.19	5.00	10.30
17			50	22.89	82.3	0.26	4.70	11.50
17			63	21.14	86.6	0.42	4.30	13.00
17			80	17.55	89.3	0.60	3.70	14.80
17			100	12.71	90.9	0.94	3.00	16.80
17			125	8.62	93.5	1.44	1.80	18.80
17			160	3.10	95.5	2.15	0.00	21.10
17			200	-1.04	96.5	3.10	0.00	22.80
18	3,284	3,293						
18			20	40.95	73.8	0.00	5.60	7.60
18			25	37.58	77.2	0.07	5.40	8.30
18			32	33.05	79.1	0.10	5.20	9.20
18			40	28.08	80.3	0.16	5.00	10.30
18			50	24.12	82.3	0.23	4.70	11.50
18			63	22.39	86.6	0.36	4.30	13.00
18			80	18.82	89.3	0.53	3.70	14.80
18			100	14.02	90.9	0.82	3.00	16.80
18			125	10.00	93.5	1.25	1.80	18.80
18			160	4.57	95.5	1.88	0.00	21.10
18			200	0.55	96.5	2.70	0.00	22.80
19	5,029	5,034						
19			20	37.26	73.8	0.00	5.60	7.60
19			25	33.86	77.2	0.10	5.40	8.30
19			32	29.31	79.1	0.15	5.20	9.20
19			40	24.31	80.3	0.25	5.00	10.30
19			50	20.31	82.3	0.35	4.70	11.50
19			63	18.51	86.6	0.55	4.30	13.00
19			80	14.86	89.3	0.81	3.70	14.80
19			100	9.90	90.9	1.26	3.00	16.80
19			125	5.65	93.5	1.91	1.80	18.80
19			160	-0.11	95.5	2.87	0.00	21.10
19			200	-4.57	96.5	4.13	0.00	22.80
2	2,742	2,750						
2			20	42.51	73.8	0.00	5.60	7.60
2			25	39.16	77.2	0.06	5.40	8.30
2			32	34.63	79.1	0.08	5.20	9.20
2			40	29.67	80.3	0.14	5.00	10.30
2			50	25.72	82.3	0.19	4.70	11.50
2			63	24.01	86.6	0.30	4.30	13.00
2			80	20.47	89.3	0.44	3.70	14.80
2			100	15.72	90.9	0.69	3.00	16.80
2			125	11.77	93.5	1.05	1.80	18.80
2			160	6.44	95.5	1.57	0.00	21.10
2			200	2.56	96.5	2.26	0.00	22.80
20	4,846	4,851						
20			20	37.58	73.8	0.00	5.60	7.60
20			25	34.19	77.2	0.10	5.40	8.30
20			32	29.64	79.1	0.15	5.20	9.20
20			40	24.64	80.3	0.24	5.00	10.30
20			50	20.64	82.3	0.34	4.70	11.50
20			63	18.85	86.6	0.53	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			80	15.21	89.3	0.78	3.70	14.80
20			100	10.27	90.9	1.21	3.00	16.80
20			125	6.04	93.5	1.84	1.80	18.80
20			160	0.32	95.5	2.77	0.00	21.10
20			200	-4.09	96.5	3.98	0.00	22.80
21	3,573	3,583						
21			20	40.21	73.8	0.00	5.60	7.60
21			25	36.84	77.2	0.07	5.40	8.30
21			32	32.31	79.1	0.11	5.20	9.20
21			40	27.34	80.3	0.18	5.00	10.30
21			50	23.36	82.3	0.25	4.70	11.50
21			63	21.62	86.6	0.39	4.30	13.00
21			80	18.04	89.3	0.57	3.70	14.80
21			100	13.22	90.9	0.90	3.00	16.80
21			125	9.15	93.5	1.36	1.80	18.80
21			160	3.67	95.5	2.04	0.00	21.10
21			200	-0.42	96.5	2.94	0.00	22.80
22	3,427	3,436						
22			20	40.58	73.8	0.00	5.60	7.60
22			25	37.21	77.2	0.07	5.40	8.30
22			32	32.68	79.1	0.10	5.20	9.20
22			40	27.71	80.3	0.17	5.00	10.30
22			50	23.74	82.3	0.24	4.70	11.50
22			63	22.00	86.6	0.38	4.30	13.00
22			80	18.43	89.3	0.55	3.70	14.80
22			100	13.62	90.9	0.86	3.00	16.80
22			125	9.57	93.5	1.31	1.80	18.80
22			160	4.12	95.5	1.96	0.00	21.10
22			200	0.06	96.5	2.82	0.00	22.80
23	2,913	2,922						
23			20	41.99	73.8	0.00	5.60	7.60
23			25	38.63	77.2	0.06	5.40	8.30
23			32	34.10	79.1	0.09	5.20	9.20
23			40	29.14	80.3	0.15	5.00	10.30
23			50	25.18	82.3	0.20	4.70	11.50
23			63	23.47	86.6	0.32	4.30	13.00
23			80	19.92	89.3	0.47	3.70	14.80
23			100	15.16	90.9	0.73	3.00	16.80
23			125	11.18	93.5	1.11	1.80	18.80
23			160	5.82	95.5	1.67	0.00	21.10
23			200	1.89	96.5	2.40	0.00	22.80
24	4,818	4,823						
24			20	37.63	73.8	0.00	5.60	7.60
24			25	34.24	77.2	0.10	5.40	8.30
24			32	29.69	79.1	0.14	5.20	9.20
24			40	24.69	80.3	0.24	5.00	10.30
24			50	20.70	82.3	0.34	4.70	11.50
24			63	18.90	86.6	0.53	4.30	13.00
24			80	15.26	89.3	0.77	3.70	14.80
24			100	10.33	90.9	1.21	3.00	16.80
24			125	6.10	93.5	1.83	1.80	18.80
24			160	0.38	95.5	2.75	0.00	21.10
24			200	-4.02	96.5	3.96	0.00	22.80
25	4,233	4,239						
25			20	38.75	73.8	0.00	5.60	7.60
25			25	35.37	77.2	0.08	5.40	8.30
25			32	30.83	79.1	0.13	5.20	9.20
25			40	25.84	80.3	0.21	5.00	10.30
25			50	21.86	82.3	0.30	4.70	11.50
25			63	20.09	86.6	0.47	4.30	13.00
25			80	16.48	89.3	0.68	3.70	14.80
25			100	11.59	90.9	1.06	3.00	16.80
25			125	7.44	93.5	1.61	1.80	18.80
25			160	1.84	95.5	2.42	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			200	-2.42	96.5	3.48	0.00	22.80
26	4,141	4,149						
26			20	38.94	73.8	0.00	5.60	7.60
26			25	35.56	77.2	0.08	5.40	8.30
26			32	31.02	79.1	0.12	5.20	9.20
26			40	26.03	80.3	0.21	5.00	10.30
26			50	22.05	82.3	0.29	4.70	11.50
26			63	20.28	86.6	0.46	4.30	13.00
26			80	16.68	89.3	0.66	3.70	14.80
26			100	11.80	90.9	1.04	3.00	16.80
26			125	7.66	93.5	1.58	1.80	18.80
26			160	2.07	95.5	2.37	0.00	21.10
26			200	-2.16	96.5	3.40	0.00	22.80
27	3,964	3,972						
27			20	39.32	73.8	0.00	5.60	7.60
27			25	35.94	77.2	0.08	5.40	8.30
27			32	31.40	79.1	0.12	5.20	9.20
27			40	26.42	80.3	0.20	5.00	10.30
27			50	22.44	82.3	0.28	4.70	11.50
27			63	20.68	86.6	0.44	4.30	13.00
27			80	17.08	89.3	0.64	3.70	14.80
27			100	12.23	90.9	0.99	3.00	16.80
27			125	8.11	93.5	1.51	1.80	18.80
27			160	2.56	95.5	2.26	0.00	21.10
27			200	-1.64	96.5	3.26	0.00	22.80
28	3,602	3,609						
28			20	40.15	73.8	0.00	5.60	7.60
28			25	36.78	77.2	0.07	5.40	8.30
28			32	32.24	79.1	0.11	5.20	9.20
28			40	27.27	80.3	0.18	5.00	10.30
28			50	23.30	82.3	0.25	4.70	11.50
28			63	21.55	86.6	0.40	4.30	13.00
28			80	17.97	89.3	0.58	3.70	14.80
28			100	13.15	90.9	0.90	3.00	16.80
28			125	9.08	93.5	1.37	1.80	18.80
28			160	3.59	95.5	2.06	0.00	21.10
28			200	-0.51	96.5	2.96	0.00	22.80
29	3,312	3,321						
29			20	40.88	73.8	0.00	5.60	7.60
29			25	37.51	77.2	0.07	5.40	8.30
29			32	32.98	79.1	0.10	5.20	9.20
29			40	28.01	80.3	0.17	5.00	10.30
29			50	24.04	82.3	0.23	4.70	11.50
29			63	22.31	86.6	0.37	4.30	13.00
29			80	18.74	89.3	0.53	3.70	14.80
29			100	13.95	90.9	0.83	3.00	16.80
29			125	9.91	93.5	1.26	1.80	18.80
29			160	4.48	95.5	1.89	0.00	21.10
29			200	0.45	96.5	2.72	0.00	22.80
3	2,184	2,196						
3			20	44.47	73.8	0.00	5.60	7.60
3			25	41.12	77.2	0.04	5.40	8.30
3			32	36.60	79.1	0.07	5.20	9.20
3			40	31.66	80.3	0.11	5.00	10.30
3			50	27.71	82.3	0.15	4.70	11.50
3			63	26.03	86.6	0.24	4.30	13.00
3			80	22.52	89.3	0.35	3.70	14.80
3			100	17.82	90.9	0.55	3.00	16.80
3			125	13.93	93.5	0.83	1.80	18.80
3			160	8.72	95.5	1.25	0.00	21.10
3			200	4.97	96.5	1.80	0.00	22.80
30	2,708	2,716						
30			20	42.62	73.8	0.00	5.60	7.60
30			25	39.27	77.2	0.05	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
30			32	34.74	79.1	0.08	5.20	9.20
30			40	29.78	80.3	0.14	5.00	10.30
30			50	25.83	82.3	0.19	4.70	11.50
30			63	24.12	86.6	0.30	4.30	13.00
30			80	20.59	89.3	0.43	3.70	14.80
30			100	15.84	90.9	0.68	3.00	16.80
30			125	11.89	93.5	1.03	1.80	18.80
30			160	6.57	95.5	1.55	0.00	21.10
30			200	2.69	96.5	2.23	0.00	22.80
31	3,336	3,343						
31			20	40.82	73.8	0.00	5.60	7.60
31			25	37.45	77.2	0.07	5.40	8.30
31			32	32.92	79.1	0.10	5.20	9.20
31			40	27.95	80.3	0.17	5.00	10.30
31			50	23.98	82.3	0.23	4.70	11.50
31			63	22.25	86.6	0.37	4.30	13.00
31			80	18.68	89.3	0.53	3.70	14.80
31			100	13.88	90.9	0.84	3.00	16.80
31			125	9.85	93.5	1.27	1.80	18.80
31			160	4.41	95.5	1.91	0.00	21.10
31			200	0.38	96.5	2.74	0.00	22.80
32	2,641	2,650						
32			20	42.84	73.8	0.00	5.60	7.60
32			25	39.48	77.2	0.05	5.40	8.30
32			32	34.96	79.1	0.08	5.20	9.20
32			40	30.00	80.3	0.13	5.00	10.30
32			50	26.05	82.3	0.19	4.70	11.50
32			63	24.34	86.6	0.29	4.30	13.00
32			80	20.81	89.3	0.42	3.70	14.80
32			100	16.07	90.9	0.66	3.00	16.80
32			125	12.13	93.5	1.01	1.80	18.80
32			160	6.83	95.5	1.51	0.00	21.10
32			200	2.96	96.5	2.17	0.00	22.80
33	2,155	2,169						
33			20	44.57	73.8	0.00	5.60	7.60
33			25	41.23	77.2	0.04	5.40	8.30
33			32	36.71	79.1	0.07	5.20	9.20
33			40	31.77	80.3	0.11	5.00	10.30
33			50	27.82	82.3	0.15	4.70	11.50
33			63	26.14	86.6	0.24	4.30	13.00
33			80	22.63	89.3	0.35	3.70	14.80
33			100	17.93	90.9	0.54	3.00	16.80
33			125	14.05	93.5	0.82	1.80	18.80
33			160	8.84	95.5	1.24	0.00	21.10
33			200	5.10	96.5	1.78	0.00	22.80
4	2,258	2,269						
4			20	44.18	73.8	0.00	5.60	7.60
4			25	40.84	77.2	0.05	5.40	8.30
4			32	36.31	79.1	0.07	5.20	9.20
4			40	31.37	80.3	0.11	5.00	10.30
4			50	27.42	82.3	0.16	4.70	11.50
4			63	25.73	86.6	0.25	4.30	13.00
4			80	22.22	89.3	0.36	3.70	14.80
4			100	17.52	90.9	0.57	3.00	16.80
4			125	13.62	93.5	0.86	1.80	18.80
4			160	8.39	95.5	1.29	0.00	21.10
4			200	4.62	96.5	1.86	0.00	22.80
5	2,049	2,061						
5			20	45.02	73.8	0.00	5.60	7.60
5			25	41.68	77.2	0.04	5.40	8.30
5			32	37.16	79.1	0.06	5.20	9.20
5			40	32.21	80.3	0.10	5.00	10.30
5			50	28.27	82.3	0.14	4.70	11.50
5			63	26.59	86.6	0.23	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			80	23.09	89.3	0.33	3.70	14.80
5			100	18.40	90.9	0.52	3.00	16.80
5			125	14.53	93.5	0.78	1.80	18.80
5			160	9.34	95.5	1.17	0.00	21.10
5			200	5.63	96.5	1.69	0.00	22.80
6	3,676	3,683						
6			20	39.97	73.8	0.00	5.60	7.60
6			25	36.60	77.2	0.07	5.40	8.30
6			32	32.06	79.1	0.11	5.20	9.20
6			40	27.09	80.3	0.18	5.00	10.30
6			50	23.12	82.3	0.26	4.70	11.50
6			63	21.37	86.6	0.41	4.30	13.00
6			80	17.79	89.3	0.59	3.70	14.80
6			100	12.95	90.9	0.92	3.00	16.80
6			125	8.88	93.5	1.40	1.80	18.80
6			160	3.38	95.5	2.10	0.00	21.10
6			200	-0.75	96.5	3.02	0.00	22.80
7	3,175	3,183						
7			20	41.24	73.8	0.00	5.60	7.60
7			25	37.88	77.2	0.06	5.40	8.30
7			32	33.35	79.1	0.10	5.20	9.20
7			40	28.38	80.3	0.16	5.00	10.30
7			50	24.42	82.3	0.22	4.70	11.50
7			63	22.69	86.6	0.35	4.30	13.00
7			80	19.13	89.3	0.51	3.70	14.80
7			100	14.35	90.9	0.80	3.00	16.80
7			125	10.33	93.5	1.21	1.80	18.80
7			160	4.93	95.5	1.81	0.00	21.10
7			200	0.93	96.5	2.61	0.00	22.80
8	2,617	2,626						
8			20	42.91	73.8	0.00	5.60	7.60
8			25	39.56	77.2	0.05	5.40	8.30
8			32	35.03	79.1	0.08	5.20	9.20
8			40	30.08	80.3	0.13	5.00	10.30
8			50	26.13	82.3	0.18	4.70	11.50
8			63	24.42	86.6	0.29	4.30	13.00
8			80	20.89	89.3	0.42	3.70	14.80
8			100	16.16	90.9	0.66	3.00	16.80
8			125	12.21	93.5	1.00	1.80	18.80
8			160	6.92	95.5	1.50	0.00	21.10
8			200	3.06	96.5	2.15	0.00	22.80
9	2,284	2,295						
9			20	44.08	73.8	0.00	5.60	7.60
9			25	40.74	77.2	0.05	5.40	8.30
9			32	36.22	79.1	0.07	5.20	9.20
9			40	31.27	80.3	0.11	5.00	10.30
9			50	27.32	82.3	0.16	4.70	11.50
9			63	25.63	86.6	0.25	4.30	13.00
9			80	22.12	89.3	0.37	3.70	14.80
9			100	17.41	90.9	0.57	3.00	16.80
9			125	13.51	93.5	0.87	1.80	18.80
9			160	8.28	95.5	1.31	0.00	21.10
9			200	4.50	96.5	1.88	0.00	22.80
Sum								
Sum			20	56.63				
Sum			25	53.27				
Sum			32	48.74				
Sum			40	43.78				
Sum			50	39.82				
Sum			63	38.10				
Sum			80	34.55				
Sum			100	29.78				
Sum			125	25.80				
Sum			160	20.44				
Sum			200	16.52				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency
Noise sensitive area: RH Purola Noise sensitive point: Finnish normal frequency - User defined (319)
Highest noise value at receptor: 8.0 m/s
WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,556	1,569						
1			20	47.39	73.8	0.00	5.60	7.60
1			25	44.06	77.2	0.03	5.40	8.30
1			32	39.54	79.1	0.05	5.20	9.20
1			40	34.61	80.3	0.08	5.00	10.30
1			50	30.68	82.3	0.11	4.70	11.50
1			63	29.02	86.6	0.17	4.30	13.00
1			80	25.54	89.3	0.25	3.70	14.80
1			100	20.90	90.9	0.39	3.00	16.80
1			125	17.09	93.5	0.60	1.80	18.80
1			160	11.99	95.5	0.89	0.00	21.10
1			200	8.40	96.5	1.29	0.00	22.80
10	4,264	4,269						
10			20	38.69	73.8	0.00	5.60	7.60
10			25	35.31	77.2	0.09	5.40	8.30
10			32	30.77	79.1	0.13	5.20	9.20
10			40	25.78	80.3	0.21	5.00	10.30
10			50	21.80	82.3	0.30	4.70	11.50
10			63	20.02	86.6	0.47	4.30	13.00
10			80	16.41	89.3	0.68	3.70	14.80
10			100	11.53	90.9	1.07	3.00	16.80
10			125	7.37	93.5	1.62	1.80	18.80
10			160	1.76	95.5	2.43	0.00	21.10
10			200	-2.51	96.5	3.50	0.00	22.80
11	4,102	4,108						
11			20	39.03	73.8	0.00	5.60	7.60
11			25	35.65	77.2	0.08	5.40	8.30
11			32	31.10	79.1	0.12	5.20	9.20
11			40	26.12	80.3	0.21	5.00	10.30
11			50	22.14	82.3	0.29	4.70	11.50
11			63	20.38	86.6	0.45	4.30	13.00
11			80	16.77	89.3	0.66	3.70	14.80
11			100	11.90	90.9	1.03	3.00	16.80
11			125	7.77	93.5	1.56	1.80	18.80
11			160	2.19	95.5	2.34	0.00	21.10
11			200	-2.04	96.5	3.37	0.00	22.80
12	4,776	4,780						
12			20	37.71	73.8	0.00	5.60	7.60
12			25	34.32	77.2	0.10	5.40	8.30
12			32	29.77	79.1	0.14	5.20	9.20
12			40	24.77	80.3	0.24	5.00	10.30
12			50	20.78	82.3	0.33	4.70	11.50
12			63	18.99	86.6	0.53	4.30	13.00
12			80	15.35	89.3	0.76	3.70	14.80
12			100	10.42	90.9	1.20	3.00	16.80
12			125	6.19	93.5	1.82	1.80	18.80
12			160	0.49	95.5	2.72	0.00	21.10
12			200	-3.91	96.5	3.92	0.00	22.80
13	4,698	4,702						
13			20	37.85	73.8	0.00	5.60	7.60
13			25	34.46	77.2	0.09	5.40	8.30
13			32	29.91	79.1	0.14	5.20	9.20
13			40	24.92	80.3	0.24	5.00	10.30
13			50	20.92	82.3	0.33	4.70	11.50
13			63	19.14	86.6	0.52	4.30	13.00
13			80	15.50	89.3	0.75	3.70	14.80
13			100	10.58	90.9	1.18	3.00	16.80
13			125	6.37	93.5	1.79	1.80	18.80
13			160	0.67	95.5	2.68	0.00	21.10
13			200	-3.70	96.5	3.86	0.00	22.80
14	3,829	3,835						
14			20	39.62	73.8	0.00	5.60	7.60
14			25	36.25	77.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	31.71	79.1	0.12	5.20	9.20
14			40	26.73	80.3	0.19	5.00	10.30
14			50	22.76	82.3	0.27	4.70	11.50
14			63	21.00	86.6	0.42	4.30	13.00
14			80	17.41	89.3	0.61	3.70	14.80
14			100	12.57	90.9	0.96	3.00	16.80
14			125	8.47	93.5	1.46	1.80	18.80
14			160	2.94	95.5	2.19	0.00	21.10
14			200	-1.22	96.5	3.14	0.00	22.80
15	5,107	5,111						
15			20	37.13	73.8	0.00	5.60	7.60
15			25	33.73	77.2	0.10	5.40	8.30
15			32	29.18	79.1	0.15	5.20	9.20
15			40	24.18	80.3	0.26	5.00	10.30
15			50	20.17	82.3	0.36	4.70	11.50
15			63	18.37	86.6	0.56	4.30	13.00
15			80	14.71	89.3	0.82	3.70	14.80
15			100	9.75	90.9	1.28	3.00	16.80
15			125	5.49	93.5	1.94	1.80	18.80
15			160	-0.28	95.5	2.91	0.00	21.10
15			200	-4.76	96.5	4.19	0.00	22.80
16	5,046	5,050						
16			20	37.23	73.8	0.00	5.60	7.60
16			25	33.83	77.2	0.10	5.40	8.30
16			32	29.28	79.1	0.15	5.20	9.20
16			40	24.28	80.3	0.25	5.00	10.30
16			50	20.28	82.3	0.35	4.70	11.50
16			63	18.48	86.6	0.56	4.30	13.00
16			80	14.83	89.3	0.81	3.70	14.80
16			100	9.87	90.9	1.26	3.00	16.80
16			125	5.61	93.5	1.92	1.80	18.80
16			160	-0.15	95.5	2.88	0.00	21.10
16			200	-4.61	96.5	4.14	0.00	22.80
17	4,927	4,933						
17			20	37.44	73.8	0.00	5.60	7.60
17			25	34.04	77.2	0.10	5.40	8.30
17			32	29.49	79.1	0.15	5.20	9.20
17			40	24.49	80.3	0.25	5.00	10.30
17			50	20.49	82.3	0.35	4.70	11.50
17			63	18.70	86.6	0.54	4.30	13.00
17			80	15.05	89.3	0.79	3.70	14.80
17			100	10.11	90.9	1.23	3.00	16.80
17			125	5.86	93.5	1.87	1.80	18.80
17			160	0.13	95.5	2.81	0.00	21.10
17			200	-4.31	96.5	4.04	0.00	22.80
18	4,463	4,469						
18			20	38.30	73.8	0.00	5.60	7.60
18			25	34.91	77.2	0.09	5.40	8.30
18			32	30.36	79.1	0.13	5.20	9.20
18			40	25.37	80.3	0.22	5.00	10.30
18			50	21.38	82.3	0.31	4.70	11.50
18			63	19.60	86.6	0.49	4.30	13.00
18			80	15.98	89.3	0.71	3.70	14.80
18			100	11.08	90.9	1.12	3.00	16.80
18			125	6.90	93.5	1.70	1.80	18.80
18			160	1.25	95.5	2.55	0.00	21.10
18			200	-3.07	96.5	3.66	0.00	22.80
19	5,539	5,542						
19			20	36.43	73.8	0.00	5.60	7.60
19			25	33.02	77.2	0.11	5.40	8.30
19			32	28.46	79.1	0.17	5.20	9.20
19			40	23.45	80.3	0.28	5.00	10.30
19			50	19.44	82.3	0.39	4.70	11.50
19			63	17.62	86.6	0.61	4.30	13.00

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	13.94	89.3	0.89	3.70	14.80
19			100	8.94	90.9	1.39	3.00	16.80
19			125	4.62	93.5	2.11	1.80	18.80
19			160	-1.23	95.5	3.16	0.00	21.10
19			200	-5.82	96.5	4.54	0.00	22.80
2	2,503	2,511						
2			20	43.30	73.8	0.00	5.60	7.60
2			25	39.95	77.2	0.05	5.40	8.30
2			32	35.43	79.1	0.08	5.20	9.20
2			40	30.48	80.3	0.13	5.00	10.30
2			50	26.53	82.3	0.18	4.70	11.50
2			63	24.83	86.6	0.28	4.30	13.00
2			80	21.30	89.3	0.40	3.70	14.80
2			100	16.58	90.9	0.63	3.00	16.80
2			125	12.65	93.5	0.95	1.80	18.80
2			160	7.37	95.5	1.43	0.00	21.10
2			200	3.54	96.5	2.06	0.00	22.80
20	5,713	5,716						
20			20	36.16	73.8	0.00	5.60	7.60
20			25	32.74	77.2	0.11	5.40	8.30
20			32	28.19	79.1	0.17	5.20	9.20
20			40	23.17	80.3	0.29	5.00	10.30
20			50	19.16	82.3	0.40	4.70	11.50
20			63	17.33	86.6	0.63	4.30	13.00
20			80	13.64	89.3	0.91	3.70	14.80
20			100	8.63	90.9	1.43	3.00	16.80
20			125	4.29	93.5	2.17	1.80	18.80
20			160	-1.60	95.5	3.26	0.00	21.10
20			200	-6.23	96.5	4.69	0.00	22.80
21	5,131	5,137						
21			20	37.09	73.8	0.00	5.60	7.60
21			25	33.68	77.2	0.10	5.40	8.30
21			32	29.13	79.1	0.15	5.20	9.20
21			40	24.13	80.3	0.26	5.00	10.30
21			50	20.13	82.3	0.36	4.70	11.50
21			63	18.32	86.6	0.57	4.30	13.00
21			80	14.66	89.3	0.82	3.70	14.80
21			100	9.70	90.9	1.28	3.00	16.80
21			125	5.43	93.5	1.95	1.80	18.80
21			160	-0.34	95.5	2.93	0.00	21.10
21			200	-4.83	96.5	4.21	0.00	22.80
22	5,334	5,338						
22			20	36.75	73.8	0.00	5.60	7.60
22			25	33.35	77.2	0.11	5.40	8.30
22			32	28.79	79.1	0.16	5.20	9.20
22			40	23.79	80.3	0.27	5.00	10.30
22			50	19.78	82.3	0.37	4.70	11.50
22			63	17.96	86.6	0.59	4.30	13.00
22			80	14.30	89.3	0.85	3.70	14.80
22			100	9.32	90.9	1.33	3.00	16.80
22			125	5.02	93.5	2.03	1.80	18.80
22			160	-0.79	95.5	3.04	0.00	21.10
22			200	-5.33	96.5	4.38	0.00	22.80
23	5,113	5,117						
23			20	37.12	73.8	0.00	5.60	7.60
23			25	33.72	77.2	0.10	5.40	8.30
23			32	29.17	79.1	0.15	5.20	9.20
23			40	24.16	80.3	0.26	5.00	10.30
23			50	20.16	82.3	0.36	4.70	11.50
23			63	18.36	86.6	0.56	4.30	13.00
23			80	14.70	89.3	0.82	3.70	14.80
23			100	9.74	90.9	1.28	3.00	16.80
23			125	5.48	93.5	1.94	1.80	18.80
23			160	-0.30	95.5	2.92	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-4.78	96.5	4.20	0.00	22.80
24	6,049	6,053						
24			20	35.66	73.8	0.00	5.60	7.60
24			25	32.24	77.2	0.12	5.40	8.30
24			32	27.68	79.1	0.18	5.20	9.20
24			40	22.66	80.3	0.30	5.00	10.30
24			50	18.64	82.3	0.42	4.70	11.50
24			63	16.79	86.6	0.67	4.30	13.00
24			80	13.09	89.3	0.97	3.70	14.80
24			100	8.05	90.9	1.51	3.00	16.80
24			125	3.66	93.5	2.30	1.80	18.80
24			160	-2.29	95.5	3.45	0.00	21.10
24			200	-7.00	96.5	4.96	0.00	22.80
25	5,525	5,529						
25			20	36.45	73.8	0.00	5.60	7.60
25			25	33.04	77.2	0.11	5.40	8.30
25			32	28.48	79.1	0.17	5.20	9.20
25			40	23.47	80.3	0.28	5.00	10.30
25			50	19.46	82.3	0.39	4.70	11.50
25			63	17.64	86.6	0.61	4.30	13.00
25			80	13.96	89.3	0.88	3.70	14.80
25			100	8.97	90.9	1.38	3.00	16.80
25			125	4.65	93.5	2.10	1.80	18.80
25			160	-1.20	95.5	3.15	0.00	21.10
25			200	-5.79	96.5	4.53	0.00	22.80
26	5,740	5,745						
26			20	36.11	73.8	0.00	5.60	7.60
26			25	32.70	77.2	0.11	5.40	8.30
26			32	28.14	79.1	0.17	5.20	9.20
26			40	23.13	80.3	0.29	5.00	10.30
26			50	19.11	82.3	0.40	4.70	11.50
26			63	17.28	86.6	0.63	4.30	13.00
26			80	13.59	89.3	0.92	3.70	14.80
26			100	8.58	90.9	1.44	3.00	16.80
26			125	4.23	93.5	2.18	1.80	18.80
26			160	-1.66	95.5	3.27	0.00	21.10
26			200	-6.30	96.5	4.71	0.00	22.80
27	5,828	5,832						
27			20	35.98	73.8	0.00	5.60	7.60
27			25	32.57	77.2	0.12	5.40	8.30
27			32	28.01	79.1	0.17	5.20	9.20
27			40	22.99	80.3	0.29	5.00	10.30
27			50	18.98	82.3	0.41	4.70	11.50
27			63	17.14	86.6	0.64	4.30	13.00
27			80	13.45	89.3	0.93	3.70	14.80
27			100	8.43	90.9	1.46	3.00	16.80
27			125	4.07	93.5	2.22	1.80	18.80
27			160	-1.84	95.5	3.32	0.00	21.10
27			200	-6.50	96.5	4.78	0.00	22.80
28	5,765	5,770						
28			20	36.08	73.8	0.00	5.60	7.60
28			25	32.66	77.2	0.12	5.40	8.30
28			32	28.10	79.1	0.17	5.20	9.20
28			40	23.09	80.3	0.29	5.00	10.30
28			50	19.07	82.3	0.40	4.70	11.50
28			63	17.24	86.6	0.63	4.30	13.00
28			80	13.55	89.3	0.92	3.70	14.80
28			100	8.53	90.9	1.44	3.00	16.80
28			125	4.18	93.5	2.19	1.80	18.80
28			160	-1.71	95.5	3.29	0.00	21.10
28			200	-6.35	96.5	4.73	0.00	22.80
29	5,772	5,776						
29			20	36.07	73.8	0.00	5.60	7.60
29			25	32.65	77.2	0.12	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			32	28.09	79.1	0.17	5.20	9.20
29			40	23.08	80.3	0.29	5.00	10.30
29			50	19.06	82.3	0.40	4.70	11.50
29			63	17.23	86.6	0.64	4.30	13.00
29			80	13.54	89.3	0.92	3.70	14.80
29			100	8.52	90.9	1.44	3.00	16.80
29			125	4.17	93.5	2.20	1.80	18.80
29			160	-1.73	95.5	3.29	0.00	21.10
29			200	-6.37	96.5	4.74	0.00	22.80
3	2,130	2,141						
3			20	44.69	73.8	0.00	5.60	7.60
3			25	41.35	77.2	0.04	5.40	8.30
3			32	36.83	79.1	0.06	5.20	9.20
3			40	31.88	80.3	0.11	5.00	10.30
3			50	27.94	82.3	0.15	4.70	11.50
3			63	26.25	86.6	0.24	4.30	13.00
3			80	22.75	89.3	0.34	3.70	14.80
3			100	18.05	90.9	0.54	3.00	16.80
3			125	14.18	93.5	0.81	1.80	18.80
3			160	8.97	95.5	1.22	0.00	21.10
3			200	5.23	96.5	1.76	0.00	22.80
30	5,335	5,339						
30			20	36.75	73.8	0.00	5.60	7.60
30			25	33.34	77.2	0.11	5.40	8.30
30			32	28.79	79.1	0.16	5.20	9.20
30			40	23.78	80.3	0.27	5.00	10.30
30			50	19.78	82.3	0.37	4.70	11.50
30			63	17.96	86.6	0.59	4.30	13.00
30			80	14.30	89.3	0.85	3.70	14.80
30			100	9.32	90.9	1.33	3.00	16.80
30			125	5.02	93.5	2.03	1.80	18.80
30			160	-0.79	95.5	3.04	0.00	21.10
30			200	-5.33	96.5	4.38	0.00	22.80
31	5,997	6,000						
31			20	35.74	73.8	0.00	5.60	7.60
31			25	32.32	77.2	0.12	5.40	8.30
31			32	27.76	79.1	0.18	5.20	9.20
31			40	22.74	80.3	0.30	5.00	10.30
31			50	18.72	82.3	0.42	4.70	11.50
31			63	16.88	86.6	0.66	4.30	13.00
31			80	13.18	89.3	0.96	3.70	14.80
31			100	8.14	90.9	1.50	3.00	16.80
31			125	3.76	93.5	2.28	1.80	18.80
31			160	-2.18	95.5	3.42	0.00	21.10
31			200	-6.88	96.5	4.92	0.00	22.80
32	5,507	5,511						
32			20	36.48	73.8	0.00	5.60	7.60
32			25	33.06	77.2	0.11	5.40	8.30
32			32	28.51	79.1	0.17	5.20	9.20
32			40	23.50	80.3	0.28	5.00	10.30
32			50	19.49	82.3	0.39	4.70	11.50
32			63	17.67	86.6	0.61	4.30	13.00
32			80	13.99	89.3	0.88	3.70	14.80
32			100	9.00	90.9	1.38	3.00	16.80
32			125	4.68	93.5	2.09	1.80	18.80
32			160	-1.17	95.5	3.14	0.00	21.10
32			200	-5.74	96.5	4.52	0.00	22.80
33	5,166	5,171						
33			20	37.03	73.8	0.00	5.60	7.60
33			25	33.62	77.2	0.10	5.40	8.30
33			32	29.07	79.1	0.16	5.20	9.20
33			40	24.07	80.3	0.26	5.00	10.30
33			50	20.07	82.3	0.36	4.70	11.50
33			63	18.26	86.6	0.57	4.30	13.00

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Junnunmäen tuulivoimahanke

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wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			80	14.60	89.3	0.83	3.70	14.80
33			100	9.64	90.9	1.29	3.00	16.80
33			125	5.36	93.5	1.97	1.80	18.80
33			160	-0.42	95.5	2.95	0.00	21.10
33			200	-4.91	96.5	4.24	0.00	22.80
4	2,691	2,699						
4			20	42.68	73.8	0.00	5.60	7.60
4			25	39.32	77.2	0.05	5.40	8.30
4			32	34.80	79.1	0.08	5.20	9.20
4			40	29.84	80.3	0.13	5.00	10.30
4			50	25.89	82.3	0.19	4.70	11.50
4			63	24.18	86.6	0.30	4.30	13.00
4			80	20.64	89.3	0.43	3.70	14.80
4			100	15.90	90.9	0.67	3.00	16.80
4			125	11.95	93.5	1.03	1.80	18.80
4			160	6.64	95.5	1.54	0.00	21.10
4			200	2.76	96.5	2.21	0.00	22.80
5	3,129	3,136						
5			20	41.37	73.8	0.00	5.60	7.60
5			25	38.01	77.2	0.06	5.40	8.30
5			32	33.48	79.1	0.09	5.20	9.20
5			40	28.52	80.3	0.16	5.00	10.30
5			50	24.55	82.3	0.22	4.70	11.50
5			63	22.83	86.6	0.34	4.30	13.00
5			80	19.27	89.3	0.50	3.70	14.80
5			100	14.49	90.9	0.78	3.00	16.80
5			125	10.48	93.5	1.19	1.80	18.80
5			160	5.08	95.5	1.79	0.00	21.10
5			200	1.10	96.5	2.57	0.00	22.80
6	3,549	3,555						
6			20	40.28	73.8	0.00	5.60	7.60
6			25	36.91	77.2	0.07	5.40	8.30
6			32	32.38	79.1	0.11	5.20	9.20
6			40	27.41	80.3	0.18	5.00	10.30
6			50	23.44	82.3	0.25	4.70	11.50
6			63	21.69	86.6	0.39	4.30	13.00
6			80	18.12	89.3	0.57	3.70	14.80
6			100	13.30	90.9	0.89	3.00	16.80
6			125	9.23	93.5	1.35	1.80	18.80
6			160	3.76	95.5	2.03	0.00	21.10
6			200	-0.33	96.5	2.91	0.00	22.80
7	3,579	3,585						
7			20	40.21	73.8	0.00	5.60	7.60
7			25	36.84	77.2	0.07	5.40	8.30
7			32	32.30	79.1	0.11	5.20	9.20
7			40	27.33	80.3	0.18	5.00	10.30
7			50	23.36	82.3	0.25	4.70	11.50
7			63	21.62	86.6	0.39	4.30	13.00
7			80	18.04	89.3	0.57	3.70	14.80
7			100	13.21	90.9	0.90	3.00	16.80
7			125	9.15	93.5	1.36	1.80	18.80
7			160	3.67	95.5	2.04	0.00	21.10
7			200	-0.43	96.5	2.94	0.00	22.80
8	3,341	3,347						
8			20	40.81	73.8	0.00	5.60	7.60
8			25	37.44	77.2	0.07	5.40	8.30
8			32	32.91	79.1	0.10	5.20	9.20
8			40	27.94	80.3	0.17	5.00	10.30
8			50	23.97	82.3	0.23	4.70	11.50
8			63	22.24	86.6	0.37	4.30	13.00
8			80	18.67	89.3	0.54	3.70	14.80
8			100	13.87	90.9	0.84	3.00	16.80
8			125	9.84	93.5	1.27	1.80	18.80
8			160	4.40	95.5	1.91	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	0.36	96.5	2.74	0.00	22.80
9	3,692	3,698						
9			20	39.94	73.8	0.00	5.60	7.60
9			25	36.57	77.2	0.07	5.40	8.30
9			32	32.03	79.1	0.11	5.20	9.20
9			40	27.06	80.3	0.18	5.00	10.30
9			50	23.08	82.3	0.26	4.70	11.50
9			63	21.33	86.6	0.41	4.30	13.00
9			80	17.75	89.3	0.59	3.70	14.80
9			100	12.92	90.9	0.92	3.00	16.80
9			125	8.84	93.5	1.41	1.80	18.80
9			160	3.33	95.5	2.11	0.00	21.10
9			200	-0.79	96.5	3.03	0.00	22.80
Sum								
Sum			20	54.86				
Sum			25	51.49				
Sum			32	46.95				
Sum			40	41.98				
Sum			50	38.01				
Sum			63	36.27				
Sum			80	32.70				
Sum			100	27.89				
Sum			125	23.85				
Sum			160	18.42				
Sum			200	14.42				

Noise sensitive area: RH Rinne 1 Noise sensitive point: Finnish normal frequency - User defined (314)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,757	1,770						
1			20	46.34	73.8	0.00	5.60	7.60
1			25	43.01	77.2	0.04	5.40	8.30
1			32	38.49	79.1	0.05	5.20	9.20
1			40	33.55	80.3	0.09	5.00	10.30
1			50	29.62	82.3	0.12	4.70	11.50
1			63	27.95	86.6	0.19	4.30	13.00
1			80	24.46	89.3	0.28	3.70	14.80
1			100	19.80	90.9	0.44	3.00	16.80
1			125	15.97	93.5	0.67	1.80	18.80
1			160	10.83	95.5	1.01	0.00	21.10
1			200	7.19	96.5	1.45	0.00	22.80
10	3,754	3,760						
10			20	39.80	73.8	0.00	5.60	7.60
10			25	36.42	77.2	0.08	5.40	8.30
10			32	31.88	79.1	0.11	5.20	9.20
10			40	26.91	80.3	0.19	5.00	10.30
10			50	22.93	82.3	0.26	4.70	11.50
10			63	21.18	86.6	0.41	4.30	13.00
10			80	17.59	89.3	0.60	3.70	14.80
10			100	12.76	90.9	0.94	3.00	16.80
10			125	8.67	93.5	1.43	1.80	18.80
10			160	3.15	95.5	2.14	0.00	21.10
10			200	-0.99	96.5	3.08	0.00	22.80
11	3,235	3,243						
11			20	41.08	73.8	0.00	5.60	7.60
11			25	37.72	77.2	0.06	5.40	8.30
11			32	33.18	79.1	0.10	5.20	9.20
11			40	28.22	80.3	0.16	5.00	10.30
11			50	24.25	82.3	0.23	4.70	11.50
11			63	22.53	86.6	0.36	4.30	13.00
11			80	18.96	89.3	0.52	3.70	14.80
11			100	14.17	90.9	0.81	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	10.15	93.5	1.23	1.80	18.80
11			160	4.73	95.5	1.85	0.00	21.10
11			200	0.72	96.5	2.66	0.00	22.80
12	4,327	4,332						
12			20	38.57	73.8	0.00	5.60	7.60
12			25	35.18	77.2	0.09	5.40	8.30
12			32	30.64	79.1	0.13	5.20	9.20
12			40	25.65	80.3	0.22	5.00	10.30
12			50	21.66	82.3	0.30	4.70	11.50
12			63	19.89	86.6	0.48	4.30	13.00
12			80	16.27	89.3	0.69	3.70	14.80
12			100	11.38	90.9	1.08	3.00	16.80
12			125	7.22	93.5	1.65	1.80	18.80
12			160	1.60	95.5	2.47	0.00	21.10
12			200	-2.69	96.5	3.55	0.00	22.80
13	3,749	3,755						
13			20	39.81	73.8	0.00	5.60	7.60
13			25	36.43	77.2	0.08	5.40	8.30
13			32	31.89	79.1	0.11	5.20	9.20
13			40	26.92	80.3	0.19	5.00	10.30
13			50	22.94	82.3	0.26	4.70	11.50
13			63	21.19	86.6	0.41	4.30	13.00
13			80	17.61	89.3	0.60	3.70	14.80
13			100	12.77	90.9	0.94	3.00	16.80
13			125	8.68	93.5	1.43	1.80	18.80
13			160	3.17	95.5	2.14	0.00	21.10
13			200	-0.97	96.5	3.08	0.00	22.80
14	2,284	2,295						
14			20	44.08	73.8	0.00	5.60	7.60
14			25	40.74	77.2	0.05	5.40	8.30
14			32	36.22	79.1	0.07	5.20	9.20
14			40	31.27	80.3	0.11	5.00	10.30
14			50	27.32	82.3	0.16	4.70	11.50
14			63	25.63	86.6	0.25	4.30	13.00
14			80	22.12	89.3	0.37	3.70	14.80
14			100	17.41	90.9	0.57	3.00	16.80
14			125	13.51	93.5	0.87	1.80	18.80
14			160	8.28	95.5	1.31	0.00	21.10
14			200	4.50	96.5	1.88	0.00	22.80
15	4,318	4,324						
15			20	38.58	73.8	0.00	5.60	7.60
15			25	35.20	77.2	0.09	5.40	8.30
15			32	30.65	79.1	0.13	5.20	9.20
15			40	25.67	80.3	0.22	5.00	10.30
15			50	21.68	82.3	0.30	4.70	11.50
15			63	19.91	86.6	0.48	4.30	13.00
15			80	16.29	89.3	0.69	3.70	14.80
15			100	11.40	90.9	1.08	3.00	16.80
15			125	7.24	93.5	1.64	1.80	18.80
15			160	1.62	95.5	2.46	0.00	21.10
15			200	-2.66	96.5	3.55	0.00	22.80
16	3,784	3,791						
16			20	39.73	73.8	0.00	5.60	7.60
16			25	36.35	77.2	0.08	5.40	8.30
16			32	31.81	79.1	0.11	5.20	9.20
16			40	26.84	80.3	0.19	5.00	10.30
16			50	22.86	82.3	0.27	4.70	11.50
16			63	21.11	86.6	0.42	4.30	13.00
16			80	17.52	89.3	0.61	3.70	14.80
16			100	12.68	90.9	0.95	3.00	16.80
16			125	8.59	93.5	1.44	1.80	18.80
16			160	3.07	95.5	2.16	0.00	21.10
16			200	-1.08	96.5	3.11	0.00	22.80
17	3,319	3,328						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	40.86	73.8	0.00	5.60	7.60
17			25	37.49	77.2	0.07	5.40	8.30
17			32	32.96	79.1	0.10	5.20	9.20
17			40	27.99	80.3	0.17	5.00	10.30
17			50	24.02	82.3	0.23	4.70	11.50
17			63	22.29	86.6	0.37	4.30	13.00
17			80	18.72	89.3	0.53	3.70	14.80
17			100	13.92	90.9	0.83	3.00	16.80
17			125	9.89	93.5	1.26	1.80	18.80
17			160	4.46	95.5	1.90	0.00	21.10
17			200	0.43	96.5	2.73	0.00	22.80
18	2,820	2,831						
18			20	42.26	73.8	0.00	5.60	7.60
18			25	38.90	77.2	0.06	5.40	8.30
18			32	34.38	79.1	0.08	5.20	9.20
18			40	29.42	80.3	0.14	5.00	10.30
18			50	25.46	82.3	0.20	4.70	11.50
18			63	23.75	86.6	0.31	4.30	13.00
18			80	20.21	89.3	0.45	3.70	14.80
18			100	15.45	90.9	0.71	3.00	16.80
18			125	11.49	93.5	1.08	1.80	18.80
18			160	6.15	95.5	1.61	0.00	21.10
18			200	2.24	96.5	2.32	0.00	22.80
19	4,523	4,528						
19			20	38.18	73.8	0.00	5.60	7.60
19			25	34.79	77.2	0.09	5.40	8.30
19			32	30.25	79.1	0.14	5.20	9.20
19			40	25.25	80.3	0.23	5.00	10.30
19			50	21.26	82.3	0.32	4.70	11.50
19			63	19.48	86.6	0.50	4.30	13.00
19			80	15.86	89.3	0.72	3.70	14.80
19			100	10.95	90.9	1.13	3.00	16.80
19			125	6.76	93.5	1.72	1.80	18.80
19			160	1.10	95.5	2.58	0.00	21.10
19			200	-3.23	96.5	3.71	0.00	22.80
2	2,171	2,181						
2			20	44.53	73.8	0.00	5.60	7.60
2			25	41.18	77.2	0.04	5.40	8.30
2			32	36.66	79.1	0.07	5.20	9.20
2			40	31.72	80.3	0.11	5.00	10.30
2			50	27.77	82.3	0.15	4.70	11.50
2			63	26.09	86.6	0.24	4.30	13.00
2			80	22.58	89.3	0.35	3.70	14.80
2			100	17.88	90.9	0.55	3.00	16.80
2			125	14.00	93.5	0.83	1.80	18.80
2			160	8.78	95.5	1.24	0.00	21.10
2			200	5.04	96.5	1.79	0.00	22.80
20	4,379	4,384						
20			20	38.46	73.8	0.00	5.60	7.60
20			25	35.07	77.2	0.09	5.40	8.30
20			32	30.53	79.1	0.13	5.20	9.20
20			40	25.54	80.3	0.22	5.00	10.30
20			50	21.55	82.3	0.31	4.70	11.50
20			63	19.78	86.6	0.48	4.30	13.00
20			80	16.16	89.3	0.70	3.70	14.80
20			100	11.27	90.9	1.10	3.00	16.80
20			125	7.10	93.5	1.67	1.80	18.80
20			160	1.46	95.5	2.50	0.00	21.10
20			200	-2.83	96.5	3.60	0.00	22.80
21	3,191	3,202						
21			20	41.19	73.8	0.00	5.60	7.60
21			25	37.83	77.2	0.06	5.40	8.30
21			32	33.30	79.1	0.10	5.20	9.20
21			40	28.33	80.3	0.16	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	24.37	82.3	0.22	4.70	11.50
21			63	22.64	86.6	0.35	4.30	13.00
21			80	19.08	89.3	0.51	3.70	14.80
21			100	14.29	90.9	0.80	3.00	16.80
21			125	10.28	93.5	1.22	1.80	18.80
21			160	4.87	95.5	1.82	0.00	21.10
21			200	0.87	96.5	2.63	0.00	22.80
22	3,124	3,133						
22			20	41.38	73.8	0.00	5.60	7.60
22			25	38.02	77.2	0.06	5.40	8.30
22			32	33.49	79.1	0.09	5.20	9.20
22			40	28.52	80.3	0.16	5.00	10.30
22			50	24.56	82.3	0.22	4.70	11.50
22			63	22.84	86.6	0.34	4.30	13.00
22			80	19.28	89.3	0.50	3.70	14.80
22			100	14.50	90.9	0.78	3.00	16.80
22			125	10.49	93.5	1.19	1.80	18.80
22			160	5.10	95.5	1.79	0.00	21.10
22			200	1.11	96.5	2.57	0.00	22.80
23	2,681	2,690						
23			20	42.70	73.8	0.00	5.60	7.60
23			25	39.35	77.2	0.05	5.40	8.30
23			32	34.82	79.1	0.08	5.20	9.20
23			40	29.87	80.3	0.13	5.00	10.30
23			50	25.92	82.3	0.19	4.70	11.50
23			63	24.21	86.6	0.30	4.30	13.00
23			80	20.67	89.3	0.43	3.70	14.80
23			100	15.93	90.9	0.67	3.00	16.80
23			125	11.98	93.5	1.02	1.80	18.80
23			160	6.67	95.5	1.53	0.00	21.10
23			200	2.80	96.5	2.21	0.00	22.80
24	4,406	4,412						
24			20	38.41	73.8	0.00	5.60	7.60
24			25	35.02	77.2	0.09	5.40	8.30
24			32	30.48	79.1	0.13	5.20	9.20
24			40	25.49	80.3	0.22	5.00	10.30
24			50	21.50	82.3	0.31	4.70	11.50
24			63	19.72	86.6	0.49	4.30	13.00
24			80	16.10	89.3	0.71	3.70	14.80
24			100	11.21	90.9	1.10	3.00	16.80
24			125	7.03	93.5	1.68	1.80	18.80
24			160	1.39	95.5	2.51	0.00	21.10
24			200	-2.91	96.5	3.62	0.00	22.80
25	3,818	3,825						
25			20	39.65	73.8	0.00	5.60	7.60
25			25	36.27	77.2	0.08	5.40	8.30
25			32	31.73	79.1	0.11	5.20	9.20
25			40	26.76	80.3	0.19	5.00	10.30
25			50	22.78	82.3	0.27	4.70	11.50
25			63	21.03	86.6	0.42	4.30	13.00
25			80	17.43	89.3	0.61	3.70	14.80
25			100	12.59	90.9	0.96	3.00	16.80
25			125	8.49	93.5	1.45	1.80	18.80
25			160	2.97	95.5	2.18	0.00	21.10
25			200	-1.19	96.5	3.14	0.00	22.80
26	3,784	3,793						
26			20	39.72	73.8	0.00	5.60	7.60
26			25	36.34	77.2	0.08	5.40	8.30
26			32	31.81	79.1	0.11	5.20	9.20
26			40	26.83	80.3	0.19	5.00	10.30
26			50	22.85	82.3	0.27	4.70	11.50
26			63	21.10	86.6	0.42	4.30	13.00
26			80	17.51	89.3	0.61	3.70	14.80
26			100	12.67	90.9	0.95	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
26			125	8.58	93.5	1.44	1.80	18.80
26			160	3.06	95.5	2.16	0.00	21.10
26			200	-1.09	96.5	3.11	0.00	22.80
27	3,665	3,674						
27			20	40.00	73.8	0.00	5.60	7.60
27			25	36.62	77.2	0.07	5.40	8.30
27			32	32.09	79.1	0.11	5.20	9.20
27			40	27.11	80.3	0.18	5.00	10.30
27			50	23.14	82.3	0.26	4.70	11.50
27			63	21.39	86.6	0.40	4.30	13.00
27			80	17.81	89.3	0.59	3.70	14.80
27			100	12.98	90.9	0.92	3.00	16.80
27			125	8.90	93.5	1.40	1.80	18.80
27			160	3.40	95.5	2.09	0.00	21.10
27			200	-0.71	96.5	3.01	0.00	22.80
28	3,380	3,388						
28			20	40.70	73.8	0.00	5.60	7.60
28			25	37.33	77.2	0.07	5.40	8.30
28			32	32.80	79.1	0.10	5.20	9.20
28			40	27.83	80.3	0.17	5.00	10.30
28			50	23.87	82.3	0.24	4.70	11.50
28			63	22.13	86.6	0.37	4.30	13.00
28			80	18.56	89.3	0.54	3.70	14.80
28			100	13.76	90.9	0.85	3.00	16.80
28			125	9.72	93.5	1.29	1.80	18.80
28			160	4.27	95.5	1.93	0.00	21.10
28			200	0.22	96.5	2.78	0.00	22.80
29	3,189	3,198						
29			20	41.20	73.8	0.00	5.60	7.60
29			25	37.84	77.2	0.06	5.40	8.30
29			32	33.31	79.1	0.10	5.20	9.20
29			40	28.34	80.3	0.16	5.00	10.30
29			50	24.38	82.3	0.22	4.70	11.50
29			63	22.65	86.6	0.35	4.30	13.00
29			80	19.09	89.3	0.51	3.70	14.80
29			100	14.30	90.9	0.80	3.00	16.80
29			125	10.29	93.5	1.22	1.80	18.80
29			160	4.88	95.5	1.82	0.00	21.10
29			200	0.88	96.5	2.62	0.00	22.80
3	1,627	1,643						
3			20	46.99	73.8	0.00	5.60	7.60
3			25	43.66	77.2	0.03	5.40	8.30
3			32	39.14	79.1	0.05	5.20	9.20
3			40	34.21	80.3	0.08	5.00	10.30
3			50	30.27	82.3	0.11	4.70	11.50
3			63	28.61	86.6	0.18	4.30	13.00
3			80	25.13	89.3	0.26	3.70	14.80
3			100	20.48	90.9	0.41	3.00	16.80
3			125	16.67	93.5	0.62	1.80	18.80
3			160	11.55	95.5	0.94	0.00	21.10
3			200	7.94	96.5	1.35	0.00	22.80
30	2,646	2,655						
30			20	42.82	73.8	0.00	5.60	7.60
30			25	39.47	77.2	0.05	5.40	8.30
30			32	34.94	79.1	0.08	5.20	9.20
30			40	29.99	80.3	0.13	5.00	10.30
30			50	26.03	82.3	0.19	4.70	11.50
30			63	24.33	86.6	0.29	4.30	13.00
30			80	20.79	89.3	0.42	3.70	14.80
30			100	16.05	90.9	0.66	3.00	16.80
30			125	12.11	93.5	1.01	1.80	18.80
30			160	6.80	95.5	1.51	0.00	21.10
30			200	2.94	96.5	2.18	0.00	22.80
31	3,304	3,311						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			20	40.90	73.8	0.00	5.60	7.60
31			25	37.54	77.2	0.07	5.40	8.30
31			32	33.00	79.1	0.10	5.20	9.20
31			40	28.04	80.3	0.17	5.00	10.30
31			50	24.07	82.3	0.23	4.70	11.50
31			63	22.34	86.6	0.36	4.30	13.00
31			80	18.77	89.3	0.53	3.70	14.80
31			100	13.97	90.9	0.83	3.00	16.80
31			125	9.94	93.5	1.26	1.80	18.80
31			160	4.51	95.5	1.89	0.00	21.10
31			200	0.49	96.5	2.71	0.00	22.80
32	2,718	2,726						
32			20	42.59	73.8	0.00	5.60	7.60
32			25	39.23	77.2	0.05	5.40	8.30
32			32	34.71	79.1	0.08	5.20	9.20
32			40	29.75	80.3	0.14	5.00	10.30
32			50	25.80	82.3	0.19	4.70	11.50
32			63	24.09	86.6	0.30	4.30	13.00
32			80	20.55	89.3	0.44	3.70	14.80
32			100	15.81	90.9	0.68	3.00	16.80
32			125	11.85	93.5	1.04	1.80	18.80
32			160	6.53	95.5	1.55	0.00	21.10
32			200	2.65	96.5	2.24	0.00	22.80
33	2,352	2,364						
33			20	43.83	73.8	0.00	5.60	7.60
33			25	40.48	77.2	0.05	5.40	8.30
33			32	35.95	79.1	0.07	5.20	9.20
33			40	31.01	80.3	0.12	5.00	10.30
33			50	27.06	82.3	0.17	4.70	11.50
33			63	25.37	86.6	0.26	4.30	13.00
33			80	21.85	89.3	0.38	3.70	14.80
33			100	17.13	90.9	0.59	3.00	16.80
33			125	13.23	93.5	0.90	1.80	18.80
33			160	7.98	95.5	1.35	0.00	21.10
33			200	4.19	96.5	1.94	0.00	22.80
4	1,684	1,699						
4			20	46.70	73.8	0.00	5.60	7.60
4			25	43.36	77.2	0.03	5.40	8.30
4			32	38.84	79.1	0.05	5.20	9.20
4			40	33.91	80.3	0.08	5.00	10.30
4			50	29.98	82.3	0.12	4.70	11.50
4			63	28.31	86.6	0.19	4.30	13.00
4			80	24.82	89.3	0.27	3.70	14.80
4			100	20.17	90.9	0.42	3.00	16.80
4			125	16.35	93.5	0.65	1.80	18.80
4			160	11.23	95.5	0.97	0.00	21.10
4			200	7.60	96.5	1.39	0.00	22.80
5	1,506	1,522						
5			20	47.65	73.8	0.00	5.60	7.60
5			25	44.32	77.2	0.03	5.40	8.30
5			32	39.81	79.1	0.05	5.20	9.20
5			40	34.88	80.3	0.08	5.00	10.30
5			50	30.95	82.3	0.11	4.70	11.50
5			63	29.29	86.6	0.17	4.30	13.00
5			80	25.81	89.3	0.24	3.70	14.80
5			100	21.17	90.9	0.38	3.00	16.80
5			125	17.37	93.5	0.58	1.80	18.80
5			160	12.29	95.5	0.87	0.00	21.10
5			200	8.71	96.5	1.25	0.00	22.80
6	3,107	3,115						
6			20	41.43	73.8	0.00	5.60	7.60
6			25	38.07	77.2	0.06	5.40	8.30
6			32	33.54	79.1	0.09	5.20	9.20
6			40	28.57	80.3	0.16	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			50	24.61	82.3	0.22	4.70	11.50
6			63	22.89	86.6	0.34	4.30	13.00
6			80	19.33	89.3	0.50	3.70	14.80
6			100	14.55	90.9	0.78	3.00	16.80
6			125	10.55	93.5	1.18	1.80	18.80
6			160	5.15	95.5	1.78	0.00	21.10
6			200	1.18	96.5	2.55	0.00	22.80
7	2,622	2,631						
7			20	42.90	73.8	0.00	5.60	7.60
7			25	39.55	77.2	0.05	5.40	8.30
7			32	35.02	79.1	0.08	5.20	9.20
7			40	30.07	80.3	0.13	5.00	10.30
7			50	26.11	82.3	0.18	4.70	11.50
7			63	24.41	86.6	0.29	4.30	13.00
7			80	20.88	89.3	0.42	3.70	14.80
7			100	16.14	90.9	0.66	3.00	16.80
7			125	12.20	93.5	1.00	1.80	18.80
7			160	6.90	95.5	1.50	0.00	21.10
7			200	3.04	96.5	2.16	0.00	22.80
8	2,069	2,081						
8			20	44.94	73.8	0.00	5.60	7.60
8			25	41.59	77.2	0.04	5.40	8.30
8			32	37.07	79.1	0.06	5.20	9.20
8			40	32.13	80.3	0.10	5.00	10.30
8			50	28.19	82.3	0.15	4.70	11.50
8			63	26.51	86.6	0.23	4.30	13.00
8			80	23.00	89.3	0.33	3.70	14.80
8			100	18.32	90.9	0.52	3.00	16.80
8			125	14.45	93.5	0.79	1.80	18.80
8			160	9.25	95.5	1.19	0.00	21.10
8			200	5.53	96.5	1.71	0.00	22.80
9	1,808	1,821						
9			20	46.10	73.8	0.00	5.60	7.60
9			25	42.76	77.2	0.04	5.40	8.30
9			32	38.24	79.1	0.05	5.20	9.20
9			40	33.31	80.3	0.09	5.00	10.30
9			50	29.37	82.3	0.13	4.70	11.50
9			63	27.70	86.6	0.20	4.30	13.00
9			80	24.20	89.3	0.29	3.70	14.80
9			100	19.54	90.9	0.46	3.00	16.80
9			125	15.70	93.5	0.69	1.80	18.80
9			160	10.56	95.5	1.04	0.00	21.10
9			200	6.90	96.5	1.49	0.00	22.80
Sum								
Sum			20	58.03				
Sum			25	54.68				
Sum			32	50.15				
Sum			40	45.20				
Sum			50	41.25				
Sum			63	39.55				
Sum			80	36.03				
Sum			100	31.31				
Sum			125	27.39				
Sum			160	22.13				
Sum			200	18.33				

Noise sensitive area: RH Rinne 2 Noise sensitive point: Finnish normal frequency - User defined (313)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,807	1,820						
1			20	46.10	73.8	0.00	5.60	7.60
1			25	42.76	77.2	0.04	5.40	8.30

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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			32	38.25	79.1	0.05	5.20	9.20
1			40	33.31	80.3	0.09	5.00	10.30
1			50	29.37	82.3	0.13	4.70	11.50
1			63	27.70	86.6	0.20	4.30	13.00
1			80	24.21	89.3	0.29	3.70	14.80
1			100	19.55	90.9	0.45	3.00	16.80
1			125	15.71	93.5	0.69	1.80	18.80
1			160	10.56	95.5	1.04	0.00	21.10
1			200	6.91	96.5	1.49	0.00	22.80
10	3,900	3,906						
10			20	39.46	73.8	0.00	5.60	7.60
10			25	36.09	77.2	0.08	5.40	8.30
10			32	31.55	79.1	0.12	5.20	9.20
10			40	26.57	80.3	0.20	5.00	10.30
10			50	22.59	82.3	0.27	4.70	11.50
10			63	20.83	86.6	0.43	4.30	13.00
10			80	17.24	89.3	0.63	3.70	14.80
10			100	12.39	90.9	0.98	3.00	16.80
10			125	8.28	93.5	1.48	1.80	18.80
10			160	2.74	95.5	2.23	0.00	21.10
10			200	-1.44	96.5	3.20	0.00	22.80
11	3,387	3,394						
11			20	40.69	73.8	0.00	5.60	7.60
11			25	37.32	77.2	0.07	5.40	8.30
11			32	32.78	79.1	0.10	5.20	9.20
11			40	27.82	80.3	0.17	5.00	10.30
11			50	23.85	82.3	0.24	4.70	11.50
11			63	22.11	86.6	0.37	4.30	13.00
11			80	18.54	89.3	0.54	3.70	14.80
11			100	13.74	90.9	0.85	3.00	16.80
11			125	9.70	93.5	1.29	1.80	18.80
11			160	4.25	95.5	1.93	0.00	21.10
11			200	0.20	96.5	2.78	0.00	22.80
12	4,474	4,480						
12			20	38.28	73.8	0.00	5.60	7.60
12			25	34.89	77.2	0.09	5.40	8.30
12			32	30.34	79.1	0.13	5.20	9.20
12			40	25.35	80.3	0.22	5.00	10.30
12			50	21.36	82.3	0.31	4.70	11.50
12			63	19.58	86.6	0.49	4.30	13.00
12			80	15.96	89.3	0.72	3.70	14.80
12			100	11.06	90.9	1.12	3.00	16.80
12			125	6.87	93.5	1.70	1.80	18.80
12			160	1.22	95.5	2.55	0.00	21.10
12			200	-3.10	96.5	3.67	0.00	22.80
13	3,904	3,911						
13			20	39.46	73.8	0.00	5.60	7.60
13			25	36.08	77.2	0.08	5.40	8.30
13			32	31.54	79.1	0.12	5.20	9.20
13			40	26.56	80.3	0.20	5.00	10.30
13			50	22.58	82.3	0.27	4.70	11.50
13			63	20.82	86.6	0.43	4.30	13.00
13			80	17.23	89.3	0.63	3.70	14.80
13			100	12.38	90.9	0.98	3.00	16.80
13			125	8.27	93.5	1.49	1.80	18.80
13			160	2.73	95.5	2.23	0.00	21.10
13			200	-1.45	96.5	3.21	0.00	22.80
14	2,443	2,453						
14			20	43.51	73.8	0.00	5.60	7.60
14			25	40.16	77.2	0.05	5.40	8.30
14			32	35.63	79.1	0.07	5.20	9.20
14			40	30.68	80.3	0.12	5.00	10.30
14			50	26.73	82.3	0.17	4.70	11.50
14			63	25.04	86.6	0.27	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			80	21.51	89.3	0.39	3.70	14.80
14			100	16.79	90.9	0.61	3.00	16.80
14			125	12.87	93.5	0.93	1.80	18.80
14			160	7.61	95.5	1.40	0.00	21.10
14			200	3.80	96.5	2.01	0.00	22.80
15	4,473	4,478						
15			20	38.28	73.8	0.00	5.60	7.60
15			25	34.89	77.2	0.09	5.40	8.30
15			32	30.34	79.1	0.13	5.20	9.20
15			40	25.35	80.3	0.22	5.00	10.30
15			50	21.36	82.3	0.31	4.70	11.50
15			63	19.59	86.6	0.49	4.30	13.00
15			80	15.96	89.3	0.72	3.70	14.80
15			100	11.06	90.9	1.12	3.00	16.80
15			125	6.88	93.5	1.70	1.80	18.80
15			160	1.23	95.5	2.55	0.00	21.10
15			200	-3.09	96.5	3.67	0.00	22.80
16	3,943	3,949						
16			20	39.37	73.8	0.00	5.60	7.60
16			25	35.99	77.2	0.08	5.40	8.30
16			32	31.45	79.1	0.12	5.20	9.20
16			40	26.47	80.3	0.20	5.00	10.30
16			50	22.49	82.3	0.28	4.70	11.50
16			63	20.73	86.6	0.43	4.30	13.00
16			80	17.14	89.3	0.63	3.70	14.80
16			100	12.28	90.9	0.99	3.00	16.80
16			125	8.17	93.5	1.50	1.80	18.80
16			160	2.62	95.5	2.25	0.00	21.10
16			200	-1.57	96.5	3.24	0.00	22.80
17	3,479	3,487						
17			20	40.45	73.8	0.00	5.60	7.60
17			25	37.08	77.2	0.07	5.40	8.30
17			32	32.55	79.1	0.10	5.20	9.20
17			40	27.58	80.3	0.17	5.00	10.30
17			50	23.61	82.3	0.24	4.70	11.50
17			63	21.87	86.6	0.38	4.30	13.00
17			80	18.29	89.3	0.56	3.70	14.80
17			100	13.48	90.9	0.87	3.00	16.80
17			125	9.43	93.5	1.33	1.80	18.80
17			160	3.96	95.5	1.99	0.00	21.10
17			200	-0.11	96.5	2.86	0.00	22.80
18	2,980	2,990						
18			20	41.79	73.8	0.00	5.60	7.60
18			25	38.43	77.2	0.06	5.40	8.30
18			32	33.90	79.1	0.09	5.20	9.20
18			40	28.94	80.3	0.15	5.00	10.30
18			50	24.98	82.3	0.21	4.70	11.50
18			63	23.26	86.6	0.33	4.30	13.00
18			80	19.71	89.3	0.48	3.70	14.80
18			100	14.94	90.9	0.75	3.00	16.80
18			125	10.95	93.5	1.14	1.80	18.80
18			160	5.58	95.5	1.70	0.00	21.10
18			200	1.63	96.5	2.45	0.00	22.80
19	4,681	4,686						
19			20	37.88	73.8	0.00	5.60	7.60
19			25	34.49	77.2	0.09	5.40	8.30
19			32	29.94	79.1	0.14	5.20	9.20
19			40	24.95	80.3	0.23	5.00	10.30
19			50	20.96	82.3	0.33	4.70	11.50
19			63	19.17	86.6	0.52	4.30	13.00
19			80	15.53	89.3	0.75	3.70	14.80
19			100	10.61	90.9	1.17	3.00	16.80
19			125	6.40	93.5	1.78	1.80	18.80
19			160	0.71	95.5	2.67	0.00	21.10

To be continued on next page...

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DE-28211 Bremen
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			200	-3.66	96.5	3.84	0.00	22.80
2	2,286	2,296						
2			20	44.08	73.8	0.00	5.60	7.60
2			25	40.73	77.2	0.05	5.40	8.30
2			32	36.21	79.1	0.07	5.20	9.20
2			40	31.26	80.3	0.11	5.00	10.30
2			50	27.32	82.3	0.16	4.70	11.50
2			63	25.63	86.6	0.25	4.30	13.00
2			80	22.11	89.3	0.37	3.70	14.80
2			100	17.41	90.9	0.57	3.00	16.80
2			125	13.51	93.5	0.87	1.80	18.80
2			160	8.27	95.5	1.31	0.00	21.10
2			200	4.50	96.5	1.88	0.00	22.80
20	4,539	4,544						
20			20	38.15	73.8	0.00	5.60	7.60
20			25	34.76	77.2	0.09	5.40	8.30
20			32	30.21	79.1	0.14	5.20	9.20
20			40	25.22	80.3	0.23	5.00	10.30
20			50	21.23	82.3	0.32	4.70	11.50
20			63	19.45	86.6	0.50	4.30	13.00
20			80	15.82	89.3	0.73	3.70	14.80
20			100	10.92	90.9	1.14	3.00	16.80
20			125	6.72	93.5	1.73	1.80	18.80
20			160	1.06	95.5	2.59	0.00	21.10
20			200	-3.28	96.5	3.73	0.00	22.80
21	3,346	3,357						
21			20	40.78	73.8	0.00	5.60	7.60
21			25	37.41	77.2	0.07	5.40	8.30
21			32	32.88	79.1	0.10	5.20	9.20
21			40	27.91	80.3	0.17	5.00	10.30
21			50	23.95	82.3	0.23	4.70	11.50
21			63	22.21	86.6	0.37	4.30	13.00
21			80	18.64	89.3	0.54	3.70	14.80
21			100	13.84	90.9	0.84	3.00	16.80
21			125	9.81	93.5	1.28	1.80	18.80
21			160	4.37	95.5	1.91	0.00	21.10
21			200	0.33	96.5	2.75	0.00	22.80
22	3,271	3,279						
22			20	40.98	73.8	0.00	5.60	7.60
22			25	37.62	77.2	0.07	5.40	8.30
22			32	33.09	79.1	0.10	5.20	9.20
22			40	28.12	80.3	0.16	5.00	10.30
22			50	24.16	82.3	0.23	4.70	11.50
22			63	22.42	86.6	0.36	4.30	13.00
22			80	18.86	89.3	0.52	3.70	14.80
22			100	14.07	90.9	0.82	3.00	16.80
22			125	10.04	93.5	1.25	1.80	18.80
22			160	4.62	95.5	1.87	0.00	21.10
22			200	0.60	96.5	2.69	0.00	22.80
23	2,816	2,825						
23			20	42.28	73.8	0.00	5.60	7.60
23			25	38.92	77.2	0.06	5.40	8.30
23			32	34.40	79.1	0.08	5.20	9.20
23			40	29.44	80.3	0.14	5.00	10.30
23			50	25.48	82.3	0.20	4.70	11.50
23			63	23.77	86.6	0.31	4.30	13.00
23			80	20.23	89.3	0.45	3.70	14.80
23			100	15.47	90.9	0.71	3.00	16.80
23			125	11.51	93.5	1.07	1.80	18.80
23			160	6.17	95.5	1.61	0.00	21.10
23			200	2.26	96.5	2.32	0.00	22.80
24	4,564	4,570						
24			20	38.10	73.8	0.00	5.60	7.60
24			25	34.71	77.2	0.09	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			32	30.17	79.1	0.14	5.20	9.20
24			40	25.17	80.3	0.23	5.00	10.30
24			50	21.18	82.3	0.32	4.70	11.50
24			63	19.40	86.6	0.50	4.30	13.00
24			80	15.77	89.3	0.73	3.70	14.80
24			100	10.86	90.9	1.14	3.00	16.80
24			125	6.67	93.5	1.74	1.80	18.80
24			160	1.00	95.5	2.60	0.00	21.10
24			200	-3.34	96.5	3.75	0.00	22.80
25	3,976	3,983						
25			20	39.30	73.8	0.00	5.60	7.60
25			25	35.92	77.2	0.08	5.40	8.30
25			32	31.38	79.1	0.12	5.20	9.20
25			40	26.40	80.3	0.20	5.00	10.30
25			50	22.42	82.3	0.28	4.70	11.50
25			63	20.66	86.6	0.44	4.30	13.00
25			80	17.06	89.3	0.64	3.70	14.80
25			100	12.20	90.9	1.00	3.00	16.80
25			125	8.08	93.5	1.51	1.80	18.80
25			160	2.53	95.5	2.27	0.00	21.10
25			200	-1.67	96.5	3.27	0.00	22.80
26	3,938	3,946						
26			20	39.38	73.8	0.00	5.60	7.60
26			25	36.00	77.2	0.08	5.40	8.30
26			32	31.46	79.1	0.12	5.20	9.20
26			40	26.48	80.3	0.20	5.00	10.30
26			50	22.50	82.3	0.28	4.70	11.50
26			63	20.74	86.6	0.43	4.30	13.00
26			80	17.14	89.3	0.63	3.70	14.80
26			100	12.29	90.9	0.99	3.00	16.80
26			125	8.18	93.5	1.50	1.80	18.80
26			160	2.63	95.5	2.25	0.00	21.10
26			200	-1.56	96.5	3.24	0.00	22.80
27	3,812	3,820						
27			20	39.66	73.8	0.00	5.60	7.60
27			25	36.28	77.2	0.08	5.40	8.30
27			32	31.74	79.1	0.11	5.20	9.20
27			40	26.77	80.3	0.19	5.00	10.30
27			50	22.79	82.3	0.27	4.70	11.50
27			63	21.04	86.6	0.42	4.30	13.00
27			80	17.45	89.3	0.61	3.70	14.80
27			100	12.60	90.9	0.96	3.00	16.80
27			125	8.51	93.5	1.45	1.80	18.80
27			160	2.98	95.5	2.18	0.00	21.10
27			200	-1.17	96.5	3.13	0.00	22.80
28	3,515	3,522						
28			20	40.36	73.8	0.00	5.60	7.60
28			25	36.99	77.2	0.07	5.40	8.30
28			32	32.46	79.1	0.11	5.20	9.20
28			40	27.49	80.3	0.18	5.00	10.30
28			50	23.52	82.3	0.25	4.70	11.50
28			63	21.78	86.6	0.39	4.30	13.00
28			80	18.20	89.3	0.56	3.70	14.80
28			100	13.38	90.9	0.88	3.00	16.80
28			125	9.33	93.5	1.34	1.80	18.80
28			160	3.86	95.5	2.01	0.00	21.10
28			200	-0.22	96.5	2.89	0.00	22.80
29	3,306	3,315						
29			20	40.89	73.8	0.00	5.60	7.60
29			25	37.53	77.2	0.07	5.40	8.30
29			32	32.99	79.1	0.10	5.20	9.20
29			40	28.03	80.3	0.17	5.00	10.30
29			50	24.06	82.3	0.23	4.70	11.50
29			63	22.33	86.6	0.36	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			80	18.76	89.3	0.53	3.70	14.80
29			100	13.96	90.9	0.83	3.00	16.80
29			125	9.93	93.5	1.26	1.80	18.80
29			160	4.50	95.5	1.89	0.00	21.10
29			200	0.47	96.5	2.72	0.00	22.80
3	1,724	1,738						
3			20	46.50	73.8	0.00	5.60	7.60
3			25	43.16	77.2	0.03	5.40	8.30
3			32	38.64	79.1	0.05	5.20	9.20
3			40	33.71	80.3	0.09	5.00	10.30
3			50	29.78	82.3	0.12	4.70	11.50
3			63	28.11	86.6	0.19	4.30	13.00
3			80	24.62	89.3	0.28	3.70	14.80
3			100	19.96	90.9	0.43	3.00	16.80
3			125	16.14	93.5	0.66	1.80	18.80
3			160	11.01	95.5	0.99	0.00	21.10
3			200	7.37	96.5	1.43	0.00	22.80
30	2,749	2,757						
30			20	42.49	73.8	0.00	5.60	7.60
30			25	39.14	77.2	0.06	5.40	8.30
30			32	34.61	79.1	0.08	5.20	9.20
30			40	29.65	80.3	0.14	5.00	10.30
30			50	25.70	82.3	0.19	4.70	11.50
30			63	23.99	86.6	0.30	4.30	13.00
30			80	20.45	89.3	0.44	3.70	14.80
30			100	15.70	90.9	0.69	3.00	16.80
30			125	11.74	93.5	1.05	1.80	18.80
30			160	6.42	95.5	1.57	0.00	21.10
30			200	2.53	96.5	2.26	0.00	22.80
31	3,402	3,409						
31			20	40.65	73.8	0.00	5.60	7.60
31			25	37.28	77.2	0.07	5.40	8.30
31			32	32.75	79.1	0.10	5.20	9.20
31			40	27.78	80.3	0.17	5.00	10.30
31			50	23.81	82.3	0.24	4.70	11.50
31			63	22.07	86.6	0.37	4.30	13.00
31			80	18.50	89.3	0.55	3.70	14.80
31			100	13.70	90.9	0.85	3.00	16.80
31			125	9.65	93.5	1.30	1.80	18.80
31			160	4.21	95.5	1.94	0.00	21.10
31			200	0.15	96.5	2.80	0.00	22.80
32	2,788	2,797						
32			20	42.37	73.8	0.00	5.60	7.60
32			25	39.01	77.2	0.06	5.40	8.30
32			32	34.48	79.1	0.08	5.20	9.20
32			40	29.53	80.3	0.14	5.00	10.30
32			50	25.57	82.3	0.20	4.70	11.50
32			63	23.86	86.6	0.31	4.30	13.00
32			80	20.32	89.3	0.45	3.70	14.80
32			100	15.57	90.9	0.70	3.00	16.80
32			125	11.60	93.5	1.06	1.80	18.80
32			160	6.27	95.5	1.59	0.00	21.10
32			200	2.37	96.5	2.29	0.00	22.80
33	2,390	2,402						
33			20	43.69	73.8	0.00	5.60	7.60
33			25	40.34	77.2	0.05	5.40	8.30
33			32	35.82	79.1	0.07	5.20	9.20
33			40	30.87	80.3	0.12	5.00	10.30
33			50	26.92	82.3	0.17	4.70	11.50
33			63	25.22	86.6	0.26	4.30	13.00
33			80	21.70	89.3	0.38	3.70	14.80
33			100	16.99	90.9	0.60	3.00	16.80
33			125	13.08	93.5	0.91	1.80	18.80
33			160	7.82	95.5	1.37	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
33			200	4.02	96.5	1.97	0.00	22.80
4	1,817	1,830						
4			20	46.05	73.8	0.00	5.60	7.60
4			25	42.71	77.2	0.04	5.40	8.30
4			32	38.19	79.1	0.05	5.20	9.20
4			40	33.26	80.3	0.09	5.00	10.30
4			50	29.32	82.3	0.13	4.70	11.50
4			63	27.65	86.6	0.20	4.30	13.00
4			80	24.16	89.3	0.29	3.70	14.80
4			100	19.49	90.9	0.46	3.00	16.80
4			125	15.65	93.5	0.70	1.80	18.80
4			160	10.51	95.5	1.04	0.00	21.10
4			200	6.85	96.5	1.50	0.00	22.80
5	1,660	1,674						
5			20	46.82	73.8	0.00	5.60	7.60
5			25	43.49	77.2	0.03	5.40	8.30
5			32	38.97	79.1	0.05	5.20	9.20
5			40	34.04	80.3	0.08	5.00	10.30
5			50	30.11	82.3	0.12	4.70	11.50
5			63	28.44	86.6	0.18	4.30	13.00
5			80	24.96	89.3	0.27	3.70	14.80
5			100	20.31	90.9	0.42	3.00	16.80
5			125	16.49	93.5	0.64	1.80	18.80
5			160	11.37	95.5	0.95	0.00	21.10
5			200	7.75	96.5	1.37	0.00	22.80
6	3,246	3,254						
6			20	41.05	73.8	0.00	5.60	7.60
6			25	37.69	77.2	0.07	5.40	8.30
6			32	33.15	79.1	0.10	5.20	9.20
6			40	28.19	80.3	0.16	5.00	10.30
6			50	24.22	82.3	0.23	4.70	11.50
6			63	22.49	86.6	0.36	4.30	13.00
6			80	18.93	89.3	0.52	3.70	14.80
6			100	14.14	90.9	0.81	3.00	16.80
6			125	10.12	93.5	1.24	1.80	18.80
6			160	4.70	95.5	1.85	0.00	21.10
6			200	0.68	96.5	2.67	0.00	22.80
7	2,771	2,779						
7			20	42.42	73.8	0.00	5.60	7.60
7			25	39.07	77.2	0.06	5.40	8.30
7			32	34.54	79.1	0.08	5.20	9.20
7			40	29.58	80.3	0.14	5.00	10.30
7			50	25.63	82.3	0.19	4.70	11.50
7			63	23.92	86.6	0.31	4.30	13.00
7			80	20.38	89.3	0.44	3.70	14.80
7			100	15.63	90.9	0.69	3.00	16.80
7			125	11.66	93.5	1.06	1.80	18.80
7			160	6.34	95.5	1.58	0.00	21.10
7			200	2.44	96.5	2.28	0.00	22.80
8	2,221	2,232						
8			20	44.33	73.8	0.00	5.60	7.60
8			25	40.98	77.2	0.04	5.40	8.30
8			32	36.46	79.1	0.07	5.20	9.20
8			40	31.52	80.3	0.11	5.00	10.30
8			50	27.57	82.3	0.16	4.70	11.50
8			63	25.88	86.6	0.25	4.30	13.00
8			80	22.37	89.3	0.36	3.70	14.80
8			100	17.67	90.9	0.56	3.00	16.80
8			125	13.78	93.5	0.85	1.80	18.80
8			160	8.56	95.5	1.27	0.00	21.10
8			200	4.80	96.5	1.83	0.00	22.80
9	1,967	1,979						
9			20	45.37	73.8	0.00	5.60	7.60
9			25	42.03	77.2	0.04	5.40	8.30

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			32	37.51	79.1	0.06	5.20	9.20
9			40	32.57	80.3	0.10	5.00	10.30
9			50	28.63	82.3	0.14	4.70	11.50
9			63	26.95	86.6	0.22	4.30	13.00
9			80	23.45	89.3	0.32	3.70	14.80
9			100	18.78	90.9	0.49	3.00	16.80
9			125	14.92	93.5	0.75	1.80	18.80
9			160	9.74	95.5	1.13	0.00	21.10
9			200	6.05	96.5	1.62	0.00	22.80
Sum								
Sum			20	57.57				
Sum			25	54.22				
Sum			32	49.69				
Sum			40	44.74				
Sum			50	40.78				
Sum			63	39.08				
Sum			80	35.55				
Sum			100	30.81				
Sum			125	26.87				
Sum			160	21.58				
Sum			200	17.74				

Noise sensitive area: RH Riuttalantie 2 Noise sensitive point: Finnish normal frequency - User defined (323)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	7,125	7,127						
1			20	34.24	73.8	0.00	5.60	7.60
1			25	30.80	77.2	0.14	5.40	8.30
1			32	26.23	79.1	0.21	5.20	9.20
1			40	21.19	80.3	0.36	5.00	10.30
1			50	17.14	82.3	0.50	4.70	11.50
1			63	15.26	86.6	0.78	4.30	13.00
1			80	11.50	89.3	1.14	3.70	14.80
1			100	6.36	90.9	1.78	3.00	16.80
1			125	1.83	93.5	2.71	1.80	18.80
1			160	-4.32	95.5	4.06	0.00	21.10
1			200	-9.30	96.5	5.84	0.00	22.80
10	4,264	4,269						
10			20	38.69	73.8	0.00	5.60	7.60
10			25	35.31	77.2	0.09	5.40	8.30
10			32	30.77	79.1	0.13	5.20	9.20
10			40	25.78	80.3	0.21	5.00	10.30
10			50	21.79	82.3	0.30	4.70	11.50
10			63	20.02	86.6	0.47	4.30	13.00
10			80	16.41	89.3	0.68	3.70	14.80
10			100	11.53	90.9	1.07	3.00	16.80
10			125	7.37	93.5	1.62	1.80	18.80
10			160	1.76	95.5	2.43	0.00	21.10
10			200	-2.51	96.5	3.50	0.00	22.80
11	4,462	4,466						
11			20	38.30	73.8	0.00	5.60	7.60
11			25	34.91	77.2	0.09	5.40	8.30
11			32	30.37	79.1	0.13	5.20	9.20
11			40	25.38	80.3	0.22	5.00	10.30
11			50	21.39	82.3	0.31	4.70	11.50
11			63	19.61	86.6	0.49	4.30	13.00
11			80	15.99	89.3	0.71	3.70	14.80
11			100	11.08	90.9	1.12	3.00	16.80
11			125	6.90	93.5	1.70	1.80	18.80
11			160	1.26	95.5	2.55	0.00	21.10
11			200	-3.06	96.5	3.66	0.00	22.80
12	3,800	3,805						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			20	39.69	73.8	0.00	5.60	7.60
12			25	36.32	77.2	0.08	5.40	8.30
12			32	31.78	79.1	0.11	5.20	9.20
12			40	26.80	80.3	0.19	5.00	10.30
12			50	22.83	82.3	0.27	4.70	11.50
12			63	21.08	86.6	0.42	4.30	13.00
12			80	17.49	89.3	0.61	3.70	14.80
12			100	12.64	90.9	0.95	3.00	16.80
12			125	8.55	93.5	1.45	1.80	18.80
12			160	3.03	95.5	2.17	0.00	21.10
12			200	-1.13	96.5	3.12	0.00	22.80
13	3,860	3,865						
13			20	39.56	73.8	0.00	5.60	7.60
13			25	36.18	77.2	0.08	5.40	8.30
13			32	31.64	79.1	0.12	5.20	9.20
13			40	26.66	80.3	0.19	5.00	10.30
13			50	22.69	82.3	0.27	4.70	11.50
13			63	20.93	86.6	0.43	4.30	13.00
13			80	17.34	89.3	0.62	3.70	14.80
13			100	12.49	90.9	0.97	3.00	16.80
13			125	8.39	93.5	1.47	1.80	18.80
13			160	2.85	95.5	2.20	0.00	21.10
13			200	-1.31	96.5	3.17	0.00	22.80
14	5,150	5,154						
14			20	37.06	73.8	0.00	5.60	7.60
14			25	33.65	77.2	0.10	5.40	8.30
14			32	29.10	79.1	0.15	5.20	9.20
14			40	24.10	80.3	0.26	5.00	10.30
14			50	20.10	82.3	0.36	4.70	11.50
14			63	18.29	86.6	0.57	4.30	13.00
14			80	14.63	89.3	0.82	3.70	14.80
14			100	9.67	90.9	1.29	3.00	16.80
14			125	5.40	93.5	1.96	1.80	18.80
14			160	-0.38	95.5	2.94	0.00	21.10
14			200	-4.87	96.5	4.23	0.00	22.80
15	3,415	3,420						
15			20	40.62	73.8	0.00	5.60	7.60
15			25	37.25	77.2	0.07	5.40	8.30
15			32	32.72	79.1	0.10	5.20	9.20
15			40	27.75	80.3	0.17	5.00	10.30
15			50	23.78	82.3	0.24	4.70	11.50
15			63	22.04	86.6	0.38	4.30	13.00
15			80	18.47	89.3	0.55	3.70	14.80
15			100	13.66	90.9	0.86	3.00	16.80
15			125	9.62	93.5	1.30	1.80	18.80
15			160	4.17	95.5	1.95	0.00	21.10
15			200	0.11	96.5	2.80	0.00	22.80
16	3,655	3,660						
16			20	40.03	73.8	0.00	5.60	7.60
16			25	36.66	77.2	0.07	5.40	8.30
16			32	32.12	79.1	0.11	5.20	9.20
16			40	27.15	80.3	0.18	5.00	10.30
16			50	23.17	82.3	0.26	4.70	11.50
16			63	21.43	86.6	0.40	4.30	13.00
16			80	17.84	89.3	0.59	3.70	14.80
16			100	13.02	90.9	0.91	3.00	16.80
16			125	8.94	93.5	1.39	1.80	18.80
16			160	3.44	95.5	2.09	0.00	21.10
16			200	-0.67	96.5	3.00	0.00	22.80
17	4,101	4,107						
17			20	39.03	73.8	0.00	5.60	7.60
17			25	35.65	77.2	0.08	5.40	8.30
17			32	31.11	79.1	0.12	5.20	9.20
17			40	26.12	80.3	0.21	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			50	22.14	82.3	0.29	4.70	11.50
17			63	20.38	86.6	0.45	4.30	13.00
17			80	16.77	89.3	0.66	3.70	14.80
17			100	11.90	90.9	1.03	3.00	16.80
17			125	7.77	93.5	1.56	1.80	18.80
17			160	2.19	95.5	2.34	0.00	21.10
17			200	-2.04	96.5	3.37	0.00	22.80
18	4,592	4,597						
18			20	38.05	73.8	0.00	5.60	7.60
18			25	34.66	77.2	0.09	5.40	8.30
18			32	30.11	79.1	0.14	5.20	9.20
18			40	25.12	80.3	0.23	5.00	10.30
18			50	21.13	82.3	0.32	4.70	11.50
18			63	19.34	86.6	0.51	4.30	13.00
18			80	15.71	89.3	0.74	3.70	14.80
18			100	10.80	90.9	1.15	3.00	16.80
18			125	6.60	93.5	1.75	1.80	18.80
18			160	0.93	95.5	2.62	0.00	21.10
18			200	-3.42	96.5	3.77	0.00	22.80
19	3,009	3,015						
19			20	41.72	73.8	0.00	5.60	7.60
19			25	38.35	77.2	0.06	5.40	8.30
19			32	33.82	79.1	0.09	5.20	9.20
19			40	28.86	80.3	0.15	5.00	10.30
19			50	24.90	82.3	0.21	4.70	11.50
19			63	23.18	86.6	0.33	4.30	13.00
19			80	19.63	89.3	0.48	3.70	14.80
19			100	14.86	90.9	0.75	3.00	16.80
19			125	10.87	93.5	1.15	1.80	18.80
19			160	5.50	95.5	1.72	0.00	21.10
19			200	1.54	96.5	2.47	0.00	22.80
2	6,073	6,076						
2			20	35.63	73.8	0.00	5.60	7.60
2			25	32.21	77.2	0.12	5.40	8.30
2			32	27.65	79.1	0.18	5.20	9.20
2			40	22.62	80.3	0.30	5.00	10.30
2			50	18.60	82.3	0.43	4.70	11.50
2			63	16.76	86.6	0.67	4.30	13.00
2			80	13.06	89.3	0.97	3.70	14.80
2			100	8.01	90.9	1.52	3.00	16.80
2			125	3.62	93.5	2.31	1.80	18.80
2			160	-2.33	95.5	3.46	0.00	21.10
2			200	-7.05	96.5	4.98	0.00	22.80
20	3,033	3,039						
20			20	41.64	73.8	0.00	5.60	7.60
20			25	38.28	77.2	0.06	5.40	8.30
20			32	33.75	79.1	0.09	5.20	9.20
20			40	28.79	80.3	0.15	5.00	10.30
20			50	24.83	82.3	0.21	4.70	11.50
20			63	23.11	86.6	0.33	4.30	13.00
20			80	19.56	89.3	0.49	3.70	14.80
20			100	14.78	90.9	0.76	3.00	16.80
20			125	10.79	93.5	1.15	1.80	18.80
20			160	5.41	95.5	1.73	0.00	21.10
20			200	1.45	96.5	2.49	0.00	22.80
21	4,378	4,384						
21			20	38.46	73.8	0.00	5.60	7.60
21			25	35.07	77.2	0.09	5.40	8.30
21			32	30.53	79.1	0.13	5.20	9.20
21			40	25.54	80.3	0.22	5.00	10.30
21			50	21.56	82.3	0.31	4.70	11.50
21			63	19.78	86.6	0.48	4.30	13.00
21			80	16.16	89.3	0.70	3.70	14.80
21			100	11.27	90.9	1.10	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			125	7.10	93.5	1.67	1.80	18.80
21			160	1.46	95.5	2.50	0.00	21.10
21			200	-2.83	96.5	3.60	0.00	22.80
22	4,739	4,743						
22			20	37.78	73.8	0.00	5.60	7.60
22			25	34.38	77.2	0.09	5.40	8.30
22			32	29.84	79.1	0.14	5.20	9.20
22			40	24.84	80.3	0.24	5.00	10.30
22			50	20.85	82.3	0.33	4.70	11.50
22			63	19.06	86.6	0.52	4.30	13.00
22			80	15.42	89.3	0.76	3.70	14.80
22			100	10.49	90.9	1.19	3.00	16.80
22			125	6.28	93.5	1.80	1.80	18.80
22			160	0.57	95.5	2.70	0.00	21.10
22			200	-3.81	96.5	3.89	0.00	22.80
23	5,379	5,383						
23			20	36.68	73.8	0.00	5.60	7.60
23			25	33.27	77.2	0.11	5.40	8.30
23			32	28.72	79.1	0.16	5.20	9.20
23			40	23.71	80.3	0.27	5.00	10.30
23			50	19.70	82.3	0.38	4.70	11.50
23			63	17.89	86.6	0.59	4.30	13.00
23			80	14.22	89.3	0.86	3.70	14.80
23			100	9.23	90.9	1.35	3.00	16.80
23			125	4.93	93.5	2.05	1.80	18.80
23			160	-0.89	95.5	3.07	0.00	21.10
23			200	-5.43	96.5	4.41	0.00	22.80
24	3,120	3,127						
24			20	41.40	73.8	0.00	5.60	7.60
24			25	38.03	77.2	0.06	5.40	8.30
24			32	33.50	79.1	0.09	5.20	9.20
24			40	28.54	80.3	0.16	5.00	10.30
24			50	24.58	82.3	0.22	4.70	11.50
24			63	22.85	86.6	0.34	4.30	13.00
24			80	19.30	89.3	0.50	3.70	14.80
24			100	14.52	90.9	0.78	3.00	16.80
24			125	10.51	93.5	1.19	1.80	18.80
24			160	5.12	95.5	1.78	0.00	21.10
24			200	1.13	96.5	2.56	0.00	22.80
25	3,676	3,682						
25			20	39.98	73.8	0.00	5.60	7.60
25			25	36.60	77.2	0.07	5.40	8.30
25			32	32.07	79.1	0.11	5.20	9.20
25			40	27.09	80.3	0.18	5.00	10.30
25			50	23.12	82.3	0.26	4.70	11.50
25			63	21.37	86.6	0.41	4.30	13.00
25			80	17.79	89.3	0.59	3.70	14.80
25			100	12.96	90.9	0.92	3.00	16.80
25			125	8.88	93.5	1.40	1.80	18.80
25			160	3.38	95.5	2.10	0.00	21.10
25			200	-0.74	96.5	3.02	0.00	22.80
26	3,937	3,944						
26			20	39.38	73.8	0.00	5.60	7.60
26			25	36.00	77.2	0.08	5.40	8.30
26			32	31.46	79.1	0.12	5.20	9.20
26			40	26.48	80.3	0.20	5.00	10.30
26			50	22.50	82.3	0.28	4.70	11.50
26			63	20.75	86.6	0.43	4.30	13.00
26			80	17.15	89.3	0.63	3.70	14.80
26			100	12.29	90.9	0.99	3.00	16.80
26			125	8.18	93.5	1.50	1.80	18.80
26			160	2.63	95.5	2.25	0.00	21.10
26			200	-1.55	96.5	3.23	0.00	22.80
27	4,333	4,338						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			20	38.55	73.8	0.00	5.60	7.60
27			25	35.17	77.2	0.09	5.40	8.30
27			32	30.62	79.1	0.13	5.20	9.20
27			40	25.64	80.3	0.22	5.00	10.30
27			50	21.65	82.3	0.30	4.70	11.50
27			63	19.88	86.6	0.48	4.30	13.00
27			80	16.26	89.3	0.69	3.70	14.80
27			100	11.37	90.9	1.08	3.00	16.80
27			125	7.20	93.5	1.65	1.80	18.80
27			160	1.58	95.5	2.47	0.00	21.10
27			200	-2.70	96.5	3.56	0.00	22.80
28	4,951	4,956						
28			20	37.40	73.8	0.00	5.60	7.60
28			25	34.00	77.2	0.10	5.40	8.30
28			32	29.45	79.1	0.15	5.20	9.20
28			40	24.45	80.3	0.25	5.00	10.30
28			50	20.45	82.3	0.35	4.70	11.50
28			63	18.65	86.6	0.55	4.30	13.00
28			80	15.00	89.3	0.79	3.70	14.80
28			100	10.06	90.9	1.24	3.00	16.80
28			125	5.81	93.5	1.88	1.80	18.80
28			160	0.07	95.5	2.82	0.00	21.10
28			200	-4.37	96.5	4.06	0.00	22.80
29	5,598	5,602						
29			20	36.33	73.8	0.00	5.60	7.60
29			25	32.92	77.2	0.11	5.40	8.30
29			32	28.36	79.1	0.17	5.20	9.20
29			40	23.35	80.3	0.28	5.00	10.30
29			50	19.34	82.3	0.39	4.70	11.50
29			63	17.52	86.6	0.62	4.30	13.00
29			80	13.84	89.3	0.90	3.70	14.80
29			100	8.83	90.9	1.40	3.00	16.80
29			125	4.50	93.5	2.13	1.80	18.80
29			160	-1.36	95.5	3.19	0.00	21.10
29			200	-5.96	96.5	4.59	0.00	22.80
3	6,607	6,610						
3			20	34.90	73.8	0.00	5.60	7.60
3			25	31.46	77.2	0.13	5.40	8.30
3			32	26.90	79.1	0.20	5.20	9.20
3			40	21.87	80.3	0.33	5.00	10.30
3			50	17.83	82.3	0.46	4.70	11.50
3			63	15.97	86.6	0.73	4.30	13.00
3			80	12.24	89.3	1.06	3.70	14.80
3			100	7.14	90.9	1.65	3.00	16.80
3			125	2.68	93.5	2.51	1.80	18.80
3			160	-3.37	95.5	3.77	0.00	21.10
3			200	-8.22	96.5	5.42	0.00	22.80
30	6,137	6,140						
30			20	35.54	73.8	0.00	5.60	7.60
30			25	32.11	77.2	0.12	5.40	8.30
30			32	27.55	79.1	0.18	5.20	9.20
30			40	22.53	80.3	0.31	5.00	10.30
30			50	18.51	82.3	0.43	4.70	11.50
30			63	16.66	86.6	0.68	4.30	13.00
30			80	12.95	89.3	0.98	3.70	14.80
30			100	7.90	90.9	1.53	3.00	16.80
30			125	3.50	93.5	2.33	1.80	18.80
30			160	-2.46	95.5	3.50	0.00	21.10
30			200	-7.20	96.5	5.03	0.00	22.80
31	6,058	6,061						
31			20	35.65	73.8	0.00	5.60	7.60
31			25	32.23	77.2	0.12	5.40	8.30
31			32	27.67	79.1	0.18	5.20	9.20
31			40	22.65	80.3	0.30	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			50	18.63	82.3	0.42	4.70	11.50
31			63	16.78	86.6	0.67	4.30	13.00
31			80	13.08	89.3	0.97	3.70	14.80
31			100	8.03	90.9	1.52	3.00	16.80
31			125	3.65	93.5	2.30	1.80	18.80
31			160	-2.31	95.5	3.45	0.00	21.10
31			200	-7.02	96.5	4.97	0.00	22.80
32	6,753	6,756						
32			20	34.71	73.8	0.00	5.60	7.60
32			25	31.27	77.2	0.14	5.40	8.30
32			32	26.70	79.1	0.20	5.20	9.20
32			40	21.67	80.3	0.34	5.00	10.30
32			50	17.63	82.3	0.47	4.70	11.50
32			63	15.76	86.6	0.74	4.30	13.00
32			80	12.02	89.3	1.08	3.70	14.80
32			100	6.92	90.9	1.69	3.00	16.80
32			125	2.44	93.5	2.57	1.80	18.80
32			160	-3.65	95.5	3.85	0.00	21.10
32			200	-8.53	96.5	5.54	0.00	22.80
33	7,315	7,318						
33			20	34.01	73.8	0.00	5.60	7.60
33			25	30.57	77.2	0.15	5.40	8.30
33			32	25.99	79.1	0.22	5.20	9.20
33			40	20.95	80.3	0.37	5.00	10.30
33			50	16.90	82.3	0.51	4.70	11.50
33			63	15.01	86.6	0.81	4.30	13.00
33			80	11.24	89.3	1.17	3.70	14.80
33			100	6.08	90.9	1.83	3.00	16.80
33			125	1.53	93.5	2.78	1.80	18.80
33			160	-4.66	95.5	4.17	0.00	21.10
33			200	-9.69	96.5	6.00	0.00	22.80
4	6,115	6,119						
4			20	35.57	73.8	0.00	5.60	7.60
4			25	32.14	77.2	0.12	5.40	8.30
4			32	27.58	79.1	0.18	5.20	9.20
4			40	22.56	80.3	0.31	5.00	10.30
4			50	18.54	82.3	0.43	4.70	11.50
4			63	16.69	86.6	0.67	4.30	13.00
4			80	12.99	89.3	0.98	3.70	14.80
4			100	7.94	90.9	1.53	3.00	16.80
4			125	3.54	93.5	2.33	1.80	18.80
4			160	-2.42	95.5	3.49	0.00	21.10
4			200	-7.15	96.5	5.02	0.00	22.80
5	5,981	5,984						
5			20	35.76	73.8	0.00	5.60	7.60
5			25	32.34	77.2	0.12	5.40	8.30
5			32	27.78	79.1	0.18	5.20	9.20
5			40	22.76	80.3	0.30	5.00	10.30
5			50	18.74	82.3	0.42	4.70	11.50
5			63	16.90	86.6	0.66	4.30	13.00
5			80	13.20	89.3	0.96	3.70	14.80
5			100	8.16	90.9	1.50	3.00	16.80
5			125	3.79	93.5	2.27	1.80	18.80
5			160	-2.15	95.5	3.41	0.00	21.10
5			200	-6.85	96.5	4.91	0.00	22.80
6	4,973	4,977						
6			20	37.36	73.8	0.00	5.60	7.60
6			25	33.96	77.2	0.10	5.40	8.30
6			32	29.41	79.1	0.15	5.20	9.20
6			40	24.41	80.3	0.25	5.00	10.30
6			50	20.41	82.3	0.35	4.70	11.50
6			63	18.61	86.6	0.55	4.30	13.00
6			80	14.96	89.3	0.80	3.70	14.80
6			100	10.02	90.9	1.24	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			125	5.77	93.5	1.89	1.80	18.80
6			160	0.02	95.5	2.84	0.00	21.10
6			200	-4.42	96.5	4.08	0.00	22.80
7	5,059	5,062						
7			20	37.21	73.8	0.00	5.60	7.60
7			25	33.81	77.2	0.10	5.40	8.30
7			32	29.26	79.1	0.15	5.20	9.20
7			40	24.26	80.3	0.25	5.00	10.30
7			50	20.26	82.3	0.35	4.70	11.50
7			63	18.46	86.6	0.56	4.30	13.00
7			80	14.80	89.3	0.81	3.70	14.80
7			100	9.85	90.9	1.27	3.00	16.80
7			125	5.59	93.5	1.92	1.80	18.80
7			160	-0.17	95.5	2.89	0.00	21.10
7			200	-4.64	96.5	4.15	0.00	22.80
8	5,492	5,495						
8			20	36.50	73.8	0.00	5.60	7.60
8			25	33.09	77.2	0.11	5.40	8.30
8			32	28.54	79.1	0.16	5.20	9.20
8			40	23.53	80.3	0.27	5.00	10.30
8			50	19.52	82.3	0.38	4.70	11.50
8			63	17.70	86.6	0.60	4.30	13.00
8			80	14.02	89.3	0.88	3.70	14.80
8			100	9.03	90.9	1.37	3.00	16.80
8			125	4.71	93.5	2.09	1.80	18.80
8			160	-1.13	95.5	3.13	0.00	21.10
8			200	-5.71	96.5	4.51	0.00	22.80
9	5,604	5,607						
9			20	36.32	73.8	0.00	5.60	7.60
9			25	32.91	77.2	0.11	5.40	8.30
9			32	28.36	79.1	0.17	5.20	9.20
9			40	23.34	80.3	0.28	5.00	10.30
9			50	19.33	82.3	0.39	4.70	11.50
9			63	17.51	86.6	0.62	4.30	13.00
9			80	13.83	89.3	0.90	3.70	14.80
9			100	8.82	90.9	1.40	3.00	16.80
9			125	4.49	93.5	2.13	1.80	18.80
9			160	-1.37	95.5	3.20	0.00	21.10
9			200	-5.97	96.5	4.60	0.00	22.80
Sum								
Sum			20	53.40				
Sum			25	50.02				
Sum			32	45.47				
Sum			40	40.49				
Sum			50	36.50				
Sum			63	34.73				
Sum			80	31.11				
Sum			100	26.22				
Sum			125	22.06				
Sum			160	16.46				
Sum			200	12.21				

Noise sensitive area: RH Riuttasjärvi Noise sensitive point: Finnish normal frequency - User defined (308)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,239	6,242						
1			20	35.39	73.8	0.00	5.60	7.60
1			25	31.97	77.2	0.12	5.40	8.30
1			32	27.41	79.1	0.19	5.20	9.20
1			40	22.38	80.3	0.31	5.00	10.30
1			50	18.36	82.3	0.44	4.70	11.50
1			63	16.51	86.6	0.69	4.30	13.00

To be continued on next page...

Project:
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Licensed user:
wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			80	12.80	89.3	1.00	3.70	14.80
1			100	7.73	90.9	1.56	3.00	16.80
1			125	3.32	93.5	2.37	1.80	18.80
1			160	-2.66	95.5	3.56	0.00	21.10
1			200	-7.42	96.5	5.12	0.00	22.80
10	3,435	3,440						
10			20	40.57	73.8	0.00	5.60	7.60
10			25	37.20	77.2	0.07	5.40	8.30
10			32	32.67	79.1	0.10	5.20	9.20
10			40	27.70	80.3	0.17	5.00	10.30
10			50	23.73	82.3	0.24	4.70	11.50
10			63	21.99	86.6	0.38	4.30	13.00
10			80	18.42	89.3	0.55	3.70	14.80
10			100	13.61	90.9	0.86	3.00	16.80
10			125	9.56	93.5	1.31	1.80	18.80
10			160	4.11	95.5	1.96	0.00	21.10
10			200	0.05	96.5	2.82	0.00	22.80
11	3,578	3,583						
11			20	40.21	73.8	0.00	5.60	7.60
11			25	36.84	77.2	0.07	5.40	8.30
11			32	32.31	79.1	0.11	5.20	9.20
11			40	27.34	80.3	0.18	5.00	10.30
11			50	23.36	82.3	0.25	4.70	11.50
11			63	21.62	86.6	0.39	4.30	13.00
11			80	18.04	89.3	0.57	3.70	14.80
11			100	13.22	90.9	0.90	3.00	16.80
11			125	9.15	93.5	1.36	1.80	18.80
11			160	3.67	95.5	2.04	0.00	21.10
11			200	-0.42	96.5	2.94	0.00	22.80
12	3,018	3,024						
12			20	41.69	73.8	0.00	5.60	7.60
12			25	38.33	77.2	0.06	5.40	8.30
12			32	33.80	79.1	0.09	5.20	9.20
12			40	28.84	80.3	0.15	5.00	10.30
12			50	24.88	82.3	0.21	4.70	11.50
12			63	23.16	86.6	0.33	4.30	13.00
12			80	19.60	89.3	0.48	3.70	14.80
12			100	14.83	90.9	0.76	3.00	16.80
12			125	10.84	93.5	1.15	1.80	18.80
12			160	5.47	95.5	1.72	0.00	21.10
12			200	1.51	96.5	2.48	0.00	22.80
13	2,976	2,982						
13			20	41.81	73.8	0.00	5.60	7.60
13			25	38.45	77.2	0.06	5.40	8.30
13			32	33.92	79.1	0.09	5.20	9.20
13			40	28.96	80.3	0.15	5.00	10.30
13			50	25.00	82.3	0.21	4.70	11.50
13			63	23.28	86.6	0.33	4.30	13.00
13			80	19.73	89.3	0.48	3.70	14.80
13			100	14.96	90.9	0.75	3.00	16.80
13			125	10.98	93.5	1.13	1.80	18.80
13			160	5.61	95.5	1.70	0.00	21.10
13			200	1.66	96.5	2.45	0.00	22.80
14	4,226	4,231						
14			20	38.77	73.8	0.00	5.60	7.60
14			25	35.39	77.2	0.08	5.40	8.30
14			32	30.84	79.1	0.13	5.20	9.20
14			40	25.86	80.3	0.21	5.00	10.30
14			50	21.88	82.3	0.30	4.70	11.50
14			63	20.11	86.6	0.47	4.30	13.00
14			80	16.49	89.3	0.68	3.70	14.80
14			100	11.61	90.9	1.06	3.00	16.80
14			125	7.46	93.5	1.61	1.80	18.80
14			160	1.86	95.5	2.41	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			200	-2.40	96.5	3.47	0.00	22.80
15	2,573	2,580						
15			20	43.07	73.8	0.00	5.60	7.60
15			25	39.72	77.2	0.05	5.40	8.30
15			32	35.19	79.1	0.08	5.20	9.20
15			40	30.24	80.3	0.13	5.00	10.30
15			50	26.29	82.3	0.18	4.70	11.50
15			63	24.58	86.6	0.28	4.30	13.00
15			80	21.06	89.3	0.41	3.70	14.80
15			100	16.32	90.9	0.64	3.00	16.80
15			125	12.39	93.5	0.98	1.80	18.80
15			160	7.10	95.5	1.47	0.00	21.10
15			200	3.25	96.5	2.12	0.00	22.80
16	2,737	2,743						
16			20	42.53	73.8	0.00	5.60	7.60
16			25	39.18	77.2	0.05	5.40	8.30
16			32	34.65	79.1	0.08	5.20	9.20
16			40	29.70	80.3	0.14	5.00	10.30
16			50	25.74	82.3	0.19	4.70	11.50
16			63	24.03	86.6	0.30	4.30	13.00
16			80	20.50	89.3	0.44	3.70	14.80
16			100	15.75	90.9	0.69	3.00	16.80
16			125	11.79	93.5	1.04	1.80	18.80
16			160	6.47	95.5	1.56	0.00	21.10
16			200	2.59	96.5	2.25	0.00	22.80
17	3,172	3,179						
17			20	41.25	73.8	0.00	5.60	7.60
17			25	37.89	77.2	0.06	5.40	8.30
17			32	33.36	79.1	0.10	5.20	9.20
17			40	28.40	80.3	0.16	5.00	10.30
17			50	24.43	82.3	0.22	4.70	11.50
17			63	22.70	86.6	0.35	4.30	13.00
17			80	19.15	89.3	0.51	3.70	14.80
17			100	14.36	90.9	0.79	3.00	16.80
17			125	10.35	93.5	1.21	1.80	18.80
17			160	4.94	95.5	1.81	0.00	21.10
17			200	0.95	96.5	2.61	0.00	22.80
18	3,663	3,670						
18			20	40.01	73.8	0.00	5.60	7.60
18			25	36.63	77.2	0.07	5.40	8.30
18			32	32.10	79.1	0.11	5.20	9.20
18			40	27.12	80.3	0.18	5.00	10.30
18			50	23.15	82.3	0.26	4.70	11.50
18			63	21.40	86.6	0.40	4.30	13.00
18			80	17.82	89.3	0.59	3.70	14.80
18			100	12.99	90.9	0.92	3.00	16.80
18			125	8.91	93.5	1.39	1.80	18.80
18			160	3.42	95.5	2.09	0.00	21.10
18			200	-0.70	96.5	3.01	0.00	22.80
19	2,127	2,135						
19			20	44.71	73.8	0.00	5.60	7.60
19			25	41.37	77.2	0.04	5.40	8.30
19			32	36.85	79.1	0.06	5.20	9.20
19			40	31.91	80.3	0.11	5.00	10.30
19			50	27.96	82.3	0.15	4.70	11.50
19			63	26.28	86.6	0.23	4.30	13.00
19			80	22.77	89.3	0.34	3.70	14.80
19			100	18.08	90.9	0.53	3.00	16.80
19			125	14.20	93.5	0.81	1.80	18.80
19			160	9.00	95.5	1.22	0.00	21.10
19			200	5.26	96.5	1.75	0.00	22.80
2	5,193	5,197						
2			20	36.99	73.8	0.00	5.60	7.60
2			25	33.58	77.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			32	29.03	79.1	0.16	5.20	9.20
2			40	24.03	80.3	0.26	5.00	10.30
2			50	20.02	82.3	0.36	4.70	11.50
2			63	18.21	86.6	0.57	4.30	13.00
2			80	14.55	89.3	0.83	3.70	14.80
2			100	9.59	90.9	1.30	3.00	16.80
2			125	5.31	93.5	1.97	1.80	18.80
2			160	-0.48	95.5	2.96	0.00	21.10
2			200	-4.98	96.5	4.26	0.00	22.80
20	2,106	2,114						
20			20	44.80	73.8	0.00	5.60	7.60
20			25	41.45	77.2	0.04	5.40	8.30
20			32	36.93	79.1	0.06	5.20	9.20
20			40	31.99	80.3	0.11	5.00	10.30
20			50	28.05	82.3	0.15	4.70	11.50
20			63	26.36	86.6	0.23	4.30	13.00
20			80	22.86	89.3	0.34	3.70	14.80
20			100	18.17	90.9	0.53	3.00	16.80
20			125	14.29	93.5	0.80	1.80	18.80
20			160	9.09	95.5	1.21	0.00	21.10
20			200	5.36	96.5	1.73	0.00	22.80
21	3,457	3,465						
21			20	40.51	73.8	0.00	5.60	7.60
21			25	37.14	77.2	0.07	5.40	8.30
21			32	32.60	79.1	0.10	5.20	9.20
21			40	27.63	80.3	0.17	5.00	10.30
21			50	23.66	82.3	0.24	4.70	11.50
21			63	21.92	86.6	0.38	4.30	13.00
21			80	18.35	89.3	0.55	3.70	14.80
21			100	13.54	90.9	0.87	3.00	16.80
21			125	9.49	93.5	1.32	1.80	18.80
21			160	4.03	95.5	1.98	0.00	21.10
21			200	-0.04	96.5	2.84	0.00	22.80
22	3,838	3,843						
22			20	39.61	73.8	0.00	5.60	7.60
22			25	36.23	77.2	0.08	5.40	8.30
22			32	31.69	79.1	0.12	5.20	9.20
22			40	26.71	80.3	0.19	5.00	10.30
22			50	22.74	82.3	0.27	4.70	11.50
22			63	20.98	86.6	0.42	4.30	13.00
22			80	17.39	89.3	0.61	3.70	14.80
22			100	12.55	90.9	0.96	3.00	16.80
22			125	8.45	93.5	1.46	1.80	18.80
22			160	2.92	95.5	2.19	0.00	21.10
22			200	-1.25	96.5	3.15	0.00	22.80
23	4,479	4,483						
23			20	38.27	73.8	0.00	5.60	7.60
23			25	34.88	77.2	0.09	5.40	8.30
23			32	30.33	79.1	0.13	5.20	9.20
23			40	25.34	80.3	0.22	5.00	10.30
23			50	21.35	82.3	0.31	4.70	11.50
23			63	19.58	86.6	0.49	4.30	13.00
23			80	15.95	89.3	0.72	3.70	14.80
23			100	11.05	90.9	1.12	3.00	16.80
23			125	6.87	93.5	1.70	1.80	18.80
23			160	1.21	95.5	2.56	0.00	21.10
23			200	-3.11	96.5	3.68	0.00	22.80
24	2,207	2,216						
24			20	44.39	73.8	0.00	5.60	7.60
24			25	41.04	77.2	0.04	5.40	8.30
24			32	36.52	79.1	0.07	5.20	9.20
24			40	31.58	80.3	0.11	5.00	10.30
24			50	27.63	82.3	0.16	4.70	11.50
24			63	25.94	86.6	0.24	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			80	22.43	89.3	0.35	3.70	14.80
24			100	17.73	90.9	0.55	3.00	16.80
24			125	13.85	93.5	0.84	1.80	18.80
24			160	8.63	95.5	1.26	0.00	21.10
24			200	4.87	96.5	1.82	0.00	22.80
25	2,753	2,761						
25			20	42.48	73.8	0.00	5.60	7.60
25			25	39.12	77.2	0.06	5.40	8.30
25			32	34.60	79.1	0.08	5.20	9.20
25			40	29.64	80.3	0.14	5.00	10.30
25			50	25.69	82.3	0.19	4.70	11.50
25			63	23.98	86.6	0.30	4.30	13.00
25			80	20.44	89.3	0.44	3.70	14.80
25			100	15.69	90.9	0.69	3.00	16.80
25			125	11.73	93.5	1.05	1.80	18.80
25			160	6.41	95.5	1.57	0.00	21.10
25			200	2.52	96.5	2.26	0.00	22.80
26	3,039	3,048						
26			20	41.62	73.8	0.00	5.60	7.60
26			25	38.26	77.2	0.06	5.40	8.30
26			32	33.73	79.1	0.09	5.20	9.20
26			40	28.77	80.3	0.15	5.00	10.30
26			50	24.81	82.3	0.21	4.70	11.50
26			63	23.08	86.6	0.34	4.30	13.00
26			80	19.53	89.3	0.49	3.70	14.80
26			100	14.76	90.9	0.76	3.00	16.80
26			125	10.76	93.5	1.16	1.80	18.80
26			160	5.38	95.5	1.74	0.00	21.10
26			200	1.42	96.5	2.50	0.00	22.80
27	3,457	3,464						
27			20	40.51	73.8	0.00	5.60	7.60
27			25	37.14	77.2	0.07	5.40	8.30
27			32	32.61	79.1	0.10	5.20	9.20
27			40	27.64	80.3	0.17	5.00	10.30
27			50	23.67	82.3	0.24	4.70	11.50
27			63	21.93	86.6	0.38	4.30	13.00
27			80	18.36	89.3	0.55	3.70	14.80
27			100	13.54	90.9	0.87	3.00	16.80
27			125	9.49	93.5	1.32	1.80	18.80
27			160	4.04	95.5	1.97	0.00	21.10
27			200	-0.03	96.5	2.84	0.00	22.80
28	4,085	4,090						
28			20	39.07	73.8	0.00	5.60	7.60
28			25	35.68	77.2	0.08	5.40	8.30
28			32	31.14	79.1	0.12	5.20	9.20
28			40	26.16	80.3	0.20	5.00	10.30
28			50	22.18	82.3	0.29	4.70	11.50
28			63	20.42	86.6	0.45	4.30	13.00
28			80	16.81	89.3	0.65	3.70	14.80
28			100	11.94	90.9	1.02	3.00	16.80
28			125	7.81	93.5	1.55	1.80	18.80
28			160	2.23	95.5	2.33	0.00	21.10
28			200	-1.99	96.5	3.35	0.00	22.80
29	4,740	4,744						
29			20	37.78	73.8	0.00	5.60	7.60
29			25	34.38	77.2	0.09	5.40	8.30
29			32	29.83	79.1	0.14	5.20	9.20
29			40	24.84	80.3	0.24	5.00	10.30
29			50	20.84	82.3	0.33	4.70	11.50
29			63	19.05	86.6	0.52	4.30	13.00
29			80	15.42	89.3	0.76	3.70	14.80
29			100	10.49	90.9	1.19	3.00	16.80
29			125	6.27	93.5	1.80	1.80	18.80
29			160	0.57	95.5	2.70	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
29			200	-3.81	96.5	3.89	0.00	22.80
3	5,711	5,714						
3			20	36.16	73.8	0.00	5.60	7.60
3			25	32.75	77.2	0.11	5.40	8.30
3			32	28.19	79.1	0.17	5.20	9.20
3			40	23.17	80.3	0.29	5.00	10.30
3			50	19.16	82.3	0.40	4.70	11.50
3			63	17.33	86.6	0.63	4.30	13.00
3			80	13.65	89.3	0.91	3.70	14.80
3			100	8.63	90.9	1.43	3.00	16.80
3			125	4.29	93.5	2.17	1.80	18.80
3			160	-1.60	95.5	3.26	0.00	21.10
3			200	-6.23	96.5	4.69	0.00	22.80
30	5,255	5,258						
30			20	36.88	73.8	0.00	5.60	7.60
30			25	33.48	77.2	0.11	5.40	8.30
30			32	28.93	79.1	0.16	5.20	9.20
30			40	23.92	80.3	0.26	5.00	10.30
30			50	19.92	82.3	0.37	4.70	11.50
30			63	18.11	86.6	0.58	4.30	13.00
30			80	14.44	89.3	0.84	3.70	14.80
30			100	9.47	90.9	1.31	3.00	16.80
30			125	5.19	93.5	2.00	1.80	18.80
30			160	-0.61	95.5	3.00	0.00	21.10
30			200	-5.13	96.5	4.31	0.00	22.80
31	5,216	5,219						
31			20	36.95	73.8	0.00	5.60	7.60
31			25	33.54	77.2	0.10	5.40	8.30
31			32	28.99	79.1	0.16	5.20	9.20
31			40	23.99	80.3	0.26	5.00	10.30
31			50	19.98	82.3	0.37	4.70	11.50
31			63	18.17	86.6	0.57	4.30	13.00
31			80	14.51	89.3	0.84	3.70	14.80
31			100	9.54	90.9	1.30	3.00	16.80
31			125	5.26	93.5	1.98	1.80	18.80
31			160	-0.53	95.5	2.98	0.00	21.10
31			200	-5.03	96.5	4.28	0.00	22.80
32	5,880	5,883						
32			20	35.91	73.8	0.00	5.60	7.60
32			25	32.49	77.2	0.12	5.40	8.30
32			32	27.93	79.1	0.18	5.20	9.20
32			40	22.91	80.3	0.29	5.00	10.30
32			50	18.90	82.3	0.41	4.70	11.50
32			63	17.06	86.6	0.65	4.30	13.00
32			80	13.37	89.3	0.94	3.70	14.80
32			100	8.34	90.9	1.47	3.00	16.80
32			125	3.97	93.5	2.24	1.80	18.80
32			160	-1.95	95.5	3.35	0.00	21.10
32			200	-6.62	96.5	4.82	0.00	22.80
33	6,424	6,428						
33			20	35.14	73.8	0.00	5.60	7.60
33			25	31.71	77.2	0.13	5.40	8.30
33			32	27.15	79.1	0.19	5.20	9.20
33			40	22.12	80.3	0.32	5.00	10.30
33			50	18.09	82.3	0.45	4.70	11.50
33			63	16.23	86.6	0.71	4.30	13.00
33			80	12.51	89.3	1.03	3.70	14.80
33			100	7.43	90.9	1.61	3.00	16.80
33			125	3.00	93.5	2.44	1.80	18.80
33			160	-3.02	95.5	3.66	0.00	21.10
33			200	-7.83	96.5	5.27	0.00	22.80
4	5,210	5,213						
4			20	36.96	73.8	0.00	5.60	7.60
4			25	33.55	77.2	0.10	5.40	8.30

To be continued on next page...

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	29.00	79.1	0.16	5.20	9.20
4			40	24.00	80.3	0.26	5.00	10.30
4			50	19.99	82.3	0.36	4.70	11.50
4			63	18.18	86.6	0.57	4.30	13.00
4			80	14.52	89.3	0.83	3.70	14.80
4			100	9.55	90.9	1.30	3.00	16.80
4			125	5.28	93.5	1.98	1.80	18.80
4			160	-0.51	95.5	2.97	0.00	21.10
4			200	-5.02	96.5	4.27	0.00	22.80
5	5,059	5,063						
5			20	37.21	73.8	0.00	5.60	7.60
5			25	33.81	77.2	0.10	5.40	8.30
5			32	29.26	79.1	0.15	5.20	9.20
5			40	24.26	80.3	0.25	5.00	10.30
5			50	20.26	82.3	0.35	4.70	11.50
5			63	18.46	86.6	0.56	4.30	13.00
5			80	14.80	89.3	0.81	3.70	14.80
5			100	9.85	90.9	1.27	3.00	16.80
5			125	5.59	93.5	1.92	1.80	18.80
5			160	-0.17	95.5	2.89	0.00	21.10
5			200	-4.64	96.5	4.15	0.00	22.80
6	4,120	4,124						
6			20	38.99	73.8	0.00	5.60	7.60
6			25	35.61	77.2	0.08	5.40	8.30
6			32	31.07	79.1	0.12	5.20	9.20
6			40	26.09	80.3	0.21	5.00	10.30
6			50	22.10	82.3	0.29	4.70	11.50
6			63	20.34	86.6	0.45	4.30	13.00
6			80	16.73	89.3	0.66	3.70	14.80
6			100	11.86	90.9	1.03	3.00	16.80
6			125	7.73	93.5	1.57	1.80	18.80
6			160	2.14	95.5	2.35	0.00	21.10
6			200	-2.09	96.5	3.38	0.00	22.80
7	4,161	4,165						
7			20	38.91	73.8	0.00	5.60	7.60
7			25	35.52	77.2	0.08	5.40	8.30
7			32	30.98	79.1	0.12	5.20	9.20
7			40	26.00	80.3	0.21	5.00	10.30
7			50	22.02	82.3	0.29	4.70	11.50
7			63	20.25	86.6	0.46	4.30	13.00
7			80	16.64	89.3	0.67	3.70	14.80
7			100	11.77	90.9	1.04	3.00	16.80
7			125	7.62	93.5	1.58	1.80	18.80
7			160	2.03	95.5	2.37	0.00	21.10
7			200	-2.21	96.5	3.42	0.00	22.80
8	4,578	4,582						
8			20	38.08	73.8	0.00	5.60	7.60
8			25	34.69	77.2	0.09	5.40	8.30
8			32	30.14	79.1	0.14	5.20	9.20
8			40	25.15	80.3	0.23	5.00	10.30
8			50	21.16	82.3	0.32	4.70	11.50
8			63	19.37	86.6	0.50	4.30	13.00
8			80	15.74	89.3	0.73	3.70	14.80
8			100	10.83	90.9	1.15	3.00	16.80
8			125	6.64	93.5	1.74	1.80	18.80
8			160	0.97	95.5	2.61	0.00	21.10
8			200	-3.38	96.5	3.76	0.00	22.80
9	4,676	4,679						
9			20	37.90	73.8	0.00	5.60	7.60
9			25	34.50	77.2	0.09	5.40	8.30
9			32	29.96	79.1	0.14	5.20	9.20
9			40	24.96	80.3	0.23	5.00	10.30
9			50	20.97	82.3	0.33	4.70	11.50
9			63	19.18	86.6	0.51	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	15.55	89.3	0.75	3.70	14.80
9			100	10.63	90.9	1.17	3.00	16.80
9			125	6.42	93.5	1.78	1.80	18.80
9			160	0.73	95.5	2.67	0.00	21.10
9			200	-3.64	96.5	3.84	0.00	22.80
Sum								
Sum			20	55.57				
Sum			25	52.21				
Sum			32	47.67				
Sum			40	42.71				
Sum			50	38.74				
Sum			63	37.01				
Sum			80	33.44				
Sum			100	28.65				
Sum			125	24.62				
Sum			160	19.21				
Sum			200	15.21				

Noise sensitive area: RH Ruunaharju Noise sensitive point: Finnish normal frequency - User defined (321)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,329	5,334						
1			20	36.76	73.8	0.00	5.60	7.60
1			25	33.35	77.2	0.11	5.40	8.30
1			32	28.80	79.1	0.16	5.20	9.20
1			40	23.79	80.3	0.27	5.00	10.30
1			50	19.79	82.3	0.37	4.70	11.50
1			63	17.97	86.6	0.59	4.30	13.00
1			80	14.31	89.3	0.85	3.70	14.80
1			100	9.33	90.9	1.33	3.00	16.80
1			125	5.03	93.5	2.03	1.80	18.80
1			160	-0.78	95.5	3.04	0.00	21.10
1			200	-5.31	96.5	4.37	0.00	22.80
10	6,468	6,472						
10			20	35.08	73.8	0.00	5.60	7.60
10			25	31.65	77.2	0.13	5.40	8.30
10			32	27.09	79.1	0.19	5.20	9.20
10			40	22.06	80.3	0.32	5.00	10.30
10			50	18.03	82.3	0.45	4.70	11.50
10			63	16.17	86.6	0.71	4.30	13.00
10			80	12.44	89.3	1.04	3.70	14.80
10			100	7.36	90.9	1.62	3.00	16.80
10			125	2.92	93.5	2.46	1.80	18.80
10			160	-3.11	95.5	3.69	0.00	21.10
10			200	-7.93	96.5	5.31	0.00	22.80
11	5,850	5,854						
11			20	35.95	73.8	0.00	5.60	7.60
11			25	32.53	77.2	0.12	5.40	8.30
11			32	27.98	79.1	0.18	5.20	9.20
11			40	22.96	80.3	0.29	5.00	10.30
11			50	18.94	82.3	0.41	4.70	11.50
11			63	17.11	86.6	0.64	4.30	13.00
11			80	13.41	89.3	0.94	3.70	14.80
11			100	8.39	90.9	1.46	3.00	16.80
11			125	4.03	93.5	2.22	1.80	18.80
11			160	-1.89	95.5	3.34	0.00	21.10
11			200	-6.55	96.5	4.80	0.00	22.80
12	6,935	6,939						
12			20	34.47	73.8	0.00	5.60	7.60
12			25	31.04	77.2	0.14	5.40	8.30
12			32	26.47	79.1	0.21	5.20	9.20
12			40	21.43	80.3	0.35	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	17.39	82.3	0.49	4.70	11.50
12			63	15.51	86.6	0.76	4.30	13.00
12			80	11.76	89.3	1.11	3.70	14.80
12			100	6.64	90.9	1.73	3.00	16.80
12			125	2.14	93.5	2.64	1.80	18.80
12			160	-3.98	95.5	3.96	0.00	21.10
12			200	-8.92	96.5	5.69	0.00	22.80
13	6,112	6,117						
13			20	35.57	73.8	0.00	5.60	7.60
13			25	32.15	77.2	0.12	5.40	8.30
13			32	27.59	79.1	0.18	5.20	9.20
13			40	22.56	80.3	0.31	5.00	10.30
13			50	18.54	82.3	0.43	4.70	11.50
13			63	16.70	86.6	0.67	4.30	13.00
13			80	12.99	89.3	0.98	3.70	14.80
13			100	7.94	90.9	1.53	3.00	16.80
13			125	3.55	93.5	2.32	1.80	18.80
13			160	-2.42	95.5	3.49	0.00	21.10
13			200	-7.15	96.5	5.02	0.00	22.80
14	4,761	4,766						
14			20	37.74	73.8	0.00	5.60	7.60
14			25	34.34	77.2	0.10	5.40	8.30
14			32	29.79	79.1	0.14	5.20	9.20
14			40	24.80	80.3	0.24	5.00	10.30
14			50	20.80	82.3	0.33	4.70	11.50
14			63	19.01	86.6	0.52	4.30	13.00
14			80	15.37	89.3	0.76	3.70	14.80
14			100	10.44	90.9	1.19	3.00	16.80
14			125	6.23	93.5	1.81	1.80	18.80
14			160	0.52	95.5	2.72	0.00	21.10
14			200	-3.87	96.5	3.91	0.00	22.80
15	6,652	6,656						
15			20	34.84	73.8	0.00	5.60	7.60
15			25	31.40	77.2	0.13	5.40	8.30
15			32	26.84	79.1	0.20	5.20	9.20
15			40	21.80	80.3	0.33	5.00	10.30
15			50	17.77	82.3	0.47	4.70	11.50
15			63	15.90	86.6	0.73	4.30	13.00
15			80	12.17	89.3	1.06	3.70	14.80
15			100	7.07	90.9	1.66	3.00	16.80
15			125	2.61	93.5	2.53	1.80	18.80
15			160	-3.46	95.5	3.79	0.00	21.10
15			200	-8.32	96.5	5.46	0.00	22.80
16	5,827	5,831						
16			20	35.99	73.8	0.00	5.60	7.60
16			25	32.57	77.2	0.12	5.40	8.30
16			32	28.01	79.1	0.17	5.20	9.20
16			40	22.99	80.3	0.29	5.00	10.30
16			50	18.98	82.3	0.41	4.70	11.50
16			63	17.14	86.6	0.64	4.30	13.00
16			80	13.45	89.3	0.93	3.70	14.80
16			100	8.43	90.9	1.46	3.00	16.80
16			125	4.07	93.5	2.22	1.80	18.80
16			160	-1.84	95.5	3.32	0.00	21.10
16			200	-6.50	96.5	4.78	0.00	22.80
17	5,156	5,162						
17			20	37.04	73.8	0.00	5.60	7.60
17			25	33.64	77.2	0.10	5.40	8.30
17			32	29.09	79.1	0.15	5.20	9.20
17			40	24.08	80.3	0.26	5.00	10.30
17			50	20.08	82.3	0.36	4.70	11.50
17			63	18.28	86.6	0.57	4.30	13.00
17			80	14.62	89.3	0.83	3.70	14.80
17			100	9.65	90.9	1.29	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	5.38	93.5	1.96	1.80	18.80
17			160	-0.40	95.5	2.94	0.00	21.10
17			200	-4.89	96.5	4.23	0.00	22.80
18	4,875	4,881						
18			20	37.53	73.8	0.00	5.60	7.60
18			25	34.13	77.2	0.10	5.40	8.30
18			32	29.58	79.1	0.15	5.20	9.20
18			40	24.59	80.3	0.24	5.00	10.30
18			50	20.59	82.3	0.34	4.70	11.50
18			63	18.79	86.6	0.54	4.30	13.00
18			80	15.15	89.3	0.78	3.70	14.80
18			100	10.21	90.9	1.22	3.00	16.80
18			125	5.97	93.5	1.85	1.80	18.80
18			160	0.25	95.5	2.78	0.00	21.10
18			200	-4.17	96.5	4.00	0.00	22.80
19	6,583	6,586						
19			20	34.93	73.8	0.00	5.60	7.60
19			25	31.50	77.2	0.13	5.40	8.30
19			32	26.93	79.1	0.20	5.20	9.20
19			40	21.90	80.3	0.33	5.00	10.30
19			50	17.87	82.3	0.46	4.70	11.50
19			63	16.00	86.6	0.72	4.30	13.00
19			80	12.27	89.3	1.05	3.70	14.80
19			100	7.18	90.9	1.65	3.00	16.80
19			125	2.72	93.5	2.50	1.80	18.80
19			160	-3.33	95.5	3.75	0.00	21.10
19			200	-8.17	96.5	5.40	0.00	22.80
2	5,496	5,501						
2			20	36.49	73.8	0.00	5.60	7.60
2			25	33.08	77.2	0.11	5.40	8.30
2			32	28.53	79.1	0.17	5.20	9.20
2			40	23.52	80.3	0.28	5.00	10.30
2			50	19.51	82.3	0.39	4.70	11.50
2			63	17.69	86.6	0.61	4.30	13.00
2			80	14.01	89.3	0.88	3.70	14.80
2			100	9.02	90.9	1.38	3.00	16.80
2			125	4.70	93.5	2.09	1.80	18.80
2			160	-1.14	95.5	3.14	0.00	21.10
2			200	-5.72	96.5	4.51	0.00	22.80
20	6,131	6,135						
20			20	35.54	73.8	0.00	5.60	7.60
20			25	32.12	77.2	0.12	5.40	8.30
20			32	27.56	79.1	0.18	5.20	9.20
20			40	22.54	80.3	0.31	5.00	10.30
20			50	18.51	82.3	0.43	4.70	11.50
20			63	16.67	86.6	0.67	4.30	13.00
20			80	12.96	89.3	0.98	3.70	14.80
20			100	7.91	90.9	1.53	3.00	16.80
20			125	3.51	93.5	2.33	1.80	18.80
20			160	-2.45	95.5	3.50	0.00	21.10
20			200	-7.19	96.5	5.03	0.00	22.80
21	4,627	4,635						
21			20	37.98	73.8	0.00	5.60	7.60
21			25	34.59	77.2	0.09	5.40	8.30
21			32	30.04	79.1	0.14	5.20	9.20
21			40	25.05	80.3	0.23	5.00	10.30
21			50	21.05	82.3	0.32	4.70	11.50
21			63	19.27	86.6	0.51	4.30	13.00
21			80	15.64	89.3	0.74	3.70	14.80
21			100	10.72	90.9	1.16	3.00	16.80
21			125	6.52	93.5	1.76	1.80	18.80
21			160	0.84	95.5	2.64	0.00	21.10
21			200	-3.52	96.5	3.80	0.00	22.80
22	4,121	4,128						

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	38.99	73.8	0.00	5.60	7.60
22			25	35.60	77.2	0.08	5.40	8.30
22			32	31.06	79.1	0.12	5.20	9.20
22			40	26.08	80.3	0.21	5.00	10.30
22			50	22.10	82.3	0.29	4.70	11.50
22			63	20.33	86.6	0.45	4.30	13.00
22			80	16.72	89.3	0.66	3.70	14.80
22			100	11.85	90.9	1.03	3.00	16.80
22			125	7.72	93.5	1.57	1.80	18.80
22			160	2.13	95.5	2.35	0.00	21.10
22			200	-2.10	96.5	3.38	0.00	22.80
23	3,507	3,514						
23			20	40.38	73.8	0.00	5.60	7.60
23			25	37.01	77.2	0.07	5.40	8.30
23			32	32.48	79.1	0.11	5.20	9.20
23			40	27.51	80.3	0.18	5.00	10.30
23			50	23.54	82.3	0.25	4.70	11.50
23			63	21.80	86.6	0.39	4.30	13.00
23			80	18.22	89.3	0.56	3.70	14.80
23			100	13.40	90.9	0.88	3.00	16.80
23			125	9.35	93.5	1.34	1.80	18.80
23			160	3.88	95.5	2.00	0.00	21.10
23			200	-0.20	96.5	2.88	0.00	22.80
24	5,741	5,746						
24			20	36.11	73.8	0.00	5.60	7.60
24			25	32.70	77.2	0.11	5.40	8.30
24			32	28.14	79.1	0.17	5.20	9.20
24			40	23.13	80.3	0.29	5.00	10.30
24			50	19.11	82.3	0.40	4.70	11.50
24			63	17.28	86.6	0.63	4.30	13.00
24			80	13.59	89.3	0.92	3.70	14.80
24			100	8.58	90.9	1.44	3.00	16.80
24			125	4.23	93.5	2.18	1.80	18.80
24			160	-1.66	95.5	3.28	0.00	21.10
24			200	-6.30	96.5	4.71	0.00	22.80
25	5,295	5,301						
25			20	36.81	73.8	0.00	5.60	7.60
25			25	33.41	77.2	0.11	5.40	8.30
25			32	28.85	79.1	0.16	5.20	9.20
25			40	23.85	80.3	0.27	5.00	10.30
25			50	19.84	82.3	0.37	4.70	11.50
25			63	18.03	86.6	0.58	4.30	13.00
25			80	14.37	89.3	0.85	3.70	14.80
25			100	9.39	90.9	1.33	3.00	16.80
25			125	5.10	93.5	2.01	1.80	18.80
25			160	-0.71	95.5	3.02	0.00	21.10
25			200	-5.23	96.5	4.35	0.00	22.80
26	4,887	4,894						
26			20	37.51	73.8	0.00	5.60	7.60
26			25	34.11	77.2	0.10	5.40	8.30
26			32	29.56	79.1	0.15	5.20	9.20
26			40	24.56	80.3	0.24	5.00	10.30
26			50	20.56	82.3	0.34	4.70	11.50
26			63	18.77	86.6	0.54	4.30	13.00
26			80	15.12	89.3	0.78	3.70	14.80
26			100	10.18	90.9	1.22	3.00	16.80
26			125	5.95	93.5	1.86	1.80	18.80
26			160	0.22	95.5	2.79	0.00	21.10
26			200	-4.21	96.5	4.01	0.00	22.80
27	4,442	4,449						
27			20	38.33	73.8	0.00	5.60	7.60
27			25	34.95	77.2	0.09	5.40	8.30
27			32	30.40	79.1	0.13	5.20	9.20
27			40	25.41	80.3	0.22	5.00	10.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			50	21.42	82.3	0.31	4.70	11.50
27			63	19.64	86.6	0.49	4.30	13.00
27			80	16.02	89.3	0.71	3.70	14.80
27			100	11.12	90.9	1.11	3.00	16.80
27			125	6.94	93.5	1.69	1.80	18.80
27			160	1.30	95.5	2.54	0.00	21.10
27			200	-3.01	96.5	3.65	0.00	22.80
28	3,812	3,819						
28			20	39.66	73.8	0.00	5.60	7.60
28			25	36.28	77.2	0.08	5.40	8.30
28			32	31.75	79.1	0.11	5.20	9.20
28			40	26.77	80.3	0.19	5.00	10.30
28			50	22.79	82.3	0.27	4.70	11.50
28			63	21.04	86.6	0.42	4.30	13.00
28			80	17.45	89.3	0.61	3.70	14.80
28			100	12.61	90.9	0.95	3.00	16.80
28			125	8.51	93.5	1.45	1.80	18.80
28			160	2.98	95.5	2.18	0.00	21.10
28			200	-1.17	96.5	3.13	0.00	22.80
29	3,161	3,170						
29			20	41.28	73.8	0.00	5.60	7.60
29			25	37.91	77.2	0.06	5.40	8.30
29			32	33.38	79.1	0.10	5.20	9.20
29			40	28.42	80.3	0.16	5.00	10.30
29			50	24.46	82.3	0.22	4.70	11.50
29			63	22.73	86.6	0.35	4.30	13.00
29			80	19.17	89.3	0.51	3.70	14.80
29			100	14.39	90.9	0.79	3.00	16.80
29			125	10.37	93.5	1.20	1.80	18.80
29			160	4.97	95.5	1.81	0.00	21.10
29			200	0.98	96.5	2.60	0.00	22.80
3	5,097	5,102						
3			20	37.15	73.8	0.00	5.60	7.60
3			25	33.74	77.2	0.10	5.40	8.30
3			32	29.19	79.1	0.15	5.20	9.20
3			40	24.19	80.3	0.26	5.00	10.30
3			50	20.19	82.3	0.36	4.70	11.50
3			63	18.38	86.6	0.56	4.30	13.00
3			80	14.73	89.3	0.82	3.70	14.80
3			100	9.77	90.9	1.28	3.00	16.80
3			125	5.51	93.5	1.94	1.80	18.80
3			160	-0.26	95.5	2.91	0.00	21.10
3			200	-4.74	96.5	4.18	0.00	22.80
30	2,670	2,679						
30			20	42.74	73.8	0.00	5.60	7.60
30			25	39.39	77.2	0.05	5.40	8.30
30			32	34.86	79.1	0.08	5.20	9.20
30			40	29.91	80.3	0.13	5.00	10.30
30			50	25.95	82.3	0.19	4.70	11.50
30			63	24.24	86.6	0.29	4.30	13.00
30			80	20.71	89.3	0.43	3.70	14.80
30			100	15.97	90.9	0.67	3.00	16.80
30			125	12.02	93.5	1.02	1.80	18.80
30			160	6.71	95.5	1.53	0.00	21.10
30			200	2.84	96.5	2.20	0.00	22.80
31	2,716	2,724						
31			20	42.60	73.8	0.00	5.60	7.60
31			25	39.24	77.2	0.05	5.40	8.30
31			32	34.71	79.1	0.08	5.20	9.20
31			40	29.76	80.3	0.14	5.00	10.30
31			50	25.80	82.3	0.19	4.70	11.50
31			63	24.10	86.6	0.30	4.30	13.00
31			80	20.56	89.3	0.44	3.70	14.80
31			100	15.81	90.9	0.68	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
31			125	11.86	93.5	1.04	1.80	18.80
31			160	6.54	95.5	1.55	0.00	21.10
31			200	2.66	96.5	2.23	0.00	22.80
32	2,028	2,040						
32			20	45.11	73.8	0.00	5.60	7.60
32			25	41.77	77.2	0.04	5.40	8.30
32			32	37.25	79.1	0.06	5.20	9.20
32			40	32.30	80.3	0.10	5.00	10.30
32			50	28.36	82.3	0.14	4.70	11.50
32			63	26.68	86.6	0.22	4.30	13.00
32			80	23.18	89.3	0.33	3.70	14.80
32			100	18.50	90.9	0.51	3.00	16.80
32			125	14.63	93.5	0.78	1.80	18.80
32			160	9.44	95.5	1.16	0.00	21.10
32			200	5.73	96.5	1.67	0.00	22.80
33	1,628	1,646						
33			20	46.97	73.8	0.00	5.60	7.60
33			25	43.64	77.2	0.03	5.40	8.30
33			32	39.12	79.1	0.05	5.20	9.20
33			40	34.19	80.3	0.08	5.00	10.30
33			50	30.25	82.3	0.12	4.70	11.50
33			63	28.59	86.6	0.18	4.30	13.00
33			80	25.11	89.3	0.26	3.70	14.80
33			100	20.46	90.9	0.41	3.00	16.80
33			125	16.64	93.5	0.63	1.80	18.80
33			160	11.53	95.5	0.94	0.00	21.10
33			200	7.92	96.5	1.35	0.00	22.80
4	4,918	4,924						
4			20	37.45	73.8	0.00	5.60	7.60
4			25	34.06	77.2	0.10	5.40	8.30
4			32	29.51	79.1	0.15	5.20	9.20
4			40	24.51	80.3	0.25	5.00	10.30
4			50	20.51	82.3	0.34	4.70	11.50
4			63	18.71	86.6	0.54	4.30	13.00
4			80	15.07	89.3	0.79	3.70	14.80
4			100	10.12	90.9	1.23	3.00	16.80
4			125	5.88	93.5	1.87	1.80	18.80
4			160	0.15	95.5	2.81	0.00	21.10
4			200	-4.28	96.5	4.04	0.00	22.80
5	4,450	4,456						
5			20	38.32	73.8	0.00	5.60	7.60
5			25	34.93	77.2	0.09	5.40	8.30
5			32	30.39	79.1	0.13	5.20	9.20
5			40	25.40	80.3	0.22	5.00	10.30
5			50	21.41	82.3	0.31	4.70	11.50
5			63	19.63	86.6	0.49	4.30	13.00
5			80	16.01	89.3	0.71	3.70	14.80
5			100	11.11	90.9	1.11	3.00	16.80
5			125	6.93	93.5	1.69	1.80	18.80
5			160	1.28	95.5	2.54	0.00	21.10
5			200	-3.03	96.5	3.65	0.00	22.80
6	6,060	6,064						
6			20	35.64	73.8	0.00	5.60	7.60
6			25	32.22	77.2	0.12	5.40	8.30
6			32	27.66	79.1	0.18	5.20	9.20
6			40	22.64	80.3	0.30	5.00	10.30
6			50	18.62	82.3	0.42	4.70	11.50
6			63	16.78	86.6	0.67	4.30	13.00
6			80	13.07	89.3	0.97	3.70	14.80
6			100	8.03	90.9	1.52	3.00	16.80
6			125	3.64	93.5	2.30	1.80	18.80
6			160	-2.31	95.5	3.46	0.00	21.10
6			200	-7.03	96.5	4.97	0.00	22.80
7	5,418	5,423						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			20	36.62	73.8	0.00	5.60	7.60
7			25	33.21	77.2	0.11	5.40	8.30
7			32	28.65	79.1	0.16	5.20	9.20
7			40	23.64	80.3	0.27	5.00	10.30
7			50	19.64	82.3	0.38	4.70	11.50
7			63	17.82	86.6	0.60	4.30	13.00
7			80	14.15	89.3	0.87	3.70	14.80
7			100	9.16	90.9	1.36	3.00	16.80
7			125	4.86	93.5	2.06	1.80	18.80
7			160	-0.97	95.5	3.09	0.00	21.10
7			200	-5.53	96.5	4.45	0.00	22.80
8	4,914	4,919						
8			20	37.46	73.8	0.00	5.60	7.60
8			25	34.06	77.2	0.10	5.40	8.30
8			32	29.52	79.1	0.15	5.20	9.20
8			40	24.52	80.3	0.25	5.00	10.30
8			50	20.52	82.3	0.34	4.70	11.50
8			63	18.72	86.6	0.54	4.30	13.00
8			80	15.08	89.3	0.79	3.70	14.80
8			100	10.13	90.9	1.23	3.00	16.80
8			125	5.89	93.5	1.87	1.80	18.80
8			160	0.16	95.5	2.80	0.00	21.10
8			200	-4.27	96.5	4.03	0.00	22.80
9	4,265	4,271						
9			20	38.69	73.8	0.00	5.60	7.60
9			25	35.30	77.2	0.09	5.40	8.30
9			32	30.76	79.1	0.13	5.20	9.20
9			40	25.78	80.3	0.21	5.00	10.30
9			50	21.79	82.3	0.30	4.70	11.50
9			63	20.02	86.6	0.47	4.30	13.00
9			80	16.41	89.3	0.68	3.70	14.80
9			100	11.52	90.9	1.07	3.00	16.80
9			125	7.37	93.5	1.62	1.80	18.80
9			160	1.75	95.5	2.43	0.00	21.10
9			200	-2.51	96.5	3.50	0.00	22.80
Sum								
Sum			20	54.47				
Sum			25	51.10				
Sum			32	46.56				
Sum			40	41.59				
Sum			50	37.62				
Sum			63	35.87				
Sum			80	32.30				
Sum			100	27.48				
Sum			125	23.42				
Sum			160	17.98				
Sum			200	13.96				

Noise sensitive area: RH Suoniemi Noise sensitive point: Finnish normal frequency - User defined (327)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,785	5,790						
1			20	36.05	73.8	0.00	5.60	7.60
1			25	32.63	77.2	0.12	5.40	8.30
1			32	28.07	79.1	0.17	5.20	9.20
1			40	23.06	80.3	0.29	5.00	10.30
1			50	19.04	82.3	0.41	4.70	11.50
1			63	17.21	86.6	0.64	4.30	13.00
1			80	13.52	89.3	0.93	3.70	14.80
1			100	8.50	90.9	1.45	3.00	16.80
1			125	4.15	93.5	2.20	1.80	18.80
1			160	-1.75	95.5	3.30	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			200	-6.40	96.5	4.75	0.00	22.80
10	6,245	6,249						
10			20	35.38	73.8	0.00	5.60	7.60
10			25	31.96	77.2	0.12	5.40	8.30
10			32	27.40	79.1	0.19	5.20	9.20
10			40	22.37	80.3	0.31	5.00	10.30
10			50	18.35	82.3	0.44	4.70	11.50
10			63	16.50	86.6	0.69	4.30	13.00
10			80	12.78	89.3	1.00	3.70	14.80
10			100	7.72	90.9	1.56	3.00	16.80
10			125	3.31	93.5	2.37	1.80	18.80
10			160	-2.68	95.5	3.56	0.00	21.10
10			200	-7.44	96.5	5.12	0.00	22.80
11	5,636	5,641						
11			20	36.27	73.8	0.00	5.60	7.60
11			25	32.86	77.2	0.11	5.40	8.30
11			32	28.30	79.1	0.17	5.20	9.20
11			40	23.29	80.3	0.28	5.00	10.30
11			50	19.28	82.3	0.39	4.70	11.50
11			63	17.45	86.6	0.62	4.30	13.00
11			80	13.77	89.3	0.90	3.70	14.80
11			100	8.76	90.9	1.41	3.00	16.80
11			125	4.43	93.5	2.14	1.80	18.80
11			160	-1.44	95.5	3.22	0.00	21.10
11			200	-6.05	96.5	4.63	0.00	22.80
12	6,628	6,632						
12			20	34.87	73.8	0.00	5.60	7.60
12			25	31.43	77.2	0.13	5.40	8.30
12			32	26.87	79.1	0.20	5.20	9.20
12			40	21.83	80.3	0.33	5.00	10.30
12			50	17.80	82.3	0.46	4.70	11.50
12			63	15.94	86.6	0.73	4.30	13.00
12			80	12.21	89.3	1.06	3.70	14.80
12			100	7.11	90.9	1.66	3.00	16.80
12			125	2.65	93.5	2.52	1.80	18.80
12			160	-3.41	95.5	3.78	0.00	21.10
12			200	-8.27	96.5	5.44	0.00	22.80
13	5,762	5,767						
13			20	36.08	73.8	0.00	5.60	7.60
13			25	32.67	77.2	0.12	5.40	8.30
13			32	28.11	79.1	0.17	5.20	9.20
13			40	23.09	80.3	0.29	5.00	10.30
13			50	19.08	82.3	0.40	4.70	11.50
13			63	17.25	86.6	0.63	4.30	13.00
13			80	13.56	89.3	0.92	3.70	14.80
13			100	8.54	90.9	1.44	3.00	16.80
13			125	4.19	93.5	2.19	1.80	18.80
13			160	-1.71	95.5	3.29	0.00	21.10
13			200	-6.35	96.5	4.73	0.00	22.80
14	4,632	4,639						
14			20	37.97	73.8	0.00	5.60	7.60
14			25	34.58	77.2	0.09	5.40	8.30
14			32	30.03	79.1	0.14	5.20	9.20
14			40	25.04	80.3	0.23	5.00	10.30
14			50	21.05	82.3	0.32	4.70	11.50
14			63	19.26	86.6	0.51	4.30	13.00
14			80	15.63	89.3	0.74	3.70	14.80
14			100	10.71	90.9	1.16	3.00	16.80
14			125	6.51	93.5	1.76	1.80	18.80
14			160	0.83	95.5	2.64	0.00	21.10
14			200	-3.53	96.5	3.80	0.00	22.80
15	6,242	6,246						
15			20	35.39	73.8	0.00	5.60	7.60
15			25	31.96	77.2	0.12	5.40	8.30

To be continued on next page...

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			32	27.40	79.1	0.19	5.20	9.20
15			40	22.38	80.3	0.31	5.00	10.30
15			50	18.35	82.3	0.44	4.70	11.50
15			63	16.50	86.6	0.69	4.30	13.00
15			80	12.79	89.3	1.00	3.70	14.80
15			100	7.73	90.9	1.56	3.00	16.80
15			125	3.31	93.5	2.37	1.80	18.80
15			160	-2.67	95.5	3.56	0.00	21.10
15			200	-7.43	96.5	5.12	0.00	22.80
16	5,372	5,377						
16			20	36.69	73.8	0.00	5.60	7.60
16			25	33.28	77.2	0.11	5.40	8.30
16			32	28.73	79.1	0.16	5.20	9.20
16			40	23.72	80.3	0.27	5.00	10.30
16			50	19.71	82.3	0.38	4.70	11.50
16			63	17.90	86.6	0.59	4.30	13.00
16			80	14.23	89.3	0.86	3.70	14.80
16			100	9.25	90.9	1.34	3.00	16.80
16			125	4.95	93.5	2.04	1.80	18.80
16			160	-0.88	95.5	3.06	0.00	21.10
16			200	-5.42	96.5	4.41	0.00	22.80
17	4,704	4,712						
17			20	37.84	73.8	0.00	5.60	7.60
17			25	34.44	77.2	0.09	5.40	8.30
17			32	29.90	79.1	0.14	5.20	9.20
17			40	24.90	80.3	0.24	5.00	10.30
17			50	20.91	82.3	0.33	4.70	11.50
17			63	19.12	86.6	0.52	4.30	13.00
17			80	15.48	89.3	0.75	3.70	14.80
17			100	10.56	90.9	1.18	3.00	16.80
17			125	6.35	93.5	1.79	1.80	18.80
17			160	0.65	95.5	2.69	0.00	21.10
17			200	-3.73	96.5	3.86	0.00	22.80
18	4,554	4,562						
18			20	38.12	73.8	0.00	5.60	7.60
18			25	34.73	77.2	0.09	5.40	8.30
18			32	30.18	79.1	0.14	5.20	9.20
18			40	25.19	80.3	0.23	5.00	10.30
18			50	21.20	82.3	0.32	4.70	11.50
18			63	19.42	86.6	0.50	4.30	13.00
18			80	15.79	89.3	0.73	3.70	14.80
18			100	10.88	90.9	1.14	3.00	16.80
18			125	6.68	93.5	1.73	1.80	18.80
18			160	1.02	95.5	2.60	0.00	21.10
18			200	-3.32	96.5	3.74	0.00	22.80
19	6,064	6,068						
19			20	35.64	73.8	0.00	5.60	7.60
19			25	32.22	77.2	0.12	5.40	8.30
19			32	27.66	79.1	0.18	5.20	9.20
19			40	22.64	80.3	0.30	5.00	10.30
19			50	18.61	82.3	0.42	4.70	11.50
19			63	16.77	86.6	0.67	4.30	13.00
19			80	13.07	89.3	0.97	3.70	14.80
19			100	8.02	90.9	1.52	3.00	16.80
19			125	3.63	93.5	2.31	1.80	18.80
19			160	-2.32	95.5	3.46	0.00	21.10
19			200	-7.04	96.5	4.98	0.00	22.80
2	5,688	5,693						
2			20	36.19	73.8	0.00	5.60	7.60
2			25	32.78	77.2	0.11	5.40	8.30
2			32	28.22	79.1	0.17	5.20	9.20
2			40	23.21	80.3	0.28	5.00	10.30
2			50	19.19	82.3	0.40	4.70	11.50
2			63	17.37	86.6	0.63	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			80	13.68	89.3	0.91	3.70	14.80
2			100	8.67	90.9	1.42	3.00	16.80
2			125	4.33	93.5	2.16	1.80	18.80
2			160	-1.55	95.5	3.25	0.00	21.10
2			200	-6.18	96.5	4.67	0.00	22.80
20	5,530	5,535						
20			20	36.44	73.8	0.00	5.60	7.60
20			25	33.03	77.2	0.11	5.40	8.30
20			32	28.47	79.1	0.17	5.20	9.20
20			40	23.46	80.3	0.28	5.00	10.30
20			50	19.45	82.3	0.39	4.70	11.50
20			63	17.63	86.6	0.61	4.30	13.00
20			80	13.95	89.3	0.89	3.70	14.80
20			100	8.95	90.9	1.38	3.00	16.80
20			125	4.63	93.5	2.10	1.80	18.80
20			160	-1.22	95.5	3.16	0.00	21.10
20			200	-5.80	96.5	4.54	0.00	22.80
21	4,106	4,116						
21			20	39.01	73.8	0.00	5.60	7.60
21			25	35.63	77.2	0.08	5.40	8.30
21			32	31.09	79.1	0.12	5.20	9.20
21			40	26.10	80.3	0.21	5.00	10.30
21			50	22.12	82.3	0.29	4.70	11.50
21			63	20.36	86.6	0.45	4.30	13.00
21			80	16.75	89.3	0.66	3.70	14.80
21			100	11.88	90.9	1.03	3.00	16.80
21			125	7.75	93.5	1.56	1.80	18.80
21			160	2.16	95.5	2.35	0.00	21.10
21			200	-2.06	96.5	3.38	0.00	22.80
22	3,535	3,544						
22			20	40.31	73.8	0.00	5.60	7.60
22			25	36.94	77.2	0.07	5.40	8.30
22			32	32.40	79.1	0.11	5.20	9.20
22			40	27.43	80.3	0.18	5.00	10.30
22			50	23.46	82.3	0.25	4.70	11.50
22			63	21.72	86.6	0.39	4.30	13.00
22			80	18.14	89.3	0.57	3.70	14.80
22			100	13.32	90.9	0.89	3.00	16.80
22			125	9.26	93.5	1.35	1.80	18.80
22			160	3.79	95.5	2.02	0.00	21.10
22			200	-0.30	96.5	2.91	0.00	22.80
23	3,033	3,042						
23			20	41.64	73.8	0.00	5.60	7.60
23			25	38.28	77.2	0.06	5.40	8.30
23			32	33.74	79.1	0.09	5.20	9.20
23			40	28.78	80.3	0.15	5.00	10.30
23			50	24.82	82.3	0.21	4.70	11.50
23			63	23.10	86.6	0.33	4.30	13.00
23			80	19.55	89.3	0.49	3.70	14.80
23			100	14.78	90.9	0.76	3.00	16.80
23			125	10.78	93.5	1.16	1.80	18.80
23			160	5.40	95.5	1.73	0.00	21.10
23			200	1.44	96.5	2.49	0.00	22.80
24	5,023	5,030						
24			20	37.27	73.8	0.00	5.60	7.60
24			25	33.87	77.2	0.10	5.40	8.30
24			32	29.32	79.1	0.15	5.20	9.20
24			40	24.32	80.3	0.25	5.00	10.30
24			50	20.32	82.3	0.35	4.70	11.50
24			63	18.52	86.6	0.55	4.30	13.00
24			80	14.86	89.3	0.80	3.70	14.80
24			100	9.91	90.9	1.26	3.00	16.80
24			125	5.66	93.5	1.91	1.80	18.80
24			160	-0.10	95.5	2.87	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			200	-4.55	96.5	4.12	0.00	22.80
25	4,684	4,690						
25			20	37.88	73.8	0.00	5.60	7.60
25			25	34.48	77.2	0.09	5.40	8.30
25			32	29.93	79.1	0.14	5.20	9.20
25			40	24.94	80.3	0.23	5.00	10.30
25			50	20.95	82.3	0.33	4.70	11.50
25			63	19.16	86.6	0.52	4.30	13.00
25			80	15.53	89.3	0.75	3.70	14.80
25			100	10.60	90.9	1.17	3.00	16.80
25			125	6.39	93.5	1.78	1.80	18.80
25			160	0.70	95.5	2.67	0.00	21.10
25			200	-3.67	96.5	3.85	0.00	22.80
26	4,193	4,202						
26			20	38.83	73.8	0.00	5.60	7.60
26			25	35.45	77.2	0.08	5.40	8.30
26			32	30.91	79.1	0.13	5.20	9.20
26			40	25.92	80.3	0.21	5.00	10.30
26			50	21.94	82.3	0.29	4.70	11.50
26			63	20.17	86.6	0.46	4.30	13.00
26			80	16.56	89.3	0.67	3.70	14.80
26			100	11.68	90.9	1.05	3.00	16.80
26			125	7.53	93.5	1.60	1.80	18.80
26			160	1.94	95.5	2.40	0.00	21.10
26			200	-2.31	96.5	3.45	0.00	22.80
27	3,701	3,711						
27			20	39.91	73.8	0.00	5.60	7.60
27			25	36.54	77.2	0.07	5.40	8.30
27			32	32.00	79.1	0.11	5.20	9.20
27			40	27.03	80.3	0.19	5.00	10.30
27			50	23.05	82.3	0.26	4.70	11.50
27			63	21.30	86.6	0.41	4.30	13.00
27			80	17.72	89.3	0.59	3.70	14.80
27			100	12.88	90.9	0.93	3.00	16.80
27			125	8.80	93.5	1.41	1.80	18.80
27			160	3.30	95.5	2.12	0.00	21.10
27			200	-0.83	96.5	3.04	0.00	22.80
28	3,076	3,087						
28			20	41.51	73.8	0.00	5.60	7.60
28			25	38.15	77.2	0.06	5.40	8.30
28			32	33.62	79.1	0.09	5.20	9.20
28			40	28.66	80.3	0.15	5.00	10.30
28			50	24.69	82.3	0.22	4.70	11.50
28			63	22.97	86.6	0.34	4.30	13.00
28			80	19.42	89.3	0.49	3.70	14.80
28			100	14.64	90.9	0.77	3.00	16.80
28			125	10.64	93.5	1.17	1.80	18.80
28			160	5.25	95.5	1.76	0.00	21.10
28			200	1.28	96.5	2.53	0.00	22.80
29	2,435	2,449						
29			20	43.52	73.8	0.00	5.60	7.60
29			25	40.17	77.2	0.05	5.40	8.30
29			32	35.65	79.1	0.07	5.20	9.20
29			40	30.70	80.3	0.12	5.00	10.30
29			50	26.75	82.3	0.17	4.70	11.50
29			63	25.05	86.6	0.27	4.30	13.00
29			80	21.53	89.3	0.39	3.70	14.80
29			100	16.81	90.9	0.61	3.00	16.80
29			125	12.89	93.5	0.93	1.80	18.80
29			160	7.62	95.5	1.40	0.00	21.10
29			200	3.81	96.5	2.01	0.00	22.80
3	5,428	5,433						
3			20	36.60	73.8	0.00	5.60	7.60
3			25	33.19	77.2	0.11	5.40	8.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
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Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			32	28.64	79.1	0.16	5.20	9.20
3			40	23.63	80.3	0.27	5.00	10.30
3			50	19.62	82.3	0.38	4.70	11.50
3			63	17.80	86.6	0.60	4.30	13.00
3			80	14.13	89.3	0.87	3.70	14.80
3			100	9.14	90.9	1.36	3.00	16.80
3			125	4.83	93.5	2.06	1.80	18.80
3			160	-1.00	95.5	3.10	0.00	21.10
3			200	-5.56	96.5	4.46	0.00	22.80
30	2,219	2,232						
30			20	44.33	73.8	0.00	5.60	7.60
30			25	40.98	77.2	0.04	5.40	8.30
30			32	36.46	79.1	0.07	5.20	9.20
30			40	31.52	80.3	0.11	5.00	10.30
30			50	27.57	82.3	0.16	4.70	11.50
30			63	25.88	86.6	0.25	4.30	13.00
30			80	22.37	89.3	0.36	3.70	14.80
30			100	17.67	90.9	0.56	3.00	16.80
30			125	13.78	93.5	0.85	1.80	18.80
30			160	8.56	95.5	1.27	0.00	21.10
30			200	4.80	96.5	1.83	0.00	22.80
31	1,911	1,926						
31			20	45.61	73.8	0.00	5.60	7.60
31			25	42.27	77.2	0.04	5.40	8.30
31			32	37.75	79.1	0.06	5.20	9.20
31			40	32.81	80.3	0.10	5.00	10.30
31			50	28.87	82.3	0.13	4.70	11.50
31			63	27.20	86.6	0.21	4.30	13.00
31			80	23.70	89.3	0.31	3.70	14.80
31			100	19.03	90.9	0.48	3.00	16.80
31			125	15.18	93.5	0.73	1.80	18.80
31			160	10.01	95.5	1.10	0.00	21.10
31			200	6.33	96.5	1.58	0.00	22.80
32	1,674	1,691						
32			20	46.74	73.8	0.00	5.60	7.60
32			25	43.40	77.2	0.03	5.40	8.30
32			32	38.89	79.1	0.05	5.20	9.20
32			40	33.95	80.3	0.08	5.00	10.30
32			50	30.02	82.3	0.12	4.70	11.50
32			63	28.35	86.6	0.19	4.30	13.00
32			80	24.87	89.3	0.27	3.70	14.80
32			100	20.21	90.9	0.42	3.00	16.80
32			125	16.39	93.5	0.64	1.80	18.80
32			160	11.27	95.5	0.96	0.00	21.10
32			200	7.65	96.5	1.39	0.00	22.80
33	1,805	1,824						
33			20	46.08	73.8	0.00	5.60	7.60
33			25	42.74	77.2	0.04	5.40	8.30
33			32	38.23	79.1	0.05	5.20	9.20
33			40	33.29	80.3	0.09	5.00	10.30
33			50	29.35	82.3	0.13	4.70	11.50
33			63	27.68	86.6	0.20	4.30	13.00
33			80	24.19	89.3	0.29	3.70	14.80
33			100	19.52	90.9	0.46	3.00	16.80
33			125	15.69	93.5	0.69	1.80	18.80
33			160	10.54	95.5	1.04	0.00	21.10
33			200	6.88	96.5	1.50	0.00	22.80
4	5,112	5,117						
4			20	37.12	73.8	0.00	5.60	7.60
4			25	33.72	77.2	0.10	5.40	8.30
4			32	29.17	79.1	0.15	5.20	9.20
4			40	24.16	80.3	0.26	5.00	10.30
4			50	20.16	82.3	0.36	4.70	11.50
4			63	18.36	86.6	0.56	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			80	14.70	89.3	0.82	3.70	14.80
4			100	9.74	90.9	1.28	3.00	16.80
4			125	5.47	93.5	1.94	1.80	18.80
4			160	-0.30	95.5	2.92	0.00	21.10
4			200	-4.78	96.5	4.20	0.00	22.80
5	4,575	4,581						
5			20	38.08	73.8	0.00	5.60	7.60
5			25	34.69	77.2	0.09	5.40	8.30
5			32	30.14	79.1	0.14	5.20	9.20
5			40	25.15	80.3	0.23	5.00	10.30
5			50	21.16	82.3	0.32	4.70	11.50
5			63	19.38	86.6	0.50	4.30	13.00
5			80	15.75	89.3	0.73	3.70	14.80
5			100	10.84	90.9	1.15	3.00	16.80
5			125	6.64	93.5	1.74	1.80	18.80
5			160	0.97	95.5	2.61	0.00	21.10
5			200	-3.38	96.5	3.76	0.00	22.80
6	5,989	5,994						
6			20	35.75	73.8	0.00	5.60	7.60
6			25	32.33	77.2	0.12	5.40	8.30
6			32	27.77	79.1	0.18	5.20	9.20
6			40	22.75	80.3	0.30	5.00	10.30
6			50	18.73	82.3	0.42	4.70	11.50
6			63	16.89	86.6	0.66	4.30	13.00
6			80	13.19	89.3	0.96	3.70	14.80
6			100	8.15	90.9	1.50	3.00	16.80
6			125	3.77	93.5	2.28	1.80	18.80
6			160	-2.17	95.5	3.42	0.00	21.10
6			200	-6.87	96.5	4.91	0.00	22.80
7	5,335	5,340						
7			20	36.75	73.8	0.00	5.60	7.60
7			25	33.34	77.2	0.11	5.40	8.30
7			32	28.79	79.1	0.16	5.20	9.20
7			40	23.78	80.3	0.27	5.00	10.30
7			50	19.78	82.3	0.37	4.70	11.50
7			63	17.96	86.6	0.59	4.30	13.00
7			80	14.29	89.3	0.85	3.70	14.80
7			100	9.31	90.9	1.33	3.00	16.80
7			125	5.02	93.5	2.03	1.80	18.80
7			160	-0.79	95.5	3.04	0.00	21.10
7			200	-5.33	96.5	4.38	0.00	22.80
8	4,919	4,924						
8			20	37.45	73.8	0.00	5.60	7.60
8			25	34.05	77.2	0.10	5.40	8.30
8			32	29.51	79.1	0.15	5.20	9.20
8			40	24.51	80.3	0.25	5.00	10.30
8			50	20.51	82.3	0.34	4.70	11.50
8			63	18.71	86.6	0.54	4.30	13.00
8			80	15.07	89.3	0.79	3.70	14.80
8			100	10.12	90.9	1.23	3.00	16.80
8			125	5.88	93.5	1.87	1.80	18.80
8			160	0.15	95.5	2.81	0.00	21.10
8			200	-4.29	96.5	4.04	0.00	22.80
9	4,228	4,235						
9			20	38.76	73.8	0.00	5.60	7.60
9			25	35.38	77.2	0.08	5.40	8.30
9			32	30.84	79.1	0.13	5.20	9.20
9			40	25.85	80.3	0.21	5.00	10.30
9			50	21.87	82.3	0.30	4.70	11.50
9			63	20.10	86.6	0.47	4.30	13.00
9			80	16.49	89.3	0.68	3.70	14.80
9			100	11.60	90.9	1.06	3.00	16.80
9			125	7.45	93.5	1.61	1.80	18.80
9			160	1.85	95.5	2.41	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			200	-2.41	96.5	3.47	0.00	22.80
Sum								
Sum			20	55.39				
Sum			25	52.02				
Sum			32	47.49				
Sum			40	42.53				
Sum			50	38.56				
Sum			63	36.83				
Sum			80	33.27				
Sum			100	28.49				
Sum			125	24.49				
Sum			160	19.11				
Sum			200	15.18				

Noise sensitive area: RH Suonpää Noise sensitive point: Finnish normal frequency - User defined (309)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,872	4,876						
1			20	37.54	73.8	0.00	5.60	7.60
1			25	34.14	77.2	0.10	5.40	8.30
1			32	29.59	79.1	0.15	5.20	9.20
1			40	24.59	80.3	0.24	5.00	10.30
1			50	20.60	82.3	0.34	4.70	11.50
1			63	18.80	86.6	0.54	4.30	13.00
1			80	15.16	89.3	0.78	3.70	14.80
1			100	10.22	90.9	1.22	3.00	16.80
1			125	5.98	93.5	1.85	1.80	18.80
1			160	0.26	95.5	2.78	0.00	21.10
1			200	-4.16	96.5	4.00	0.00	22.80
10	2,234	2,245						
10			20	44.28	73.8	0.00	5.60	7.60
10			25	40.93	77.2	0.04	5.40	8.30
10			32	36.41	79.1	0.07	5.20	9.20
10			40	31.46	80.3	0.11	5.00	10.30
10			50	27.52	82.3	0.16	4.70	11.50
10			63	25.83	86.6	0.25	4.30	13.00
10			80	22.32	89.3	0.36	3.70	14.80
10			100	17.62	90.9	0.56	3.00	16.80
10			125	13.72	93.5	0.85	1.80	18.80
10			160	8.50	95.5	1.28	0.00	21.10
10			200	4.74	96.5	1.84	0.00	22.80
11	2,830	2,840						
11			20	42.23	73.8	0.00	5.60	7.60
11			25	38.88	77.2	0.06	5.40	8.30
11			32	34.35	79.1	0.09	5.20	9.20
11			40	29.39	80.3	0.14	5.00	10.30
11			50	25.44	82.3	0.20	4.70	11.50
11			63	23.72	86.6	0.31	4.30	13.00
11			80	20.18	89.3	0.45	3.70	14.80
11			100	15.42	90.9	0.71	3.00	16.80
11			125	11.46	93.5	1.08	1.80	18.80
11			160	6.12	95.5	1.62	0.00	21.10
11			200	2.21	96.5	2.33	0.00	22.80
12	1,716	1,730						
12			20	46.54	73.8	0.00	5.60	7.60
12			25	43.20	77.2	0.03	5.40	8.30
12			32	38.69	79.1	0.05	5.20	9.20
12			40	33.75	80.3	0.09	5.00	10.30
12			50	29.82	82.3	0.12	4.70	11.50
12			63	28.15	86.6	0.19	4.30	13.00
12			80	24.66	89.3	0.28	3.70	14.80
12			100	20.01	90.9	0.43	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			125	16.18	93.5	0.66	1.80	18.80
12			160	11.05	95.5	0.99	0.00	21.10
12			200	7.42	96.5	1.42	0.00	22.80
13	2,546	2,556						
13			20	43.15	73.8	0.00	5.60	7.60
13			25	39.80	77.2	0.05	5.40	8.30
13			32	35.27	79.1	0.08	5.20	9.20
13			40	30.32	80.3	0.13	5.00	10.30
13			50	26.37	82.3	0.18	4.70	11.50
13			63	24.67	86.6	0.28	4.30	13.00
13			80	21.14	89.3	0.41	3.70	14.80
13			100	16.41	90.9	0.64	3.00	16.80
13			125	12.48	93.5	0.97	1.80	18.80
13			160	7.19	95.5	1.46	0.00	21.10
13			200	3.35	96.5	2.10	0.00	22.80
14	3,930	3,937						
14			20	39.40	73.8	0.00	5.60	7.60
14			25	36.02	77.2	0.08	5.40	8.30
14			32	31.48	79.1	0.12	5.20	9.20
14			40	26.50	80.3	0.20	5.00	10.30
14			50	22.52	82.3	0.28	4.70	11.50
14			63	20.76	86.6	0.43	4.30	13.00
14			80	17.17	89.3	0.63	3.70	14.80
14			100	12.31	90.9	0.98	3.00	16.80
14			125	8.20	93.5	1.50	1.80	18.80
14			160	2.65	95.5	2.24	0.00	21.10
14			200	-1.53	96.5	3.23	0.00	22.80
15	2,054	2,066						
15			20	45.00	73.8	0.00	5.60	7.60
15			25	41.66	77.2	0.04	5.40	8.30
15			32	37.14	79.1	0.06	5.20	9.20
15			40	32.20	80.3	0.10	5.00	10.30
15			50	28.25	82.3	0.14	4.70	11.50
15			63	26.57	86.6	0.23	4.30	13.00
15			80	23.07	89.3	0.33	3.70	14.80
15			100	18.38	90.9	0.52	3.00	16.80
15			125	14.51	93.5	0.78	1.80	18.80
15			160	9.32	95.5	1.18	0.00	21.10
15			200	5.60	96.5	1.69	0.00	22.80
16	2,930	2,938						
16			20	41.94	73.8	0.00	5.60	7.60
16			25	38.58	77.2	0.06	5.40	8.30
16			32	34.05	79.1	0.09	5.20	9.20
16			40	29.09	80.3	0.15	5.00	10.30
16			50	25.13	82.3	0.21	4.70	11.50
16			63	23.42	86.6	0.32	4.30	13.00
16			80	19.87	89.3	0.47	3.70	14.80
16			100	15.10	90.9	0.73	3.00	16.80
16			125	11.12	93.5	1.12	1.80	18.80
16			160	5.76	95.5	1.67	0.00	21.10
16			200	1.83	96.5	2.41	0.00	22.80
17	3,590	3,599						
17			20	40.18	73.8	0.00	5.60	7.60
17			25	36.80	77.2	0.07	5.40	8.30
17			32	32.27	79.1	0.11	5.20	9.20
17			40	27.30	80.3	0.18	5.00	10.30
17			50	23.32	82.3	0.25	4.70	11.50
17			63	21.58	86.6	0.40	4.30	13.00
17			80	18.00	89.3	0.58	3.70	14.80
17			100	13.18	90.9	0.90	3.00	16.80
17			125	9.11	93.5	1.37	1.80	18.80
17			160	3.63	95.5	2.05	0.00	21.10
17			200	-0.47	96.5	2.95	0.00	22.80
18	3,783	3,791						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			20	39.73	73.8	0.00	5.60	7.60
18			25	36.35	77.2	0.08	5.40	8.30
18			32	31.81	79.1	0.11	5.20	9.20
18			40	26.84	80.3	0.19	5.00	10.30
18			50	22.86	82.3	0.27	4.70	11.50
18			63	21.11	86.6	0.42	4.30	13.00
18			80	17.52	89.3	0.61	3.70	14.80
18			100	12.68	90.9	0.95	3.00	16.80
18			125	8.59	93.5	1.44	1.80	18.80
18			160	3.07	95.5	2.16	0.00	21.10
18			200	-1.08	96.5	3.11	0.00	22.80
19	2,331	2,341						
19			20	43.91	73.8	0.00	5.60	7.60
19			25	40.57	77.2	0.05	5.40	8.30
19			32	36.04	79.1	0.07	5.20	9.20
19			40	31.10	80.3	0.12	5.00	10.30
19			50	27.15	82.3	0.16	4.70	11.50
19			63	25.46	86.6	0.26	4.30	13.00
19			80	21.94	89.3	0.37	3.70	14.80
19			100	17.23	90.9	0.59	3.00	16.80
19			125	13.32	93.5	0.89	1.80	18.80
19			160	8.08	95.5	1.33	0.00	21.10
19			200	4.29	96.5	1.92	0.00	22.80
2	3,914	3,921						
2			20	39.43	73.8	0.00	5.60	7.60
2			25	36.05	77.2	0.08	5.40	8.30
2			32	31.52	79.1	0.12	5.20	9.20
2			40	26.54	80.3	0.20	5.00	10.30
2			50	22.56	82.3	0.27	4.70	11.50
2			63	20.80	86.6	0.43	4.30	13.00
2			80	17.21	89.3	0.63	3.70	14.80
2			100	12.35	90.9	0.98	3.00	16.80
2			125	8.24	93.5	1.49	1.80	18.80
2			160	2.70	95.5	2.23	0.00	21.10
2			200	-1.48	96.5	3.21	0.00	22.80
20	2,947	2,955						
20			20	41.89	73.8	0.00	5.60	7.60
20			25	38.53	77.2	0.06	5.40	8.30
20			32	34.00	79.1	0.09	5.20	9.20
20			40	29.04	80.3	0.15	5.00	10.30
20			50	25.08	82.3	0.21	4.70	11.50
20			63	23.36	86.6	0.33	4.30	13.00
20			80	19.82	89.3	0.47	3.70	14.80
20			100	15.05	90.9	0.74	3.00	16.80
20			125	11.07	93.5	1.12	1.80	18.80
20			160	5.70	95.5	1.68	0.00	21.10
20			200	1.77	96.5	2.42	0.00	22.80
21	4,196	4,205						
21			20	38.82	73.8	0.00	5.60	7.60
21			25	35.44	77.2	0.08	5.40	8.30
21			32	30.90	79.1	0.13	5.20	9.20
21			40	25.91	80.3	0.21	5.00	10.30
21			50	21.93	82.3	0.29	4.70	11.50
21			63	20.16	86.6	0.46	4.30	13.00
21			80	16.55	89.3	0.67	3.70	14.80
21			100	11.67	90.9	1.05	3.00	16.80
21			125	7.53	93.5	1.60	1.80	18.80
21			160	1.93	95.5	2.40	0.00	21.10
21			200	-2.32	96.5	3.45	0.00	22.80
22	4,776	4,782						
22			20	37.71	73.8	0.00	5.60	7.60
22			25	34.31	77.2	0.10	5.40	8.30
22			32	29.76	79.1	0.14	5.20	9.20
22			40	24.77	80.3	0.24	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			50	20.77	82.3	0.33	4.70	11.50
22			63	18.98	86.6	0.53	4.30	13.00
22			80	15.34	89.3	0.77	3.70	14.80
22			100	10.41	90.9	1.20	3.00	16.80
22			125	6.19	93.5	1.82	1.80	18.80
22			160	0.48	95.5	2.73	0.00	21.10
22			200	-3.91	96.5	3.92	0.00	22.80
23	5,266	5,271						
23			20	36.86	73.8	0.00	5.60	7.60
23			25	33.46	77.2	0.11	5.40	8.30
23			32	28.90	79.1	0.16	5.20	9.20
23			40	23.90	80.3	0.26	5.00	10.30
23			50	19.89	82.3	0.37	4.70	11.50
23			63	18.08	86.6	0.58	4.30	13.00
23			80	14.42	89.3	0.84	3.70	14.80
23			100	9.45	90.9	1.32	3.00	16.80
23			125	5.16	93.5	2.00	1.80	18.80
23			160	-0.64	95.5	3.00	0.00	21.10
23			200	-5.16	96.5	4.32	0.00	22.80
24	3,614	3,621						
24			20	40.12	73.8	0.00	5.60	7.60
24			25	36.75	77.2	0.07	5.40	8.30
24			32	32.21	79.1	0.11	5.20	9.20
24			40	27.24	80.3	0.18	5.00	10.30
24			50	23.27	82.3	0.25	4.70	11.50
24			63	21.52	86.6	0.40	4.30	13.00
24			80	17.94	89.3	0.58	3.70	14.80
24			100	13.12	90.9	0.91	3.00	16.80
24			125	9.05	93.5	1.38	1.80	18.80
24			160	3.56	95.5	2.06	0.00	21.10
24			200	-0.55	96.5	2.97	0.00	22.80
25	3,714	3,721						
25			20	39.89	73.8	0.00	5.60	7.60
25			25	36.51	77.2	0.07	5.40	8.30
25			32	31.98	79.1	0.11	5.20	9.20
25			40	27.00	80.3	0.19	5.00	10.30
25			50	23.03	82.3	0.26	4.70	11.50
25			63	21.28	86.6	0.41	4.30	13.00
25			80	17.69	89.3	0.60	3.70	14.80
25			100	12.86	90.9	0.93	3.00	16.80
25			125	8.77	93.5	1.41	1.80	18.80
25			160	3.27	95.5	2.12	0.00	21.10
25			200	-0.86	96.5	3.05	0.00	22.80
26	4,259	4,267						
26			20	38.70	73.8	0.00	5.60	7.60
26			25	35.31	77.2	0.09	5.40	8.30
26			32	30.77	79.1	0.13	5.20	9.20
26			40	25.79	80.3	0.21	5.00	10.30
26			50	21.80	82.3	0.30	4.70	11.50
26			63	20.03	86.6	0.47	4.30	13.00
26			80	16.42	89.3	0.68	3.70	14.80
26			100	11.53	90.9	1.07	3.00	16.80
26			125	7.38	93.5	1.62	1.80	18.80
26			160	1.77	95.5	2.43	0.00	21.10
26			200	-2.50	96.5	3.50	0.00	22.80
27	4,749	4,755						
27			20	37.76	73.8	0.00	5.60	7.60
27			25	34.36	77.2	0.10	5.40	8.30
27			32	29.81	79.1	0.14	5.20	9.20
27			40	24.82	80.3	0.24	5.00	10.30
27			50	20.82	82.3	0.33	4.70	11.50
27			63	19.03	86.6	0.52	4.30	13.00
27			80	15.40	89.3	0.76	3.70	14.80
27			100	10.47	90.9	1.19	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
27			125	6.25	93.5	1.81	1.80	18.80
27			160	0.55	95.5	2.71	0.00	21.10
27			200	-3.84	96.5	3.90	0.00	22.80
28	5,298	5,303						
28			20	36.81	73.8	0.00	5.60	7.60
28			25	33.40	77.2	0.11	5.40	8.30
28			32	28.85	79.1	0.16	5.20	9.20
28			40	23.84	80.3	0.27	5.00	10.30
28			50	19.84	82.3	0.37	4.70	11.50
28			63	18.03	86.6	0.58	4.30	13.00
28			80	14.36	89.3	0.85	3.70	14.80
28			100	9.38	90.9	1.33	3.00	16.80
28			125	5.09	93.5	2.02	1.80	18.80
28			160	-0.71	95.5	3.02	0.00	21.10
28			200	-5.24	96.5	4.35	0.00	22.80
29	5,886	5,891						
29			20	35.90	73.8	0.00	5.60	7.60
29			25	32.48	77.2	0.12	5.40	8.30
29			32	27.92	79.1	0.18	5.20	9.20
29			40	22.90	80.3	0.29	5.00	10.30
29			50	18.88	82.3	0.41	4.70	11.50
29			63	17.05	86.6	0.65	4.30	13.00
29			80	13.35	89.3	0.94	3.70	14.80
29			100	8.32	90.9	1.47	3.00	16.80
29			125	3.96	93.5	2.24	1.80	18.80
29			160	-1.96	95.5	3.36	0.00	21.10
29			200	-6.63	96.5	4.83	0.00	22.80
3	4,545	4,550						
3			20	38.14	73.8	0.00	5.60	7.60
3			25	34.75	77.2	0.09	5.40	8.30
3			32	30.20	79.1	0.14	5.20	9.20
3			40	25.21	80.3	0.23	5.00	10.30
3			50	21.22	82.3	0.32	4.70	11.50
3			63	19.44	86.6	0.50	4.30	13.00
3			80	15.81	89.3	0.73	3.70	14.80
3			100	10.90	90.9	1.14	3.00	16.80
3			125	6.71	93.5	1.73	1.80	18.80
3			160	1.05	95.5	2.59	0.00	21.10
3			200	-3.29	96.5	3.73	0.00	22.80
30	6,105	6,109						
30			20	35.58	73.8	0.00	5.60	7.60
30			25	32.16	77.2	0.12	5.40	8.30
30			32	27.60	79.1	0.18	5.20	9.20
30			40	22.58	80.3	0.31	5.00	10.30
30			50	18.55	82.3	0.43	4.70	11.50
30			63	16.71	86.6	0.67	4.30	13.00
30			80	13.00	89.3	0.98	3.70	14.80
30			100	7.95	90.9	1.53	3.00	16.80
30			125	3.56	93.5	2.32	1.80	18.80
30			160	-2.40	95.5	3.48	0.00	21.10
30			200	-7.13	96.5	5.01	0.00	22.80
31	6,408	6,411						
31			20	35.16	73.8	0.00	5.60	7.60
31			25	31.73	77.2	0.13	5.40	8.30
31			32	27.17	79.1	0.19	5.20	9.20
31			40	22.14	80.3	0.32	5.00	10.30
31			50	18.11	82.3	0.45	4.70	11.50
31			63	16.26	86.6	0.71	4.30	13.00
31			80	12.54	89.3	1.03	3.70	14.80
31			100	7.46	90.9	1.60	3.00	16.80
31			125	3.02	93.5	2.44	1.80	18.80
31			160	-2.99	95.5	3.65	0.00	21.10
31			200	-7.80	96.5	5.26	0.00	22.80
32	6,726	6,730						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			20	34.74	73.8	0.00	5.60	7.60
32			25	31.31	77.2	0.13	5.40	8.30
32			32	26.74	79.1	0.20	5.20	9.20
32			40	21.70	80.3	0.34	5.00	10.30
32			50	17.67	82.3	0.47	4.70	11.50
32			63	15.80	86.6	0.74	4.30	13.00
32			80	12.06	89.3	1.08	3.70	14.80
32			100	6.96	90.9	1.68	3.00	16.80
32			125	2.48	93.5	2.56	1.80	18.80
32			160	-3.60	95.5	3.84	0.00	21.10
32			200	-8.48	96.5	5.52	0.00	22.80
33	7,021	7,025						
33			20	34.37	73.8	0.00	5.60	7.60
33			25	30.93	77.2	0.14	5.40	8.30
33			32	26.36	79.1	0.21	5.20	9.20
33			40	21.32	80.3	0.35	5.00	10.30
33			50	17.28	82.3	0.49	4.70	11.50
33			63	15.39	86.6	0.77	4.30	13.00
33			80	11.64	89.3	1.12	3.70	14.80
33			100	6.51	90.9	1.76	3.00	16.80
33			125	2.00	93.5	2.67	1.80	18.80
33			160	-4.14	95.5	4.00	0.00	21.10
33			200	-9.09	96.5	5.76	0.00	22.80
4	4,283	4,289						
4			20	38.65	73.8	0.00	5.60	7.60
4			25	35.27	77.2	0.09	5.40	8.30
4			32	30.72	79.1	0.13	5.20	9.20
4			40	25.74	80.3	0.21	5.00	10.30
4			50	21.75	82.3	0.30	4.70	11.50
4			63	19.98	86.6	0.47	4.30	13.00
4			80	16.37	89.3	0.69	3.70	14.80
4			100	11.48	90.9	1.07	3.00	16.80
4			125	7.32	93.5	1.63	1.80	18.80
4			160	1.71	95.5	2.44	0.00	21.10
4			200	-2.56	96.5	3.52	0.00	22.80
5	4,495	4,500						
5			20	38.24	73.8	0.00	5.60	7.60
5			25	34.85	77.2	0.09	5.40	8.30
5			32	30.30	79.1	0.14	5.20	9.20
5			40	25.31	80.3	0.23	5.00	10.30
5			50	21.32	82.3	0.32	4.70	11.50
5			63	19.54	86.6	0.50	4.30	13.00
5			80	15.92	89.3	0.72	3.70	14.80
5			100	11.01	90.9	1.13	3.00	16.80
5			125	6.83	93.5	1.71	1.80	18.80
5			160	1.17	95.5	2.57	0.00	21.10
5			200	-3.15	96.5	3.69	0.00	22.80
6	2,847	2,856						
6			20	42.19	73.8	0.00	5.60	7.60
6			25	38.83	77.2	0.06	5.40	8.30
6			32	34.30	79.1	0.09	5.20	9.20
6			40	29.34	80.3	0.14	5.00	10.30
6			50	25.39	82.3	0.20	4.70	11.50
6			63	23.67	86.6	0.31	4.30	13.00
6			80	20.13	89.3	0.46	3.70	14.80
6			100	15.37	90.9	0.71	3.00	16.80
6			125	11.40	93.5	1.09	1.80	18.80
6			160	6.06	95.5	1.63	0.00	21.10
6			200	2.14	96.5	2.34	0.00	22.80
7	3,371	3,378						
7			20	40.73	73.8	0.00	5.60	7.60
7			25	37.36	77.2	0.07	5.40	8.30
7			32	32.82	79.1	0.10	5.20	9.20
7			40	27.86	80.3	0.17	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			50	23.89	82.3	0.24	4.70	11.50
7			63	22.15	86.6	0.37	4.30	13.00
7			80	18.59	89.3	0.54	3.70	14.80
7			100	13.78	90.9	0.84	3.00	16.80
7			125	9.74	93.5	1.28	1.80	18.80
7			160	4.30	95.5	1.93	0.00	21.10
7			200	0.26	96.5	2.77	0.00	22.80
8	3,933	3,939						
8			20	39.39	73.8	0.00	5.60	7.60
8			25	36.01	77.2	0.08	5.40	8.30
8			32	31.47	79.1	0.12	5.20	9.20
8			40	26.50	80.3	0.20	5.00	10.30
8			50	22.52	82.3	0.28	4.70	11.50
8			63	20.76	86.6	0.43	4.30	13.00
8			80	17.16	89.3	0.63	3.70	14.80
8			100	12.31	90.9	0.98	3.00	16.80
8			125	8.20	93.5	1.50	1.80	18.80
8			160	2.65	95.5	2.25	0.00	21.10
8			200	-1.54	96.5	3.23	0.00	22.80
9	4,461	4,467						
9			20	38.30	73.8	0.00	5.60	7.60
9			25	34.91	77.2	0.09	5.40	8.30
9			32	30.37	79.1	0.13	5.20	9.20
9			40	25.38	80.3	0.22	5.00	10.30
9			50	21.39	82.3	0.31	4.70	11.50
9			63	19.61	86.6	0.49	4.30	13.00
9			80	15.99	89.3	0.71	3.70	14.80
9			100	11.08	90.9	1.12	3.00	16.80
9			125	6.90	93.5	1.70	1.80	18.80
9			160	1.25	95.5	2.55	0.00	21.10
9			200	-3.06	96.5	3.66	0.00	22.80
Sum								
Sum			20	55.76				
Sum			25	52.40				
Sum			32	47.87				
Sum			40	42.90				
Sum			50	38.94				
Sum			63	37.21				
Sum			80	33.65				
Sum			100	28.87				
Sum			125	24.86				
Sum			160	19.48				
Sum			200	15.52				

Noise sensitive area: RH Törmäharju 2 Noise sensitive point: Finnish normal frequency - User defined (318)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,591	3,597						
1			20	40.18	73.8	0.00	5.60	7.60
1			25	36.81	77.2	0.07	5.40	8.30
1			32	32.27	79.1	0.11	5.20	9.20
1			40	27.30	80.3	0.18	5.00	10.30
1			50	23.33	82.3	0.25	4.70	11.50
1			63	21.58	86.6	0.40	4.30	13.00
1			80	18.00	89.3	0.58	3.70	14.80
1			100	13.18	90.9	0.90	3.00	16.80
1			125	9.11	93.5	1.37	1.80	18.80
1			160	3.63	95.5	2.05	0.00	21.10
1			200	-0.47	96.5	2.95	0.00	22.80
10	2,182	2,194						
10			20	44.48	73.8	0.00	5.60	7.60
10			25	41.13	77.2	0.04	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			32	36.61	79.1	0.07	5.20	9.20
10			40	31.67	80.3	0.11	5.00	10.30
10			50	27.72	82.3	0.15	4.70	11.50
10			63	26.03	86.6	0.24	4.30	13.00
10			80	22.52	89.3	0.35	3.70	14.80
10			100	17.83	90.9	0.55	3.00	16.80
10			125	13.94	93.5	0.83	1.80	18.80
10			160	8.72	95.5	1.25	0.00	21.10
10			200	4.98	96.5	1.80	0.00	22.80
11	2,713	2,723						
11			20	42.60	73.8	0.00	5.60	7.60
11			25	39.24	77.2	0.05	5.40	8.30
11			32	34.72	79.1	0.08	5.20	9.20
11			40	29.76	80.3	0.14	5.00	10.30
11			50	25.81	82.3	0.19	4.70	11.50
11			63	24.10	86.6	0.30	4.30	13.00
11			80	20.56	89.3	0.44	3.70	14.80
11			100	15.82	90.9	0.68	3.00	16.80
11			125	11.86	93.5	1.03	1.80	18.80
11			160	6.55	95.5	1.55	0.00	21.10
11			200	2.67	96.5	2.23	0.00	22.80
12	2,116	2,128						
12			20	44.74	73.8	0.00	5.60	7.60
12			25	41.40	77.2	0.04	5.40	8.30
12			32	36.88	79.1	0.06	5.20	9.20
12			40	31.93	80.3	0.11	5.00	10.30
12			50	27.99	82.3	0.15	4.70	11.50
12			63	26.31	86.6	0.23	4.30	13.00
12			80	22.80	89.3	0.34	3.70	14.80
12			100	18.11	90.9	0.53	3.00	16.80
12			125	14.23	93.5	0.81	1.80	18.80
12			160	9.03	95.5	1.21	0.00	21.10
12			200	5.30	96.5	1.74	0.00	22.80
13	2,854	2,863						
13			20	42.16	73.8	0.00	5.60	7.60
13			25	38.81	77.2	0.06	5.40	8.30
13			32	34.28	79.1	0.09	5.20	9.20
13			40	29.32	80.3	0.14	5.00	10.30
13			50	25.36	82.3	0.20	4.70	11.50
13			63	23.65	86.6	0.31	4.30	13.00
13			80	20.11	89.3	0.46	3.70	14.80
13			100	15.35	90.9	0.72	3.00	16.80
13			125	11.38	93.5	1.09	1.80	18.80
13			160	6.03	95.5	1.63	0.00	21.10
13			200	2.12	96.5	2.35	0.00	22.80
14	3,641	3,648						
14			20	40.06	73.8	0.00	5.60	7.60
14			25	36.69	77.2	0.07	5.40	8.30
14			32	32.15	79.1	0.11	5.20	9.20
14			40	27.18	80.3	0.18	5.00	10.30
14			50	23.20	82.3	0.26	4.70	11.50
14			63	21.46	86.6	0.40	4.30	13.00
14			80	17.88	89.3	0.58	3.70	14.80
14			100	13.05	90.9	0.91	3.00	16.80
14			125	8.97	93.5	1.39	1.80	18.80
14			160	3.48	95.5	2.08	0.00	21.10
14			200	-0.63	96.5	2.99	0.00	22.80
15	2,711	2,720						
15			20	42.61	73.8	0.00	5.60	7.60
15			25	39.26	77.2	0.05	5.40	8.30
15			32	34.73	79.1	0.08	5.20	9.20
15			40	29.77	80.3	0.14	5.00	10.30
15			50	25.82	82.3	0.19	4.70	11.50
15			63	24.11	86.6	0.30	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			80	20.57	89.3	0.44	3.70	14.80
15			100	15.83	90.9	0.68	3.00	16.80
15			125	11.88	93.5	1.03	1.80	18.80
15			160	6.56	95.5	1.55	0.00	21.10
15			200	2.68	96.5	2.23	0.00	22.80
16	3,404	3,411						
16			20	40.64	73.8	0.00	5.60	7.60
16			25	37.27	77.2	0.07	5.40	8.30
16			32	32.74	79.1	0.10	5.20	9.20
16			40	27.77	80.3	0.17	5.00	10.30
16			50	23.80	82.3	0.24	4.70	11.50
16			63	22.07	86.6	0.38	4.30	13.00
16			80	18.50	89.3	0.55	3.70	14.80
16			100	13.69	90.9	0.85	3.00	16.80
16			125	9.64	93.5	1.30	1.80	18.80
16			160	4.20	95.5	1.94	0.00	21.10
16			200	0.14	96.5	2.80	0.00	22.80
17	3,889	3,897						
17			20	39.49	73.8	0.00	5.60	7.60
17			25	36.11	77.2	0.08	5.40	8.30
17			32	31.57	79.1	0.12	5.20	9.20
17			40	26.59	80.3	0.19	5.00	10.30
17			50	22.61	82.3	0.27	4.70	11.50
17			63	20.86	86.6	0.43	4.30	13.00
17			80	17.26	89.3	0.62	3.70	14.80
17			100	12.41	90.9	0.97	3.00	16.80
17			125	8.30	93.5	1.48	1.80	18.80
17			160	2.76	95.5	2.22	0.00	21.10
17			200	-1.41	96.5	3.20	0.00	22.80
18	3,821	3,829						
18			20	39.64	73.8	0.00	5.60	7.60
18			25	36.26	77.2	0.08	5.40	8.30
18			32	31.72	79.1	0.11	5.20	9.20
18			40	26.75	80.3	0.19	5.00	10.30
18			50	22.77	82.3	0.27	4.70	11.50
18			63	21.02	86.6	0.42	4.30	13.00
18			80	17.42	89.3	0.61	3.70	14.80
18			100	12.58	90.9	0.96	3.00	16.80
18			125	8.48	93.5	1.46	1.80	18.80
18			160	2.95	95.5	2.18	0.00	21.10
18			200	-1.20	96.5	3.14	0.00	22.80
19	3,217	3,224						
19			20	41.13	73.8	0.00	5.60	7.60
19			25	37.77	77.2	0.06	5.40	8.30
19			32	33.24	79.1	0.10	5.20	9.20
19			40	28.27	80.3	0.16	5.00	10.30
19			50	24.31	82.3	0.23	4.70	11.50
19			63	22.58	86.6	0.35	4.30	13.00
19			80	19.02	89.3	0.52	3.70	14.80
19			100	14.23	90.9	0.81	3.00	16.80
19			125	10.21	93.5	1.23	1.80	18.80
19			160	4.80	95.5	1.84	0.00	21.10
19			200	0.79	96.5	2.64	0.00	22.80
2	2,902	2,911						
2			20	42.02	73.8	0.00	5.60	7.60
2			25	38.66	77.2	0.06	5.40	8.30
2			32	34.13	79.1	0.09	5.20	9.20
2			40	29.17	80.3	0.15	5.00	10.30
2			50	25.22	82.3	0.20	4.70	11.50
2			63	23.50	86.6	0.32	4.30	13.00
2			80	19.95	89.3	0.47	3.70	14.80
2			100	15.19	90.9	0.73	3.00	16.80
2			125	11.21	93.5	1.11	1.80	18.80
2			160	5.86	95.5	1.66	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			200	1.93	96.5	2.39	0.00	22.80
20	3,780	3,787						
20			20	39.73	73.8	0.00	5.60	7.60
20			25	36.36	77.2	0.08	5.40	8.30
20			32	31.82	79.1	0.11	5.20	9.20
20			40	26.84	80.3	0.19	5.00	10.30
20			50	22.87	82.3	0.27	4.70	11.50
20			63	21.12	86.6	0.42	4.30	13.00
20			80	17.53	89.3	0.61	3.70	14.80
20			100	12.69	90.9	0.95	3.00	16.80
20			125	8.59	93.5	1.44	1.80	18.80
20			160	3.08	95.5	2.16	0.00	21.10
20			200	-1.07	96.5	3.11	0.00	22.80
21	4,479	4,487						
21			20	38.26	73.8	0.00	5.60	7.60
21			25	34.87	77.2	0.09	5.40	8.30
21			32	30.33	79.1	0.13	5.20	9.20
21			40	25.34	80.3	0.22	5.00	10.30
21			50	21.35	82.3	0.31	4.70	11.50
21			63	19.57	86.6	0.49	4.30	13.00
21			80	15.94	89.3	0.72	3.70	14.80
21			100	11.04	90.9	1.12	3.00	16.80
21			125	6.86	93.5	1.71	1.80	18.80
21			160	1.20	95.5	2.56	0.00	21.10
21			200	-3.12	96.5	3.68	0.00	22.80
22	5,027	5,032						
22			20	37.26	73.8	0.00	5.60	7.60
22			25	33.86	77.2	0.10	5.40	8.30
22			32	29.31	79.1	0.15	5.20	9.20
22			40	24.31	80.3	0.25	5.00	10.30
22			50	20.31	82.3	0.35	4.70	11.50
22			63	18.51	86.6	0.55	4.30	13.00
22			80	14.86	89.3	0.81	3.70	14.80
22			100	9.91	90.9	1.26	3.00	16.80
22			125	5.65	93.5	1.91	1.80	18.80
22			160	-0.10	95.5	2.87	0.00	21.10
22			200	-4.56	96.5	4.13	0.00	22.80
23	5,326	5,330						
23			20	36.76	73.8	0.00	5.60	7.60
23			25	33.36	77.2	0.11	5.40	8.30
23			32	28.80	79.1	0.16	5.20	9.20
23			40	23.80	80.3	0.27	5.00	10.30
23			50	19.79	82.3	0.37	4.70	11.50
23			63	17.98	86.6	0.59	4.30	13.00
23			80	14.31	89.3	0.85	3.70	14.80
23			100	9.33	90.9	1.33	3.00	16.80
23			125	5.04	93.5	2.03	1.80	18.80
23			160	-0.77	95.5	3.04	0.00	21.10
23			200	-5.31	96.5	4.37	0.00	22.80
24	4,444	4,450						
24			20	38.33	73.8	0.00	5.60	7.60
24			25	34.94	77.2	0.09	5.40	8.30
24			32	30.40	79.1	0.13	5.20	9.20
24			40	25.41	80.3	0.22	5.00	10.30
24			50	21.42	82.3	0.31	4.70	11.50
24			63	19.64	86.6	0.49	4.30	13.00
24			80	16.02	89.3	0.71	3.70	14.80
24			100	11.12	90.9	1.11	3.00	16.80
24			125	6.94	93.5	1.69	1.80	18.80
24			160	1.30	95.5	2.54	0.00	21.10
24			200	-3.02	96.5	3.65	0.00	22.80
25	4,277	4,283						
25			20	38.66	73.8	0.00	5.60	7.60
25			25	35.28	77.2	0.09	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			32	30.74	79.1	0.13	5.20	9.20
25			40	25.75	80.3	0.21	5.00	10.30
25			50	21.76	82.3	0.30	4.70	11.50
25			63	19.99	86.6	0.47	4.30	13.00
25			80	16.38	89.3	0.69	3.70	14.80
25			100	11.49	90.9	1.07	3.00	16.80
25			125	7.34	93.5	1.63	1.80	18.80
25			160	1.72	95.5	2.44	0.00	21.10
25			200	-2.55	96.5	3.51	0.00	22.80
26	4,795	4,802						
26			20	37.67	73.8	0.00	5.60	7.60
26			25	34.28	77.2	0.10	5.40	8.30
26			32	29.73	79.1	0.14	5.20	9.20
26			40	24.73	80.3	0.24	5.00	10.30
26			50	20.74	82.3	0.34	4.70	11.50
26			63	18.94	86.6	0.53	4.30	13.00
26			80	15.30	89.3	0.77	3.70	14.80
26			100	10.37	90.9	1.20	3.00	16.80
26			125	6.15	93.5	1.82	1.80	18.80
26			160	0.43	95.5	2.74	0.00	21.10
26			200	-3.97	96.5	3.94	0.00	22.80
27	5,207	5,213						
27			20	36.96	73.8	0.00	5.60	7.60
27			25	33.55	77.2	0.10	5.40	8.30
27			32	29.00	79.1	0.16	5.20	9.20
27			40	24.00	80.3	0.26	5.00	10.30
27			50	19.99	82.3	0.36	4.70	11.50
27			63	18.18	86.6	0.57	4.30	13.00
27			80	14.52	89.3	0.83	3.70	14.80
27			100	9.55	90.9	1.30	3.00	16.80
27			125	5.28	93.5	1.98	1.80	18.80
27			160	-0.51	95.5	2.97	0.00	21.10
27			200	-5.02	96.5	4.27	0.00	22.80
28	5,604	5,609						
28			20	36.32	73.8	0.00	5.60	7.60
28			25	32.91	77.2	0.11	5.40	8.30
28			32	28.35	79.1	0.17	5.20	9.20
28			40	23.34	80.3	0.28	5.00	10.30
28			50	19.33	82.3	0.39	4.70	11.50
28			63	17.51	86.6	0.62	4.30	13.00
28			80	13.83	89.3	0.90	3.70	14.80
28			100	8.82	90.9	1.40	3.00	16.80
28			125	4.49	93.5	2.13	1.80	18.80
28			160	-1.37	95.5	3.20	0.00	21.10
28			200	-5.98	96.5	4.60	0.00	22.80
29	6,057	6,062						
29			20	35.65	73.8	0.00	5.60	7.60
29			25	32.23	77.2	0.12	5.40	8.30
29			32	27.67	79.1	0.18	5.20	9.20
29			40	22.64	80.3	0.30	5.00	10.30
29			50	18.62	82.3	0.42	4.70	11.50
29			63	16.78	86.6	0.67	4.30	13.00
29			80	13.08	89.3	0.97	3.70	14.80
29			100	8.03	90.9	1.52	3.00	16.80
29			125	3.64	93.5	2.30	1.80	18.80
29			160	-2.31	95.5	3.46	0.00	21.10
29			200	-7.02	96.5	4.97	0.00	22.80
3	3,464	3,472						
3			20	40.49	73.8	0.00	5.60	7.60
3			25	37.12	77.2	0.07	5.40	8.30
3			32	32.58	79.1	0.10	5.20	9.20
3			40	27.62	80.3	0.17	5.00	10.30
3			50	23.65	82.3	0.24	4.70	11.50
3			63	21.91	86.6	0.38	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	18.33	89.3	0.56	3.70	14.80
3			100	13.52	90.9	0.87	3.00	16.80
3			125	9.47	93.5	1.32	1.80	18.80
3			160	4.01	95.5	1.98	0.00	21.10
3			200	-0.06	96.5	2.85	0.00	22.80
30	6,067	6,071						
30			20	35.64	73.8	0.00	5.60	7.60
30			25	32.21	77.2	0.12	5.40	8.30
30			32	27.65	79.1	0.18	5.20	9.20
30			40	22.63	80.3	0.30	5.00	10.30
30			50	18.61	82.3	0.42	4.70	11.50
30			63	16.77	86.6	0.67	4.30	13.00
30			80	13.06	89.3	0.97	3.70	14.80
30			100	8.02	90.9	1.52	3.00	16.80
30			125	3.63	93.5	2.31	1.80	18.80
30			160	-2.33	95.5	3.46	0.00	21.10
30			200	-7.04	96.5	4.98	0.00	22.80
31	6,536	6,540						
31			20	34.99	73.8	0.00	5.60	7.60
31			25	31.56	77.2	0.13	5.40	8.30
31			32	26.99	79.1	0.20	5.20	9.20
31			40	21.96	80.3	0.33	5.00	10.30
31			50	17.93	82.3	0.46	4.70	11.50
31			63	16.07	86.6	0.72	4.30	13.00
31			80	12.34	89.3	1.05	3.70	14.80
31			100	7.25	90.9	1.63	3.00	16.80
31			125	2.80	93.5	2.49	1.80	18.80
31			160	-3.24	95.5	3.73	0.00	21.10
31			200	-8.07	96.5	5.36	0.00	22.80
32	6,606	6,610						
32			20	34.90	73.8	0.00	5.60	7.60
32			25	31.46	77.2	0.13	5.40	8.30
32			32	26.90	79.1	0.20	5.20	9.20
32			40	21.87	80.3	0.33	5.00	10.30
32			50	17.83	82.3	0.46	4.70	11.50
32			63	15.97	86.6	0.73	4.30	13.00
32			80	12.24	89.3	1.06	3.70	14.80
32			100	7.14	90.9	1.65	3.00	16.80
32			125	2.68	93.5	2.51	1.80	18.80
32			160	-3.37	95.5	3.77	0.00	21.10
32			200	-8.22	96.5	5.42	0.00	22.80
33	6,715	6,719						
33			20	34.75	73.8	0.00	5.60	7.60
33			25	31.32	77.2	0.13	5.40	8.30
33			32	26.75	79.1	0.20	5.20	9.20
33			40	21.72	80.3	0.34	5.00	10.30
33			50	17.68	82.3	0.47	4.70	11.50
33			63	15.81	86.6	0.74	4.30	13.00
33			80	12.08	89.3	1.08	3.70	14.80
33			100	6.97	90.9	1.68	3.00	16.80
33			125	2.50	93.5	2.55	1.80	18.80
33			160	-3.58	95.5	3.83	0.00	21.10
33			200	-8.46	96.5	5.51	0.00	22.80
4	3,438	3,445						
4			20	40.56	73.8	0.00	5.60	7.60
4			25	37.19	77.2	0.07	5.40	8.30
4			32	32.65	79.1	0.10	5.20	9.20
4			40	27.68	80.3	0.17	5.00	10.30
4			50	23.71	82.3	0.24	4.70	11.50
4			63	21.98	86.6	0.38	4.30	13.00
4			80	18.40	89.3	0.55	3.70	14.80
4			100	13.59	90.9	0.86	3.00	16.80
4			125	9.55	93.5	1.31	1.80	18.80
4			160	4.09	95.5	1.96	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			200	0.03	96.5	2.82	0.00	22.80
5	3,854	3,861						
5			20	39.57	73.8	0.00	5.60	7.60
5			25	36.19	77.2	0.08	5.40	8.30
5			32	31.65	79.1	0.12	5.20	9.20
5			40	26.67	80.3	0.19	5.00	10.30
5			50	22.70	82.3	0.27	4.70	11.50
5			63	20.94	86.6	0.42	4.30	13.00
5			80	17.35	89.3	0.62	3.70	14.80
5			100	12.50	90.9	0.97	3.00	16.80
5			125	8.40	93.5	1.47	1.80	18.80
5			160	2.87	95.5	2.20	0.00	21.10
5			200	-1.30	96.5	3.17	0.00	22.80
6	2,284	2,295						
6			20	44.08	73.8	0.00	5.60	7.60
6			25	40.74	77.2	0.05	5.40	8.30
6			32	36.21	79.1	0.07	5.20	9.20
6			40	31.27	80.3	0.11	5.00	10.30
6			50	27.32	82.3	0.16	4.70	11.50
6			63	25.63	86.6	0.25	4.30	13.00
6			80	22.12	89.3	0.37	3.70	14.80
6			100	17.41	90.9	0.57	3.00	16.80
6			125	13.51	93.5	0.87	1.80	18.80
6			160	8.28	95.5	1.31	0.00	21.10
6			200	4.50	96.5	1.88	0.00	22.80
7	2,939	2,947						
7			20	41.91	73.8	0.00	5.60	7.60
7			25	38.55	77.2	0.06	5.40	8.30
7			32	34.02	79.1	0.09	5.20	9.20
7			40	29.06	80.3	0.15	5.00	10.30
7			50	25.11	82.3	0.21	4.70	11.50
7			63	23.39	86.6	0.32	4.30	13.00
7			80	19.84	89.3	0.47	3.70	14.80
7			100	15.08	90.9	0.74	3.00	16.80
7			125	11.09	93.5	1.12	1.80	18.80
7			160	5.73	95.5	1.68	0.00	21.10
7			200	1.80	96.5	2.42	0.00	22.80
8	3,394	3,402						
8			20	40.67	73.8	0.00	5.60	7.60
8			25	37.30	77.2	0.07	5.40	8.30
8			32	32.76	79.1	0.10	5.20	9.20
8			40	27.80	80.3	0.17	5.00	10.30
8			50	23.83	82.3	0.24	4.70	11.50
8			63	22.09	86.6	0.37	4.30	13.00
8			80	18.52	89.3	0.54	3.70	14.80
8			100	13.72	90.9	0.85	3.00	16.80
8			125	9.67	93.5	1.29	1.80	18.80
8			160	4.23	95.5	1.94	0.00	21.10
8			200	0.18	96.5	2.79	0.00	22.80
9	4,069	4,075						
9			20	39.10	73.8	0.00	5.60	7.60
9			25	35.72	77.2	0.08	5.40	8.30
9			32	31.17	79.1	0.12	5.20	9.20
9			40	26.19	80.3	0.20	5.00	10.30
9			50	22.21	82.3	0.29	4.70	11.50
9			63	20.45	86.6	0.45	4.30	13.00
9			80	16.85	89.3	0.65	3.70	14.80
9			100	11.98	90.9	1.02	3.00	16.80
9			125	7.85	93.5	1.55	1.80	18.80
9			160	2.27	95.5	2.32	0.00	21.10
9			200	-1.94	96.5	3.34	0.00	22.80
Sum								
Sum			20	55.49				
Sum			25	52.13				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			32	47.59				
Sum			40	42.63				
Sum			50	38.66				
Sum			63	36.92				
Sum			80	33.36				
Sum			100	28.56				
Sum			125	24.53				
Sum			160	19.11				
Sum			200	15.11				

Noise sensitive area: RH Tuomaala Noise sensitive point: Finnish normal frequency - User defined (310)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,686	1,701						
1			20	46.69	73.8	0.00	5.60	7.60
1			25	43.35	77.2	0.03	5.40	8.30
1			32	38.83	79.1	0.05	5.20	9.20
1			40	33.90	80.3	0.09	5.00	10.30
1			50	29.97	82.3	0.12	4.70	11.50
1			63	28.30	86.6	0.19	4.30	13.00
1			80	24.81	89.3	0.27	3.70	14.80
1			100	20.16	90.9	0.43	3.00	16.80
1			125	16.34	93.5	0.65	1.80	18.80
1			160	11.22	95.5	0.97	0.00	21.10
1			200	7.59	96.5	1.39	0.00	22.80
10	4,560	4,566						
10			20	38.11	73.8	0.00	5.60	7.60
10			25	34.72	77.2	0.09	5.40	8.30
10			32	30.17	79.1	0.14	5.20	9.20
10			40	25.18	80.3	0.23	5.00	10.30
10			50	21.19	82.3	0.32	4.70	11.50
10			63	19.41	86.6	0.50	4.30	13.00
10			80	15.78	89.3	0.73	3.70	14.80
10			100	10.87	90.9	1.14	3.00	16.80
10			125	6.67	93.5	1.74	1.80	18.80
10			160	1.01	95.5	2.60	0.00	21.10
10			200	-3.34	96.5	3.74	0.00	22.80
11	4,189	4,195						
11			20	38.84	73.8	0.00	5.60	7.60
11			25	35.46	77.2	0.08	5.40	8.30
11			32	30.92	79.1	0.13	5.20	9.20
11			40	25.94	80.3	0.21	5.00	10.30
11			50	21.95	82.3	0.29	4.70	11.50
11			63	20.18	86.6	0.46	4.30	13.00
11			80	16.57	89.3	0.67	3.70	14.80
11			100	11.70	90.9	1.05	3.00	16.80
11			125	7.55	93.5	1.59	1.80	18.80
11			160	1.95	95.5	2.39	0.00	21.10
11			200	-2.30	96.5	3.44	0.00	22.80
12	5,135	5,140						
12			20	37.08	73.8	0.00	5.60	7.60
12			25	33.68	77.2	0.10	5.40	8.30
12			32	29.13	79.1	0.15	5.20	9.20
12			40	24.12	80.3	0.26	5.00	10.30
12			50	20.12	82.3	0.36	4.70	11.50
12			63	18.32	86.6	0.57	4.30	13.00
12			80	14.66	89.3	0.82	3.70	14.80
12			100	9.70	90.9	1.29	3.00	16.80
12			125	5.43	93.5	1.95	1.80	18.80
12			160	-0.35	95.5	2.93	0.00	21.10
12			200	-4.83	96.5	4.21	0.00	22.80
13	4,776	4,782						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			20	37.71	73.8	0.00	5.60	7.60
13			25	34.31	77.2	0.10	5.40	8.30
13			32	29.77	79.1	0.14	5.20	9.20
13			40	24.77	80.3	0.24	5.00	10.30
13			50	20.77	82.3	0.33	4.70	11.50
13			63	18.98	86.6	0.53	4.30	13.00
13			80	15.34	89.3	0.77	3.70	14.80
13			100	10.41	90.9	1.20	3.00	16.80
13			125	6.19	93.5	1.82	1.80	18.80
13			160	0.48	95.5	2.73	0.00	21.10
13			200	-3.91	96.5	3.92	0.00	22.80
14	3,505	3,513						
14			20	40.39	73.8	0.00	5.60	7.60
14			25	37.02	77.2	0.07	5.40	8.30
14			32	32.48	79.1	0.11	5.20	9.20
14			40	27.51	80.3	0.18	5.00	10.30
14			50	23.54	82.3	0.25	4.70	11.50
14			63	21.80	86.6	0.39	4.30	13.00
14			80	18.23	89.3	0.56	3.70	14.80
14			100	13.41	90.9	0.88	3.00	16.80
14			125	9.35	93.5	1.33	1.80	18.80
14			160	3.89	95.5	2.00	0.00	21.10
14			200	-0.19	96.5	2.88	0.00	22.80
15	5,295	5,300						
15			20	36.82	73.8	0.00	5.60	7.60
15			25	33.41	77.2	0.11	5.40	8.30
15			32	28.86	79.1	0.16	5.20	9.20
15			40	23.85	80.3	0.26	5.00	10.30
15			50	19.84	82.3	0.37	4.70	11.50
15			63	18.03	86.6	0.58	4.30	13.00
15			80	14.37	89.3	0.85	3.70	14.80
15			100	9.39	90.9	1.32	3.00	16.80
15			125	5.10	93.5	2.01	1.80	18.80
15			160	-0.71	95.5	3.02	0.00	21.10
15			200	-5.23	96.5	4.35	0.00	22.80
16	4,962	4,967						
16			20	37.38	73.8	0.00	5.60	7.60
16			25	33.98	77.2	0.10	5.40	8.30
16			32	29.43	79.1	0.15	5.20	9.20
16			40	24.43	80.3	0.25	5.00	10.30
16			50	20.43	82.3	0.35	4.70	11.50
16			63	18.63	86.6	0.55	4.30	13.00
16			80	14.98	89.3	0.79	3.70	14.80
16			100	10.04	90.9	1.24	3.00	16.80
16			125	5.79	93.5	1.89	1.80	18.80
16			160	0.05	95.5	2.83	0.00	21.10
16			200	-4.40	96.5	4.07	0.00	22.80
17	4,633	4,640						
17			20	37.97	73.8	0.00	5.60	7.60
17			25	34.58	77.2	0.09	5.40	8.30
17			32	30.03	79.1	0.14	5.20	9.20
17			40	25.04	80.3	0.23	5.00	10.30
17			50	21.04	82.3	0.32	4.70	11.50
17			63	19.26	86.6	0.51	4.30	13.00
17			80	15.63	89.3	0.74	3.70	14.80
17			100	10.71	90.9	1.16	3.00	16.80
17			125	6.51	93.5	1.76	1.80	18.80
17			160	0.82	95.5	2.64	0.00	21.10
17			200	-3.54	96.5	3.80	0.00	22.80
18	4,126	4,134						
18			20	38.97	73.8	0.00	5.60	7.60
18			25	35.59	77.2	0.08	5.40	8.30
18			32	31.05	79.1	0.12	5.20	9.20
18			40	26.07	80.3	0.21	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			50	22.08	82.3	0.29	4.70	11.50
18			63	20.32	86.6	0.45	4.30	13.00
18			80	16.71	89.3	0.66	3.70	14.80
18			100	11.84	90.9	1.03	3.00	16.80
18			125	7.70	93.5	1.57	1.80	18.80
18			160	2.12	95.5	2.36	0.00	21.10
18			200	-2.12	96.5	3.39	0.00	22.80
19	5,616	5,621						
19			20	36.30	73.8	0.00	5.60	7.60
19			25	32.89	77.2	0.11	5.40	8.30
19			32	28.34	79.1	0.17	5.20	9.20
19			40	23.32	80.3	0.28	5.00	10.30
19			50	19.31	82.3	0.39	4.70	11.50
19			63	17.49	86.6	0.62	4.30	13.00
19			80	13.80	89.3	0.90	3.70	14.80
19			100	8.80	90.9	1.41	3.00	16.80
19			125	4.47	93.5	2.14	1.80	18.80
19			160	-1.40	95.5	3.20	0.00	21.10
19			200	-6.00	96.5	4.61	0.00	22.80
2	2,677	2,687						
2			20	42.72	73.8	0.00	5.60	7.60
2			25	39.36	77.2	0.05	5.40	8.30
2			32	34.83	79.1	0.08	5.20	9.20
2			40	29.88	80.3	0.13	5.00	10.30
2			50	25.93	82.3	0.19	4.70	11.50
2			63	24.22	86.6	0.30	4.30	13.00
2			80	20.69	89.3	0.43	3.70	14.80
2			100	15.94	90.9	0.67	3.00	16.80
2			125	11.99	93.5	1.02	1.80	18.80
2			160	6.68	95.5	1.53	0.00	21.10
2			200	2.81	96.5	2.20	0.00	22.80
20	5,611	5,616						
20			20	36.31	73.8	0.00	5.60	7.60
20			25	32.90	77.2	0.11	5.40	8.30
20			32	28.34	79.1	0.17	5.20	9.20
20			40	23.33	80.3	0.28	5.00	10.30
20			50	19.32	82.3	0.39	4.70	11.50
20			63	17.49	86.6	0.62	4.30	13.00
20			80	13.81	89.3	0.90	3.70	14.80
20			100	8.81	90.9	1.40	3.00	16.80
20			125	4.48	93.5	2.13	1.80	18.80
20			160	-1.39	95.5	3.20	0.00	21.10
20			200	-5.99	96.5	4.61	0.00	22.80
21	4,638	4,646						
21			20	37.96	73.8	0.00	5.60	7.60
21			25	34.57	77.2	0.09	5.40	8.30
21			32	30.02	79.1	0.14	5.20	9.20
21			40	25.03	80.3	0.23	5.00	10.30
21			50	21.03	82.3	0.33	4.70	11.50
21			63	19.25	86.6	0.51	4.30	13.00
21			80	15.61	89.3	0.74	3.70	14.80
21			100	10.70	90.9	1.16	3.00	16.80
21			125	6.49	93.5	1.77	1.80	18.80
21			160	0.81	95.5	2.65	0.00	21.10
21			200	-3.55	96.5	3.81	0.00	22.80
22	4,665	4,672						
22			20	37.91	73.8	0.00	5.60	7.60
22			25	34.52	77.2	0.09	5.40	8.30
22			32	29.97	79.1	0.14	5.20	9.20
22			40	24.98	80.3	0.23	5.00	10.30
22			50	20.98	82.3	0.33	4.70	11.50
22			63	19.20	86.6	0.51	4.30	13.00
22			80	15.56	89.3	0.75	3.70	14.80
22			100	10.64	90.9	1.17	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			125	6.44	93.5	1.78	1.80	18.80
22			160	0.75	95.5	2.66	0.00	21.10
22			200	-3.62	96.5	3.83	0.00	22.80
23	4,276	4,282						
23			20	38.67	73.8	0.00	5.60	7.60
23			25	35.28	77.2	0.09	5.40	8.30
23			32	30.74	79.1	0.13	5.20	9.20
23			40	25.75	80.3	0.21	5.00	10.30
23			50	21.77	82.3	0.30	4.70	11.50
23			63	20.00	86.6	0.47	4.30	13.00
23			80	16.38	89.3	0.69	3.70	14.80
23			100	11.50	90.9	1.07	3.00	16.80
23			125	7.34	93.5	1.63	1.80	18.80
23			160	1.73	95.5	2.44	0.00	21.10
23			200	-2.55	96.5	3.51	0.00	22.80
24	5,769	5,774						
24			20	36.07	73.8	0.00	5.60	7.60
24			25	32.65	77.2	0.12	5.40	8.30
24			32	28.10	79.1	0.17	5.20	9.20
24			40	23.08	80.3	0.29	5.00	10.30
24			50	19.07	82.3	0.40	4.70	11.50
24			63	17.23	86.6	0.64	4.30	13.00
24			80	13.55	89.3	0.92	3.70	14.80
24			100	8.53	90.9	1.44	3.00	16.80
24			125	4.18	93.5	2.19	1.80	18.80
24			160	-1.72	95.5	3.29	0.00	21.10
24			200	-6.36	96.5	4.73	0.00	22.80
25	5,192	5,197						
25			20	36.98	73.8	0.00	5.60	7.60
25			25	33.58	77.2	0.10	5.40	8.30
25			32	29.03	79.1	0.16	5.20	9.20
25			40	24.02	80.3	0.26	5.00	10.30
25			50	20.02	82.3	0.36	4.70	11.50
25			63	18.21	86.6	0.57	4.30	13.00
25			80	14.55	89.3	0.83	3.70	14.80
25			100	9.59	90.9	1.30	3.00	16.80
25			125	5.31	93.5	1.97	1.80	18.80
25			160	-0.48	95.5	2.96	0.00	21.10
25			200	-4.98	96.5	4.26	0.00	22.80
26	5,253	5,260						
26			20	36.88	73.8	0.00	5.60	7.60
26			25	33.47	77.2	0.11	5.40	8.30
26			32	28.92	79.1	0.16	5.20	9.20
26			40	23.92	80.3	0.26	5.00	10.30
26			50	19.91	82.3	0.37	4.70	11.50
26			63	18.10	86.6	0.58	4.30	13.00
26			80	14.44	89.3	0.84	3.70	14.80
26			100	9.47	90.9	1.32	3.00	16.80
26			125	5.18	93.5	2.00	1.80	18.80
26			160	-0.62	95.5	3.00	0.00	21.10
26			200	-5.13	96.5	4.31	0.00	22.80
27	5,202	5,208						
27			20	36.97	73.8	0.00	5.60	7.60
27			25	33.56	77.2	0.10	5.40	8.30
27			32	29.01	79.1	0.16	5.20	9.20
27			40	24.01	80.3	0.26	5.00	10.30
27			50	20.00	82.3	0.36	4.70	11.50
27			63	18.19	86.6	0.57	4.30	13.00
27			80	14.53	89.3	0.83	3.70	14.80
27			100	9.56	90.9	1.30	3.00	16.80
27			125	5.29	93.5	1.98	1.80	18.80
27			160	-0.50	95.5	2.97	0.00	21.10
27			200	-5.00	96.5	4.27	0.00	22.80
28	4,972	4,978						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
28			20	37.36	73.8	0.00	5.60	7.60
28			25	33.96	77.2	0.10	5.40	8.30
28			32	29.41	79.1	0.15	5.20	9.20
28			40	24.41	80.3	0.25	5.00	10.30
28			50	20.41	82.3	0.35	4.70	11.50
28			63	18.61	86.6	0.55	4.30	13.00
28			80	14.96	89.3	0.80	3.70	14.80
28			100	10.01	90.9	1.24	3.00	16.80
28			125	5.77	93.5	1.89	1.80	18.80
28			160	0.02	95.5	2.84	0.00	21.10
28			200	-4.42	96.5	4.08	0.00	22.80
29	4,810	4,816						
29			20	37.65	73.8	0.00	5.60	7.60
29			25	34.25	77.2	0.10	5.40	8.30
29			32	29.70	79.1	0.14	5.20	9.20
29			40	24.70	80.3	0.24	5.00	10.30
29			50	20.71	82.3	0.34	4.70	11.50
29			63	18.92	86.6	0.53	4.30	13.00
29			80	15.28	89.3	0.77	3.70	14.80
29			100	10.34	90.9	1.20	3.00	16.80
29			125	6.12	93.5	1.83	1.80	18.80
29			160	0.40	95.5	2.75	0.00	21.10
29			200	-4.00	96.5	3.95	0.00	22.80
3	2,063	2,076						
3			20	44.96	73.8	0.00	5.60	7.60
3			25	41.62	77.2	0.04	5.40	8.30
3			32	37.09	79.1	0.06	5.20	9.20
3			40	32.15	80.3	0.10	5.00	10.30
3			50	28.21	82.3	0.15	4.70	11.50
3			63	26.53	86.6	0.23	4.30	13.00
3			80	23.02	89.3	0.33	3.70	14.80
3			100	18.34	90.9	0.52	3.00	16.80
3			125	14.47	93.5	0.79	1.80	18.80
3			160	9.27	95.5	1.18	0.00	21.10
3			200	5.55	96.5	1.70	0.00	22.80
30	4,263	4,269						
30			20	38.69	73.8	0.00	5.60	7.60
30			25	35.31	77.2	0.09	5.40	8.30
30			32	30.77	79.1	0.13	5.20	9.20
30			40	25.78	80.3	0.21	5.00	10.30
30			50	21.79	82.3	0.30	4.70	11.50
30			63	20.02	86.6	0.47	4.30	13.00
30			80	16.41	89.3	0.68	3.70	14.80
30			100	11.53	90.9	1.07	3.00	16.80
30			125	7.37	93.5	1.62	1.80	18.80
30			160	1.76	95.5	2.43	0.00	21.10
30			200	-2.51	96.5	3.50	0.00	22.80
31	4,917	4,922						
31			20	37.46	73.8	0.00	5.60	7.60
31			25	34.06	77.2	0.10	5.40	8.30
31			32	29.51	79.1	0.15	5.20	9.20
31			40	24.51	80.3	0.25	5.00	10.30
31			50	20.51	82.3	0.34	4.70	11.50
31			63	18.72	86.6	0.54	4.30	13.00
31			80	15.07	89.3	0.79	3.70	14.80
31			100	10.13	90.9	1.23	3.00	16.80
31			125	5.89	93.5	1.87	1.80	18.80
31			160	0.15	95.5	2.81	0.00	21.10
31			200	-4.28	96.5	4.04	0.00	22.80
32	4,283	4,289						
32			20	38.65	73.8	0.00	5.60	7.60
32			25	35.27	77.2	0.09	5.40	8.30
32			32	30.72	79.1	0.13	5.20	9.20
32			40	25.74	80.3	0.21	5.00	10.30

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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
32			50	21.75	82.3	0.30	4.70	11.50
32			63	19.98	86.6	0.47	4.30	13.00
32			80	16.37	89.3	0.69	3.70	14.80
32			100	11.48	90.9	1.07	3.00	16.80
32			125	7.32	93.5	1.63	1.80	18.80
32			160	1.71	95.5	2.44	0.00	21.10
32			200	-2.56	96.5	3.52	0.00	22.80
33	3,824	3,832						
33			20	39.63	73.8	0.00	5.60	7.60
33			25	36.25	77.2	0.08	5.40	8.30
33			32	31.72	79.1	0.11	5.20	9.20
33			40	26.74	80.3	0.19	5.00	10.30
33			50	22.76	82.3	0.27	4.70	11.50
33			63	21.01	86.6	0.42	4.30	13.00
33			80	17.42	89.3	0.61	3.70	14.80
33			100	12.57	90.9	0.96	3.00	16.80
33			125	8.47	93.5	1.46	1.80	18.80
33			160	2.95	95.5	2.18	0.00	21.10
33			200	-1.21	96.5	3.14	0.00	22.80
4	2,500	2,510						
4			20	43.31	73.8	0.00	5.60	7.60
4			25	39.96	77.2	0.05	5.40	8.30
4			32	35.43	79.1	0.08	5.20	9.20
4			40	30.48	80.3	0.13	5.00	10.30
4			50	26.53	82.3	0.18	4.70	11.50
4			63	24.83	86.6	0.28	4.30	13.00
4			80	21.30	89.3	0.40	3.70	14.80
4			100	16.58	90.9	0.63	3.00	16.80
4			125	12.65	93.5	0.95	1.80	18.80
4			160	7.38	95.5	1.43	0.00	21.10
4			200	3.55	96.5	2.06	0.00	22.80
5	2,671	2,681						
5			20	42.73	73.8	0.00	5.60	7.60
5			25	39.38	77.2	0.05	5.40	8.30
5			32	34.85	79.1	0.08	5.20	9.20
5			40	29.90	80.3	0.13	5.00	10.30
5			50	25.95	82.3	0.19	4.70	11.50
5			63	24.24	86.6	0.29	4.30	13.00
5			80	20.70	89.3	0.43	3.70	14.80
5			100	15.96	90.9	0.67	3.00	16.80
5			125	12.01	93.5	1.02	1.80	18.80
5			160	6.70	95.5	1.53	0.00	21.10
5			200	2.83	96.5	2.20	0.00	22.80
6	3,825	3,832						
6			20	39.63	73.8	0.00	5.60	7.60
6			25	36.26	77.2	0.08	5.40	8.30
6			32	31.72	79.1	0.11	5.20	9.20
6			40	26.74	80.3	0.19	5.00	10.30
6			50	22.76	82.3	0.27	4.70	11.50
6			63	21.01	86.6	0.42	4.30	13.00
6			80	17.42	89.3	0.61	3.70	14.80
6			100	12.57	90.9	0.96	3.00	16.80
6			125	8.48	93.5	1.46	1.80	18.80
6			160	2.95	95.5	2.18	0.00	21.10
6			200	-1.21	96.5	3.14	0.00	22.80
7	3,567	3,575						
7			20	40.24	73.8	0.00	5.60	7.60
7			25	36.86	77.2	0.07	5.40	8.30
7			32	32.33	79.1	0.11	5.20	9.20
7			40	27.36	80.3	0.18	5.00	10.30
7			50	23.39	82.3	0.25	4.70	11.50
7			63	21.64	86.6	0.39	4.30	13.00
7			80	18.06	89.3	0.57	3.70	14.80
7			100	13.24	90.9	0.89	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	9.18	93.5	1.36	1.80	18.80
7			160	3.70	95.5	2.04	0.00	21.10
7			200	-0.40	96.5	2.93	0.00	22.80
8	3,119	3,128						
8			20	41.40	73.8	0.00	5.60	7.60
8			25	38.03	77.2	0.06	5.40	8.30
8			32	33.50	79.1	0.09	5.20	9.20
8			40	28.54	80.3	0.16	5.00	10.30
8			50	24.58	82.3	0.22	4.70	11.50
8			63	22.85	86.6	0.34	4.30	13.00
8			80	19.29	89.3	0.50	3.70	14.80
8			100	14.51	90.9	0.78	3.00	16.80
8			125	10.51	93.5	1.19	1.80	18.80
8			160	5.11	95.5	1.78	0.00	21.10
8			200	1.13	96.5	2.56	0.00	22.80
9	3,156	3,164						
9			20	41.30	73.8	0.00	5.60	7.60
9			25	37.93	77.2	0.06	5.40	8.30
9			32	33.40	79.1	0.09	5.20	9.20
9			40	28.44	80.3	0.16	5.00	10.30
9			50	24.47	82.3	0.22	4.70	11.50
9			63	22.75	86.6	0.35	4.30	13.00
9			80	19.19	89.3	0.51	3.70	14.80
9			100	14.40	90.9	0.79	3.00	16.80
9			125	10.39	93.5	1.20	1.80	18.80
9			160	4.99	95.5	1.80	0.00	21.10
9			200	1.00	96.5	2.59	0.00	22.80
Sum								
Sum			20	55.21				
Sum			25	51.85				
Sum			32	47.31				
Sum			40	42.34				
Sum			50	38.37				
Sum			63	36.64				
Sum			80	33.07				
Sum			100	28.26				
Sum			125	24.23				
Sum			160	18.81				
Sum			200	14.80				

Noise sensitive area: RH Yläpelto Noise sensitive point: Finnish normal frequency - User defined (320)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,808	5,813						
1			20	36.01	73.8	0.00	5.60	7.60
1			25	32.60	77.2	0.12	5.40	8.30
1			32	28.04	79.1	0.17	5.20	9.20
1			40	23.02	80.3	0.29	5.00	10.30
1			50	19.00	82.3	0.41	4.70	11.50
1			63	17.17	86.6	0.64	4.30	13.00
1			80	13.48	89.3	0.93	3.70	14.80
1			100	8.46	90.9	1.45	3.00	16.80
1			125	4.10	93.5	2.21	1.80	18.80
1			160	-1.80	95.5	3.31	0.00	21.10
1			200	-6.45	96.5	4.77	0.00	22.80
10	6,725	6,729						
10			20	34.74	73.8	0.00	5.60	7.60
10			25	31.31	77.2	0.13	5.40	8.30
10			32	26.74	79.1	0.20	5.20	9.20
10			40	21.70	80.3	0.34	5.00	10.30
10			50	17.67	82.3	0.47	4.70	11.50
10			63	15.80	86.6	0.74	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	12.06	89.3	1.08	3.70	14.80
10			100	6.96	90.9	1.68	3.00	16.80
10			125	2.48	93.5	2.56	1.80	18.80
10			160	-3.59	95.5	3.84	0.00	21.10
10			200	-8.48	96.5	5.52	0.00	22.80
11	6,106	6,111						
11			20	35.58	73.8	0.00	5.60	7.60
11			25	32.16	77.2	0.12	5.40	8.30
11			32	27.59	79.1	0.18	5.20	9.20
11			40	22.57	80.3	0.31	5.00	10.30
11			50	18.55	82.3	0.43	4.70	11.50
11			63	16.71	86.6	0.67	4.30	13.00
11			80	13.00	89.3	0.98	3.70	14.80
11			100	7.95	90.9	1.53	3.00	16.80
11			125	3.56	93.5	2.32	1.80	18.80
11			160	-2.41	95.5	3.48	0.00	21.10
11			200	-7.13	96.5	5.01	0.00	22.80
12	7,162	7,166						
12			20	34.19	73.8	0.00	5.60	7.60
12			25	30.75	77.2	0.14	5.40	8.30
12			32	26.18	79.1	0.21	5.20	9.20
12			40	21.14	80.3	0.36	5.00	10.30
12			50	17.09	82.3	0.50	4.70	11.50
12			63	15.21	86.6	0.79	4.30	13.00
12			80	11.45	89.3	1.15	3.70	14.80
12			100	6.30	90.9	1.79	3.00	16.80
12			125	1.77	93.5	2.72	1.80	18.80
12			160	-4.39	95.5	4.08	0.00	21.10
12			200	-9.38	96.5	5.88	0.00	22.80
13	6,317	6,321						
13			20	35.28	73.8	0.00	5.60	7.60
13			25	31.86	77.2	0.13	5.40	8.30
13			32	27.29	79.1	0.19	5.20	9.20
13			40	22.27	80.3	0.32	5.00	10.30
13			50	18.24	82.3	0.44	4.70	11.50
13			63	16.39	86.6	0.70	4.30	13.00
13			80	12.67	89.3	1.01	3.70	14.80
13			100	7.60	90.9	1.58	3.00	16.80
13			125	3.18	93.5	2.40	1.80	18.80
13			160	-2.82	95.5	3.60	0.00	21.10
13			200	-7.60	96.5	5.18	0.00	22.80
14	5,040	5,046						
14			20	37.24	73.8	0.00	5.60	7.60
14			25	33.84	77.2	0.10	5.40	8.30
14			32	29.29	79.1	0.15	5.20	9.20
14			40	24.29	80.3	0.25	5.00	10.30
14			50	20.29	82.3	0.35	4.70	11.50
14			63	18.49	86.6	0.56	4.30	13.00
14			80	14.83	89.3	0.81	3.70	14.80
14			100	9.88	90.9	1.26	3.00	16.80
14			125	5.62	93.5	1.92	1.80	18.80
14			160	-0.13	95.5	2.88	0.00	21.10
14			200	-4.60	96.5	4.14	0.00	22.80
15	6,835	6,839						
15			20	34.60	73.8	0.00	5.60	7.60
15			25	31.16	77.2	0.14	5.40	8.30
15			32	26.59	79.1	0.21	5.20	9.20
15			40	21.56	80.3	0.34	5.00	10.30
15			50	17.52	82.3	0.48	4.70	11.50
15			63	15.65	86.6	0.75	4.30	13.00
15			80	11.91	89.3	1.09	3.70	14.80
15			100	6.79	90.9	1.71	3.00	16.80
15			125	2.30	93.5	2.60	1.80	18.80
15			160	-3.80	95.5	3.90	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	-8.71	96.5	5.61	0.00	22.80
16	5,986	5,991						
16			20	35.75	73.8	0.00	5.60	7.60
16			25	32.33	77.2	0.12	5.40	8.30
16			32	27.77	79.1	0.18	5.20	9.20
16			40	22.75	80.3	0.30	5.00	10.30
16			50	18.73	82.3	0.42	4.70	11.50
16			63	16.89	86.6	0.66	4.30	13.00
16			80	13.19	89.3	0.96	3.70	14.80
16			100	8.15	90.9	1.50	3.00	16.80
16			125	3.77	93.5	2.28	1.80	18.80
16			160	-2.16	95.5	3.41	0.00	21.10
16			200	-6.86	96.5	4.91	0.00	22.80
17	5,312	5,318						
17			20	36.78	73.8	0.00	5.60	7.60
17			25	33.38	77.2	0.11	5.40	8.30
17			32	28.83	79.1	0.16	5.20	9.20
17			40	23.82	80.3	0.27	5.00	10.30
17			50	19.81	82.3	0.37	4.70	11.50
17			63	18.00	86.6	0.58	4.30	13.00
17			80	14.33	89.3	0.85	3.70	14.80
17			100	9.36	90.9	1.33	3.00	16.80
17			125	5.06	93.5	2.02	1.80	18.80
17			160	-0.75	95.5	3.03	0.00	21.10
17			200	-5.28	96.5	4.36	0.00	22.80
18	5,081	5,088						
18			20	37.17	73.8	0.00	5.60	7.60
18			25	33.77	77.2	0.10	5.40	8.30
18			32	29.22	79.1	0.15	5.20	9.20
18			40	24.22	80.3	0.25	5.00	10.30
18			50	20.21	82.3	0.36	4.70	11.50
18			63	18.41	86.6	0.56	4.30	13.00
18			80	14.76	89.3	0.81	3.70	14.80
18			100	9.80	90.9	1.27	3.00	16.80
18			125	5.54	93.5	1.93	1.80	18.80
18			160	-0.23	95.5	2.90	0.00	21.10
18			200	-4.70	96.5	4.17	0.00	22.80
19	6,720	6,724						
19			20	34.75	73.8	0.00	5.60	7.60
19			25	31.31	77.2	0.13	5.40	8.30
19			32	26.75	79.1	0.20	5.20	9.20
19			40	21.71	80.3	0.34	5.00	10.30
19			50	17.68	82.3	0.47	4.70	11.50
19			63	15.81	86.6	0.74	4.30	13.00
19			80	12.07	89.3	1.08	3.70	14.80
19			100	6.97	90.9	1.68	3.00	16.80
19			125	2.49	93.5	2.55	1.80	18.80
19			160	-3.58	95.5	3.83	0.00	21.10
19			200	-8.47	96.5	5.51	0.00	22.80
2	5,895	5,900						
2			20	35.88	73.8	0.00	5.60	7.60
2			25	32.47	77.2	0.12	5.40	8.30
2			32	27.91	79.1	0.18	5.20	9.20
2			40	22.89	80.3	0.29	5.00	10.30
2			50	18.87	82.3	0.41	4.70	11.50
2			63	17.03	86.6	0.65	4.30	13.00
2			80	13.34	89.3	0.94	3.70	14.80
2			100	8.31	90.9	1.47	3.00	16.80
2			125	3.94	93.5	2.24	1.80	18.80
2			160	-1.98	95.5	3.36	0.00	21.10
2			200	-6.65	96.5	4.84	0.00	22.80
20	6,230	6,234						
20			20	35.40	73.8	0.00	5.60	7.60
20			25	31.98	77.2	0.12	5.40	8.30

To be continued on next page...

Project:
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	27.42	79.1	0.19	5.20	9.20
20			40	22.39	80.3	0.31	5.00	10.30
20			50	18.37	82.3	0.44	4.70	11.50
20			63	16.52	86.6	0.69	4.30	13.00
20			80	12.81	89.3	1.00	3.70	14.80
20			100	7.75	90.9	1.56	3.00	16.80
20			125	3.34	93.5	2.37	1.80	18.80
20			160	-2.65	95.5	3.55	0.00	21.10
20			200	-7.41	96.5	5.11	0.00	22.80
21	4,748	4,756						
21			20	37.75	73.8	0.00	5.60	7.60
21			25	34.36	77.2	0.10	5.40	8.30
21			32	29.81	79.1	0.14	5.20	9.20
21			40	24.82	80.3	0.24	5.00	10.30
21			50	20.82	82.3	0.33	4.70	11.50
21			63	19.03	86.6	0.52	4.30	13.00
21			80	15.39	89.3	0.76	3.70	14.80
21			100	10.47	90.9	1.19	3.00	16.80
21			125	6.25	93.5	1.81	1.80	18.80
21			160	0.54	95.5	2.71	0.00	21.10
21			200	-3.85	96.5	3.90	0.00	22.80
22	4,207	4,215						
22			20	38.80	73.8	0.00	5.60	7.60
22			25	35.42	77.2	0.08	5.40	8.30
22			32	30.88	79.1	0.13	5.20	9.20
22			40	25.89	80.3	0.21	5.00	10.30
22			50	21.91	82.3	0.30	4.70	11.50
22			63	20.14	86.6	0.46	4.30	13.00
22			80	16.53	89.3	0.67	3.70	14.80
22			100	11.65	90.9	1.05	3.00	16.80
22			125	7.50	93.5	1.60	1.80	18.80
22			160	1.90	95.5	2.40	0.00	21.10
22			200	-2.35	96.5	3.46	0.00	22.80
23	3,630	3,638						
23			20	40.08	73.8	0.00	5.60	7.60
23			25	36.71	77.2	0.07	5.40	8.30
23			32	32.17	79.1	0.11	5.20	9.20
23			40	27.20	80.3	0.18	5.00	10.30
23			50	23.23	82.3	0.25	4.70	11.50
23			63	21.48	86.6	0.40	4.30	13.00
23			80	17.90	89.3	0.58	3.70	14.80
23			100	13.07	90.9	0.91	3.00	16.80
23			125	9.00	93.5	1.38	1.80	18.80
23			160	3.51	95.5	2.07	0.00	21.10
23			200	-0.60	96.5	2.98	0.00	22.80
24	5,784	5,789						
24			20	36.05	73.8	0.00	5.60	7.60
24			25	32.63	77.2	0.12	5.40	8.30
24			32	28.07	79.1	0.17	5.20	9.20
24			40	23.06	80.3	0.29	5.00	10.30
24			50	19.04	82.3	0.41	4.70	11.50
24			63	17.21	86.6	0.64	4.30	13.00
24			80	13.52	89.3	0.93	3.70	14.80
24			100	8.50	90.9	1.45	3.00	16.80
24			125	4.15	93.5	2.20	1.80	18.80
24			160	-1.75	95.5	3.30	0.00	21.10
24			200	-6.40	96.5	4.75	0.00	22.80
25	5,383	5,389						
25			20	36.67	73.8	0.00	5.60	7.60
25			25	33.26	77.2	0.11	5.40	8.30
25			32	28.71	79.1	0.16	5.20	9.20
25			40	23.70	80.3	0.27	5.00	10.30
25			50	19.69	82.3	0.38	4.70	11.50
25			63	17.88	86.6	0.59	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
25			80	14.21	89.3	0.86	3.70	14.80
25			100	9.22	90.9	1.35	3.00	16.80
25			125	4.92	93.5	2.05	1.80	18.80
25			160	-0.90	95.5	3.07	0.00	21.10
25			200	-5.45	96.5	4.42	0.00	22.80
26	4,934	4,942						
26			20	37.42	73.8	0.00	5.60	7.60
26			25	34.02	77.2	0.10	5.40	8.30
26			32	29.47	79.1	0.15	5.20	9.20
26			40	24.48	80.3	0.25	5.00	10.30
26			50	20.48	82.3	0.35	4.70	11.50
26			63	18.68	86.6	0.54	4.30	13.00
26			80	15.03	89.3	0.79	3.70	14.80
26			100	10.09	90.9	1.24	3.00	16.80
26			125	5.84	93.5	1.88	1.80	18.80
26			160	0.11	95.5	2.82	0.00	21.10
26			200	-4.33	96.5	4.05	0.00	22.80
27	4,463	4,471						
27			20	38.29	73.8	0.00	5.60	7.60
27			25	34.90	77.2	0.09	5.40	8.30
27			32	30.36	79.1	0.13	5.20	9.20
27			40	25.37	80.3	0.22	5.00	10.30
27			50	21.38	82.3	0.31	4.70	11.50
27			63	19.60	86.6	0.49	4.30	13.00
27			80	15.98	89.3	0.72	3.70	14.80
27			100	11.07	90.9	1.12	3.00	16.80
27			125	6.89	93.5	1.70	1.80	18.80
27			160	1.24	95.5	2.55	0.00	21.10
27			200	-3.07	96.5	3.67	0.00	22.80
28	3,827	3,835						
28			20	39.63	73.8	0.00	5.60	7.60
28			25	36.25	77.2	0.08	5.40	8.30
28			32	31.71	79.1	0.12	5.20	9.20
28			40	26.73	80.3	0.19	5.00	10.30
28			50	22.76	82.3	0.27	4.70	11.50
28			63	21.00	86.6	0.42	4.30	13.00
28			80	17.41	89.3	0.61	3.70	14.80
28			100	12.57	90.9	0.96	3.00	16.80
28			125	8.47	93.5	1.46	1.80	18.80
28			160	2.94	95.5	2.19	0.00	21.10
28			200	-1.22	96.5	3.14	0.00	22.80
29	3,167	3,177						
29			20	41.26	73.8	0.00	5.60	7.60
29			25	37.90	77.2	0.06	5.40	8.30
29			32	33.36	79.1	0.10	5.20	9.20
29			40	28.40	80.3	0.16	5.00	10.30
29			50	24.44	82.3	0.22	4.70	11.50
29			63	22.71	86.6	0.35	4.30	13.00
29			80	19.15	89.3	0.51	3.70	14.80
29			100	14.36	90.9	0.79	3.00	16.80
29			125	10.35	93.5	1.21	1.80	18.80
29			160	4.95	95.5	1.81	0.00	21.10
29			200	0.95	96.5	2.61	0.00	22.80
3	5,537	5,542						
3			20	36.43	73.8	0.00	5.60	7.60
3			25	33.02	77.2	0.11	5.40	8.30
3			32	28.46	79.1	0.17	5.20	9.20
3			40	23.45	80.3	0.28	5.00	10.30
3			50	19.44	82.3	0.39	4.70	11.50
3			63	17.62	86.6	0.61	4.30	13.00
3			80	13.94	89.3	0.89	3.70	14.80
3			100	8.94	90.9	1.39	3.00	16.80
3			125	4.62	93.5	2.11	1.80	18.80
3			160	-1.23	95.5	3.16	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			200	-5.82	96.5	4.54	0.00	22.80
30	2,778	2,788						
30			20	42.39	73.8	0.00	5.60	7.60
30			25	39.04	77.2	0.06	5.40	8.30
30			32	34.51	79.1	0.08	5.20	9.20
30			40	29.55	80.3	0.14	5.00	10.30
30			50	25.60	82.3	0.20	4.70	11.50
30			63	23.89	86.6	0.31	4.30	13.00
30			80	20.35	89.3	0.45	3.70	14.80
30			100	15.60	90.9	0.70	3.00	16.80
30			125	11.63	93.5	1.06	1.80	18.80
30			160	6.30	95.5	1.59	0.00	21.10
30			200	2.41	96.5	2.29	0.00	22.80
31	2,673	2,683						
31			20	42.73	73.8	0.00	5.60	7.60
31			25	39.37	77.2	0.05	5.40	8.30
31			32	34.85	79.1	0.08	5.20	9.20
31			40	29.89	80.3	0.13	5.00	10.30
31			50	25.94	82.3	0.19	4.70	11.50
31			63	24.23	86.6	0.30	4.30	13.00
31			80	20.70	89.3	0.43	3.70	14.80
31			100	15.96	90.9	0.67	3.00	16.80
31			125	12.01	93.5	1.02	1.80	18.80
31			160	6.70	95.5	1.53	0.00	21.10
31			200	2.83	96.5	2.20	0.00	22.80
32	2,142	2,155						
32			20	44.63	73.8	0.00	5.60	7.60
32			25	41.29	77.2	0.04	5.40	8.30
32			32	36.77	79.1	0.06	5.20	9.20
32			40	31.83	80.3	0.11	5.00	10.30
32			50	27.88	82.3	0.15	4.70	11.50
32			63	26.20	86.6	0.24	4.30	13.00
32			80	22.69	89.3	0.34	3.70	14.80
32			100	17.99	90.9	0.54	3.00	16.80
32			125	14.11	93.5	0.82	1.80	18.80
32			160	8.90	95.5	1.23	0.00	21.10
32			200	5.17	96.5	1.77	0.00	22.80
33	1,924	1,941						
33			20	45.54	73.8	0.00	5.60	7.60
33			25	42.20	77.2	0.04	5.40	8.30
33			32	37.68	79.1	0.06	5.20	9.20
33			40	32.74	80.3	0.10	5.00	10.30
33			50	28.80	82.3	0.14	4.70	11.50
33			63	27.12	86.6	0.21	4.30	13.00
33			80	23.63	89.3	0.31	3.70	14.80
33			100	18.95	90.9	0.49	3.00	16.80
33			125	15.10	93.5	0.74	1.80	18.80
33			160	9.93	95.5	1.11	0.00	21.10
33			200	6.25	96.5	1.59	0.00	22.80
4	5,313	5,318						
4			20	36.78	73.8	0.00	5.60	7.60
4			25	33.38	77.2	0.11	5.40	8.30
4			32	28.83	79.1	0.16	5.20	9.20
4			40	23.82	80.3	0.27	5.00	10.30
4			50	19.81	82.3	0.37	4.70	11.50
4			63	18.00	86.6	0.59	4.30	13.00
4			80	14.33	89.3	0.85	3.70	14.80
4			100	9.36	90.9	1.33	3.00	16.80
4			125	5.06	93.5	2.02	1.80	18.80
4			160	-0.75	95.5	3.03	0.00	21.10
4			200	-5.28	96.5	4.36	0.00	22.80
5	4,816	4,823						
5			20	37.63	73.8	0.00	5.60	7.60
5			25	34.24	77.2	0.10	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			32	29.69	79.1	0.14	5.20	9.20
5			40	24.69	80.3	0.24	5.00	10.30
5			50	20.70	82.3	0.34	4.70	11.50
5			63	18.90	86.6	0.53	4.30	13.00
5			80	15.26	89.3	0.77	3.70	14.80
5			100	10.33	90.9	1.21	3.00	16.80
5			125	6.10	93.5	1.83	1.80	18.80
5			160	0.39	95.5	2.75	0.00	21.10
5			200	-4.02	96.5	3.95	0.00	22.80
6	6,371	6,376						
6			20	35.21	73.8	0.00	5.60	7.60
6			25	31.78	77.2	0.13	5.40	8.30
6			32	27.22	79.1	0.19	5.20	9.20
6			40	22.19	80.3	0.32	5.00	10.30
6			50	18.16	82.3	0.45	4.70	11.50
6			63	16.31	86.6	0.70	4.30	13.00
6			80	12.59	89.3	1.02	3.70	14.80
6			100	7.52	90.9	1.59	3.00	16.80
6			125	3.09	93.5	2.42	1.80	18.80
6			160	-2.92	95.5	3.63	0.00	21.10
6			200	-7.72	96.5	5.23	0.00	22.80
7	5,720	5,725						
7			20	36.14	73.8	0.00	5.60	7.60
7			25	32.73	77.2	0.11	5.40	8.30
7			32	28.17	79.1	0.17	5.20	9.20
7			40	23.16	80.3	0.29	5.00	10.30
7			50	19.14	82.3	0.40	4.70	11.50
7			63	17.31	86.6	0.63	4.30	13.00
7			80	13.63	89.3	0.92	3.70	14.80
7			100	8.61	90.9	1.43	3.00	16.80
7			125	4.27	93.5	2.18	1.80	18.80
7			160	-1.62	95.5	3.26	0.00	21.10
7			200	-6.25	96.5	4.69	0.00	22.80
8	5,243	5,249						
8			20	36.90	73.8	0.00	5.60	7.60
8			25	33.49	77.2	0.10	5.40	8.30
8			32	28.94	79.1	0.16	5.20	9.20
8			40	23.94	80.3	0.26	5.00	10.30
8			50	19.93	82.3	0.37	4.70	11.50
8			63	18.12	86.6	0.58	4.30	13.00
8			80	14.46	89.3	0.84	3.70	14.80
8			100	9.49	90.9	1.31	3.00	16.80
8			125	5.20	93.5	1.99	1.80	18.80
8			160	-0.59	95.5	2.99	0.00	21.10
8			200	-5.10	96.5	4.30	0.00	22.80
9	4,572	4,578						
9			20	38.09	73.8	0.00	5.60	7.60
9			25	34.69	77.2	0.09	5.40	8.30
9			32	30.15	79.1	0.14	5.20	9.20
9			40	25.16	80.3	0.23	5.00	10.30
9			50	21.17	82.3	0.32	4.70	11.50
9			63	19.38	86.6	0.50	4.30	13.00
9			80	15.75	89.3	0.73	3.70	14.80
9			100	10.84	90.9	1.14	3.00	16.80
9			125	6.65	93.5	1.74	1.80	18.80
9			160	0.98	95.5	2.61	0.00	21.10
9			200	-3.37	96.5	3.75	0.00	22.80
Sum								
Sum			20	53.99				
Sum			25	50.61				
Sum			32	46.08				
Sum			40	41.10				
Sum			50	37.12				
Sum			63	35.37				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			80	31.77				
Sum			100	26.93				
Sum			125	22.85				
Sum			160	17.35				
Sum			200	13.27				

Project:
Junnunmäen tuulivoimahanke

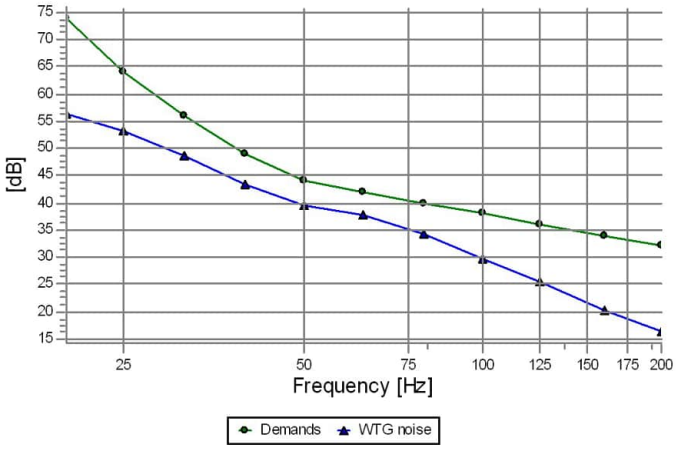
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Etelälahti 2 Noise sensitive point: Finnish normal frequency - User defined (305)

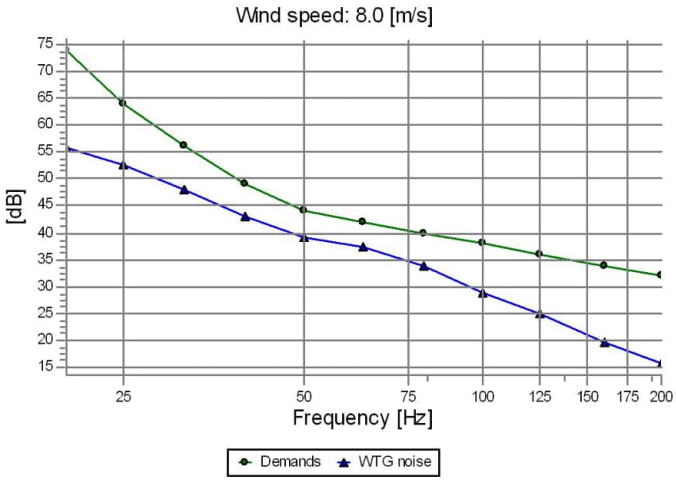
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.40	Yes
25.0	64.00	53.04	Yes
31.5	56.00	48.51	Yes
40.0	49.00	43.55	Yes
50.0	44.00	39.59	Yes
63.0	42.00	37.87	Yes
80.0	40.00	34.32	Yes
100.0	38.00	29.55	Yes
125.0	36.00	25.57	Yes
160.0	34.00	20.21	Yes
200.0	32.00	16.29	Yes

HH Etelälahti 5 Noise sensitive point: Finnish normal frequency - User defined (303)

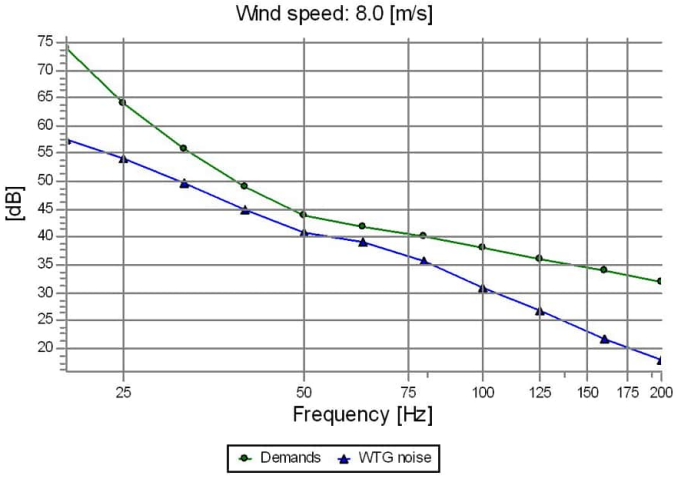
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.91	Yes
25.0	64.00	52.54	Yes
31.5	56.00	48.01	Yes
40.0	49.00	43.04	Yes
50.0	44.00	39.08	Yes
63.0	42.00	37.35	Yes
80.0	40.00	33.79	Yes
100.0	38.00	29.01	Yes
125.0	36.00	25.00	Yes
160.0	34.00	19.61	Yes
200.0	32.00	15.64	Yes

HH Eteläniemi 1 Noise sensitive point: Finnish normal frequency - User defined (304)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	57.65	Yes
25.0	64.00	54.29	Yes
31.5	56.00	49.77	Yes
40.0	49.00	44.82	Yes
50.0	44.00	40.86	Yes
63.0	42.00	39.16	Yes
80.0	40.00	35.63	Yes
100.0	38.00	30.90	Yes
125.0	36.00	26.98	Yes
160.0	34.00	21.70	Yes
200.0	32.00	17.89	Yes

Project:
Junnunmäen tuulivoimahanke

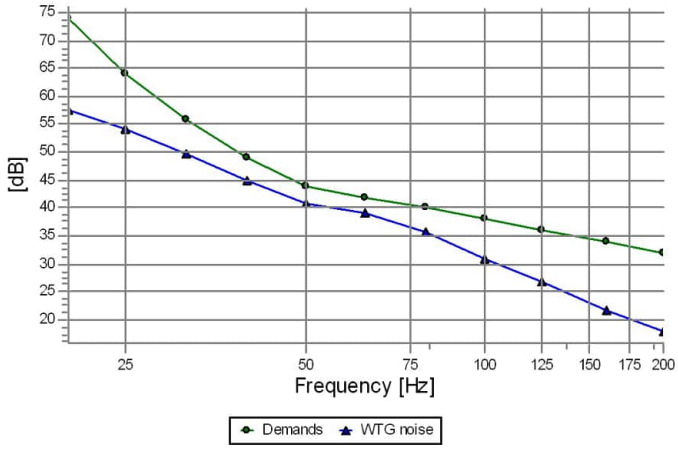
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Eteläniemi 2 Noise sensitive point: Finnish normal frequency - User defined (284)

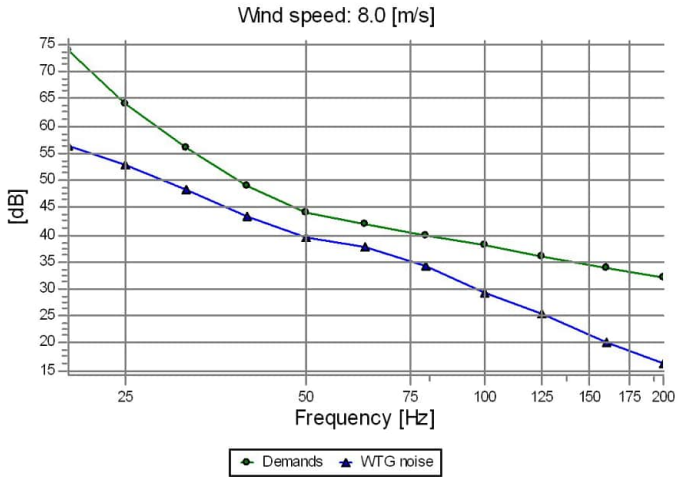
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	57.63	Yes
25.0	64.00	54.28	Yes
31.5	56.00	49.75	Yes
40.0	49.00	44.80	Yes
50.0	44.00	40.85	Yes
63.0	42.00	39.15	Yes
80.0	40.00	35.62	Yes
100.0	38.00	30.89	Yes
125.0	36.00	26.96	Yes
160.0	34.00	21.69	Yes
200.0	32.00	17.88	Yes

HH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (295)

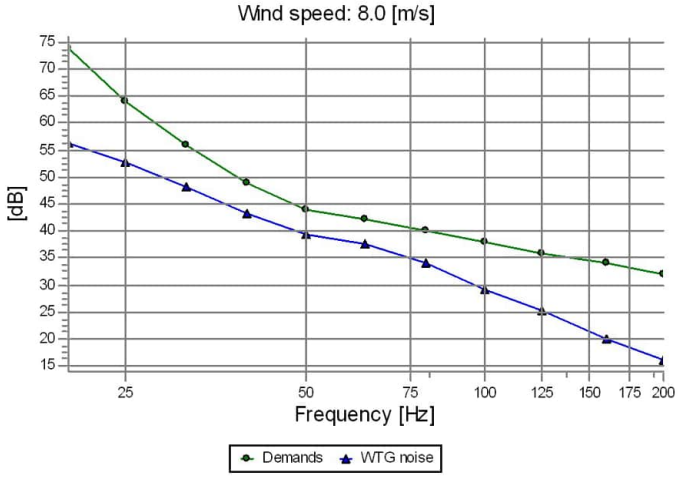
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.27	Yes
25.0	64.00	52.91	Yes
31.5	56.00	48.38	Yes
40.0	49.00	43.42	Yes
50.0	44.00	39.46	Yes
63.0	42.00	37.74	Yes
80.0	40.00	34.19	Yes
100.0	38.00	29.43	Yes
125.0	36.00	25.44	Yes
160.0	34.00	20.10	Yes
200.0	32.00	16.19	Yes

HH Haukijärvi 2 Noise sensitive point: Finnish normal frequency - User defined (296)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.11	Yes
25.0	64.00	52.74	Yes
31.5	56.00	48.21	Yes
40.0	49.00	43.25	Yes
50.0	44.00	39.29	Yes
63.0	42.00	37.57	Yes
80.0	40.00	34.02	Yes
100.0	38.00	29.24	Yes
125.0	36.00	25.26	Yes
160.0	34.00	19.90	Yes
200.0	32.00	15.98	Yes

Project:
Junnunmäen tuulivoimahanke

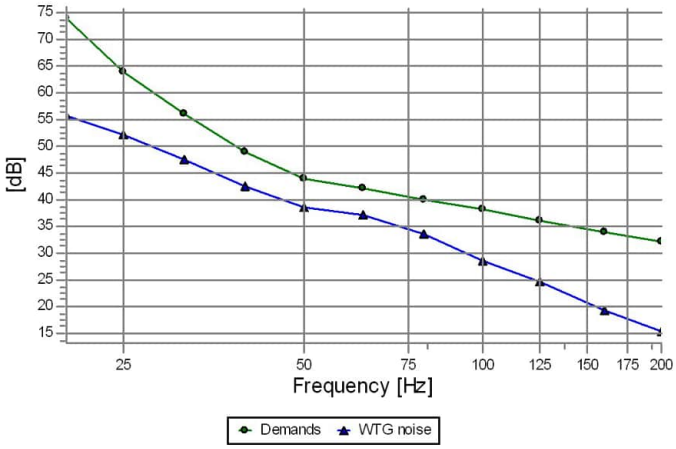
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Haukijärvi 3 Noise sensitive point: Finnish normal frequency - User defined (294)

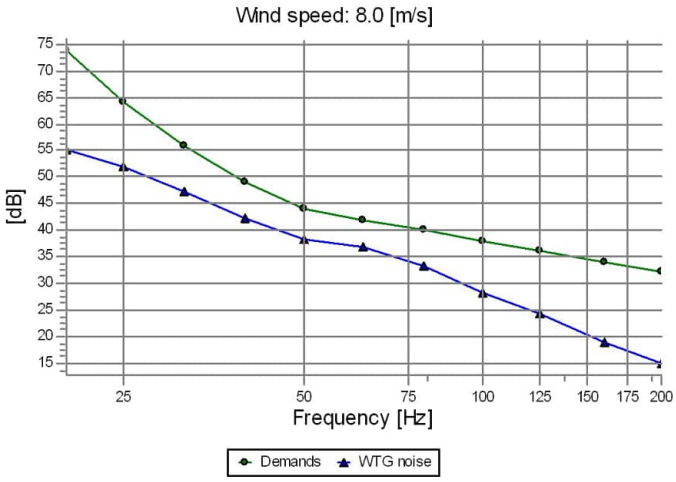
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.46	Yes
25.0	64.00	52.09	Yes
31.5	56.00	47.56	Yes
40.0	49.00	42.59	Yes
50.0	44.00	38.62	Yes
63.0	42.00	36.89	Yes
80.0	40.00	33.32	Yes
100.0	38.00	28.53	Yes
125.0	36.00	24.51	Yes
160.0	34.00	19.10	Yes
200.0	32.00	15.12	Yes

HH Hiekkaranta Noise sensitive point: Finnish normal frequency - User defined (300)

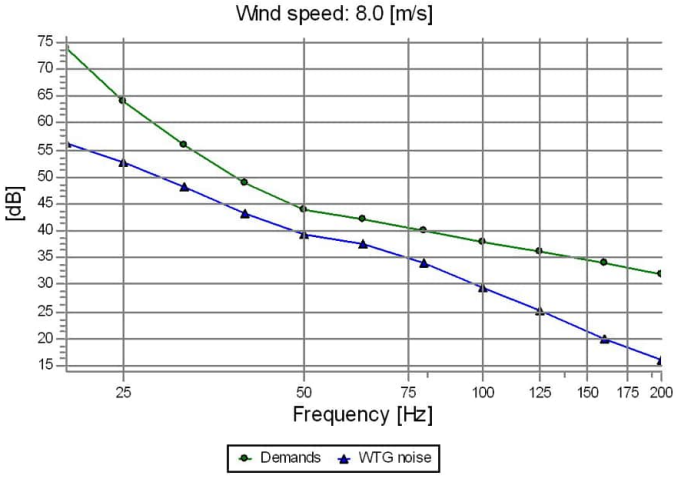
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.23	Yes
25.0	64.00	51.86	Yes
31.5	56.00	47.32	Yes
40.0	49.00	42.35	Yes
50.0	44.00	38.38	Yes
63.0	42.00	36.64	Yes
80.0	40.00	33.07	Yes
100.0	38.00	28.26	Yes
125.0	36.00	24.22	Yes
160.0	34.00	18.77	Yes
200.0	32.00	14.74	Yes

HH Iso Mäkijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (292)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.17	Yes
25.0	64.00	52.80	Yes
31.5	56.00	48.27	Yes
40.0	49.00	43.31	Yes
50.0	44.00	39.35	Yes
63.0	42.00	37.62	Yes
80.0	40.00	34.06	Yes
100.0	38.00	29.28	Yes
125.0	36.00	25.28	Yes
160.0	34.00	19.89	Yes
200.0	32.00	15.93	Yes

Project:
Junnunmäen tuulivoimahanke

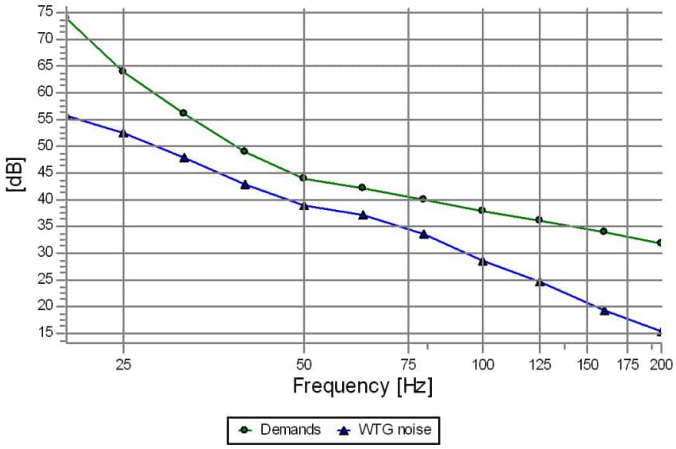
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
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DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Kallioniemi 2 Noise sensitive point: Finnish normal frequency - User defined (290)

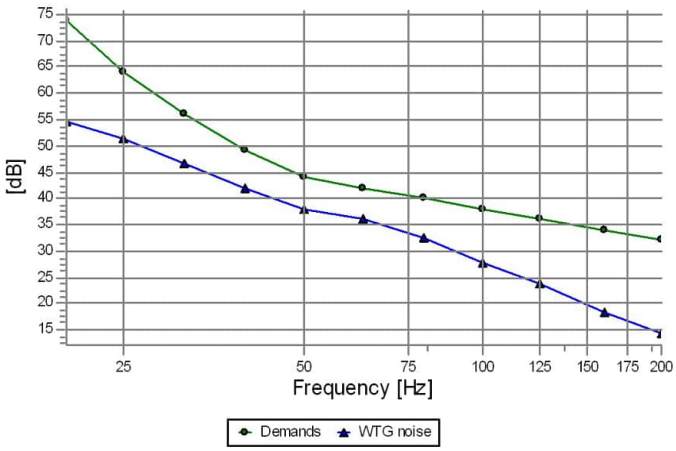
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.70	Yes
25.0	64.00	52.34	Yes
31.5	56.00	47.80	Yes
40.0	49.00	42.84	Yes
50.0	44.00	38.87	Yes
63.0	42.00	37.14	Yes
80.0	40.00	33.57	Yes
100.0	38.00	28.77	Yes
125.0	36.00	24.75	Yes
160.0	34.00	19.33	Yes
200.0	32.00	15.32	Yes

HH Kauvanjärvi 5 Noise sensitive point: Finnish normal frequency - User defined (301)

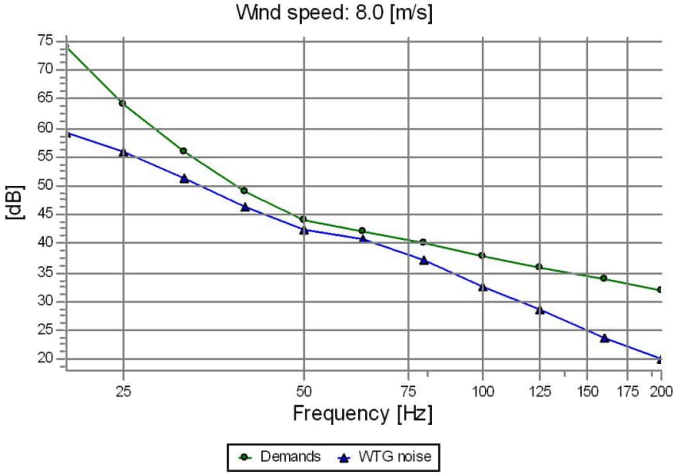
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.68	Yes
25.0	64.00	51.31	Yes
31.5	56.00	46.77	Yes
40.0	49.00	41.80	Yes
50.0	44.00	37.83	Yes
63.0	42.00	36.09	Yes
80.0	40.00	32.51	Yes
100.0	38.00	27.70	Yes
125.0	36.00	23.65	Yes
160.0	34.00	18.21	Yes
200.0	32.00	14.19	Yes

HH Kellarimäentie Noise sensitive point: Finnish normal frequency - User defined (331)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	59.12	Yes
25.0	64.00	55.79	Yes
31.5	56.00	51.27	Yes
40.0	49.00	46.33	Yes
50.0	44.00	42.40	Yes
63.0	42.00	40.73	Yes
80.0	40.00	37.24	Yes
100.0	38.00	32.59	Yes
125.0	36.00	28.77	Yes
160.0	34.00	23.67	Yes
200.0	32.00	20.10	Yes

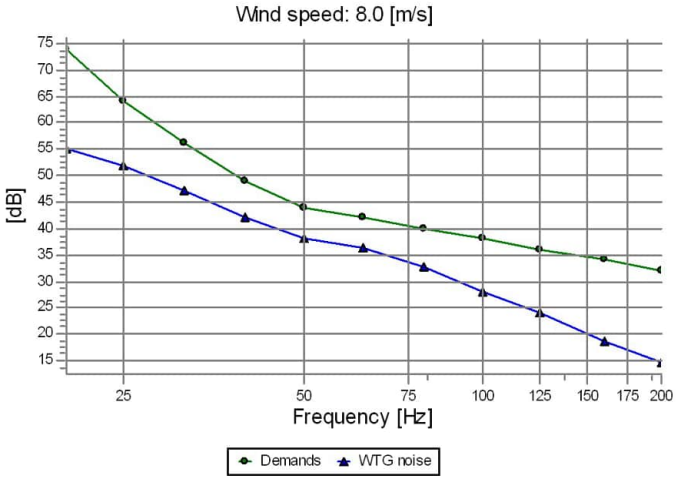
Project:
Junnunmäen tuulivoimahanke

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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

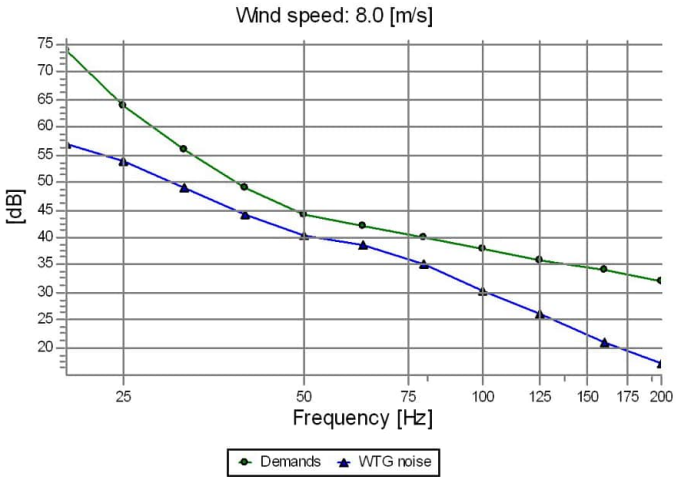
Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Koivuharju Noise sensitive point: Finnish normal frequency - User defined (281)



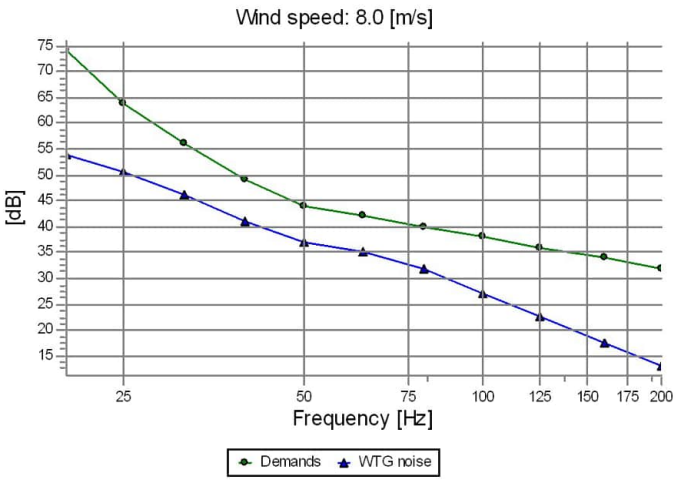
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.07	Yes
25.0	64.00	51.70	Yes
31.5	56.00	47.16	Yes
40.0	49.00	42.19	Yes
50.0	44.00	38.22	Yes
63.0	42.00	36.48	Yes
80.0	40.00	32.90	Yes
100.0	38.00	28.09	Yes
125.0	36.00	24.03	Yes
160.0	34.00	18.58	Yes
200.0	32.00	14.53	Yes

HH Koivula 3 Noise sensitive point: Finnish normal frequency - User defined (291)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	57.05	Yes
25.0	64.00	53.69	Yes
31.5	56.00	49.16	Yes
40.0	49.00	44.21	Yes
50.0	44.00	40.25	Yes
63.0	42.00	38.54	Yes
80.0	40.00	35.00	Yes
100.0	38.00	30.25	Yes
125.0	36.00	26.29	Yes
160.0	34.00	20.97	Yes
200.0	32.00	17.10	Yes

HH Korsu 1 Noise sensitive point: Finnish normal frequency - User defined (299)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	53.97	Yes
25.0	64.00	50.59	Yes
31.5	56.00	46.05	Yes
40.0	49.00	41.07	Yes
50.0	44.00	37.09	Yes
63.0	42.00	35.34	Yes
80.0	40.00	31.75	Yes
100.0	38.00	26.90	Yes
125.0	36.00	22.82	Yes
160.0	34.00	17.32	Yes
200.0	32.00	13.24	Yes

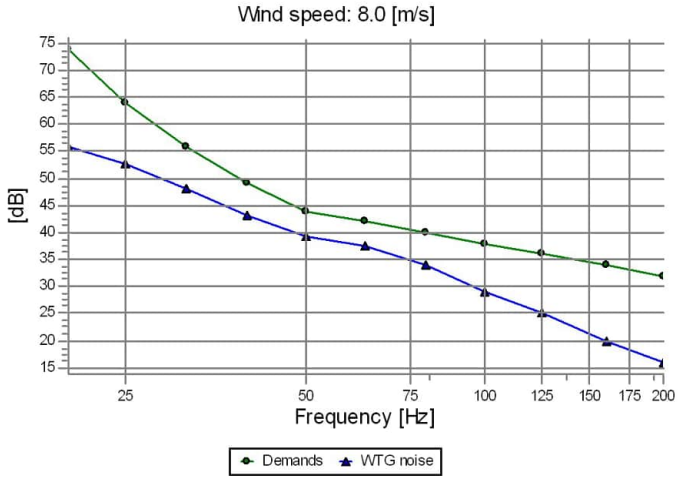
Project:
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

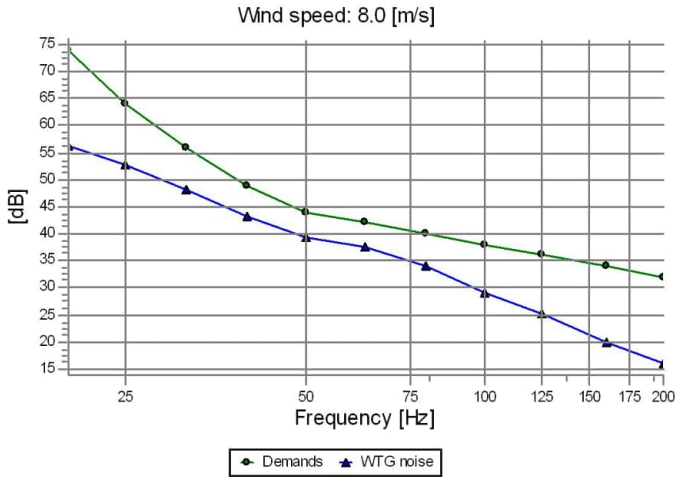
Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Kuusela Noise sensitive point: Finnish normal frequency - User defined (298)



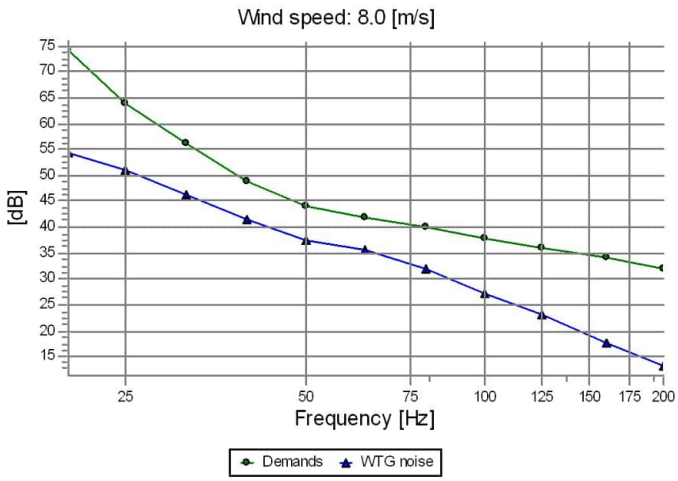
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.03	Yes
25.0	64.00	52.67	Yes
31.5	56.00	48.14	Yes
40.0	49.00	43.18	Yes
50.0	44.00	39.21	Yes
63.0	42.00	37.49	Yes
80.0	40.00	33.94	Yes
100.0	38.00	29.16	Yes
125.0	36.00	25.17	Yes
160.0	34.00	19.81	Yes
200.0	32.00	15.88	Yes

HH Lammaslahti 2 Noise sensitive point: Finnish normal frequency - User defined (283)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.12	Yes
25.0	64.00	52.76	Yes
31.5	56.00	48.23	Yes
40.0	49.00	43.26	Yes
50.0	44.00	39.30	Yes
63.0	42.00	37.58	Yes
80.0	40.00	34.02	Yes
100.0	38.00	29.25	Yes
125.0	36.00	25.25	Yes
160.0	34.00	19.88	Yes
200.0	32.00	15.95	Yes

HH Lehtoharju 2 Noise sensitive point: Finnish normal frequency - User defined (293)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.27	Yes
25.0	64.00	50.89	Yes
31.5	56.00	46.35	Yes
40.0	49.00	41.37	Yes
50.0	44.00	37.39	Yes
63.0	42.00	35.64	Yes
80.0	40.00	32.04	Yes
100.0	38.00	27.19	Yes
125.0	36.00	23.08	Yes
160.0	34.00	17.55	Yes
200.0	32.00	13.40	Yes

Project:
Junnunmäen tuulivoimahanke

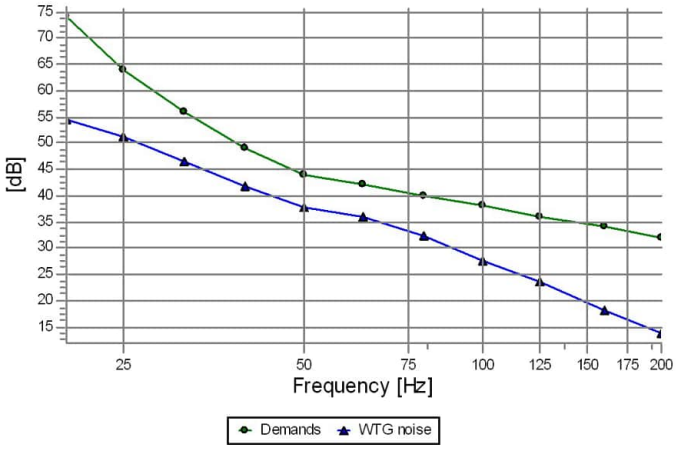
Licensed user:
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+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Leinolanlahti Noise sensitive point: Finnish normal frequency - User defined (297)

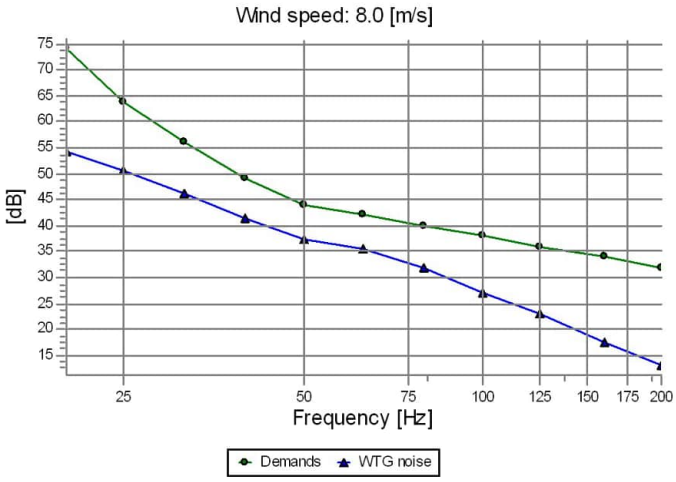
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.50	Yes
25.0	64.00	51.13	Yes
31.5	56.00	46.59	Yes
40.0	49.00	41.62	Yes
50.0	44.00	37.65	Yes
63.0	42.00	35.90	Yes
80.0	40.00	32.32	Yes
100.0	38.00	27.50	Yes
125.0	36.00	23.45	Yes
160.0	34.00	18.00	Yes
200.0	32.00	13.97	Yes

HH Mustalahti 1 Noise sensitive point: Finnish normal frequency - User defined (280)

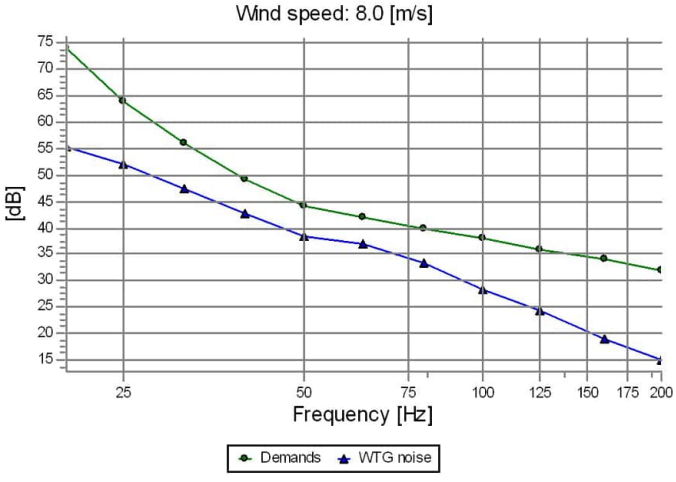
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.14	Yes
25.0	64.00	50.76	Yes
31.5	56.00	46.22	Yes
40.0	49.00	41.24	Yes
50.0	44.00	37.26	Yes
63.0	42.00	35.51	Yes
80.0	40.00	31.91	Yes
100.0	38.00	27.05	Yes
125.0	36.00	22.94	Yes
160.0	34.00	17.40	Yes
200.0	32.00	13.25	Yes

HH Mustalahti 6 Noise sensitive point: Finnish normal frequency - User defined (282)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.40	Yes
25.0	64.00	52.03	Yes
31.5	56.00	47.50	Yes
40.0	49.00	42.53	Yes
50.0	44.00	38.56	Yes
63.0	42.00	36.82	Yes
80.0	40.00	33.25	Yes
100.0	38.00	28.45	Yes
125.0	36.00	24.41	Yes
160.0	34.00	18.99	Yes
200.0	32.00	14.97	Yes

Project:
Junnunmäen tuulivoimahanke

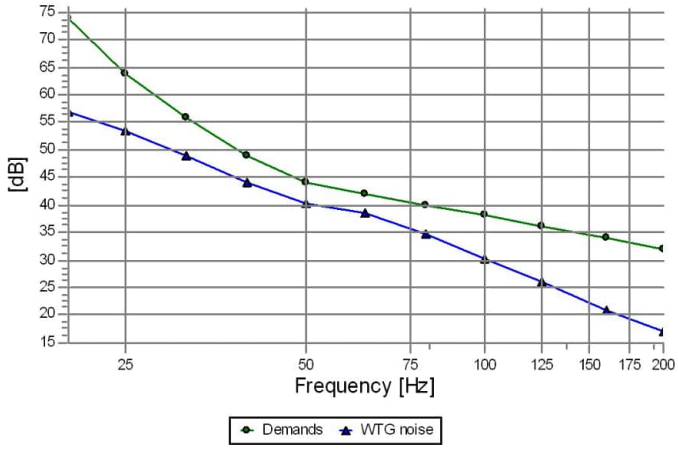
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+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Pajaniemi 1 Noise sensitive point: Finnish normal frequency - User defined (289)

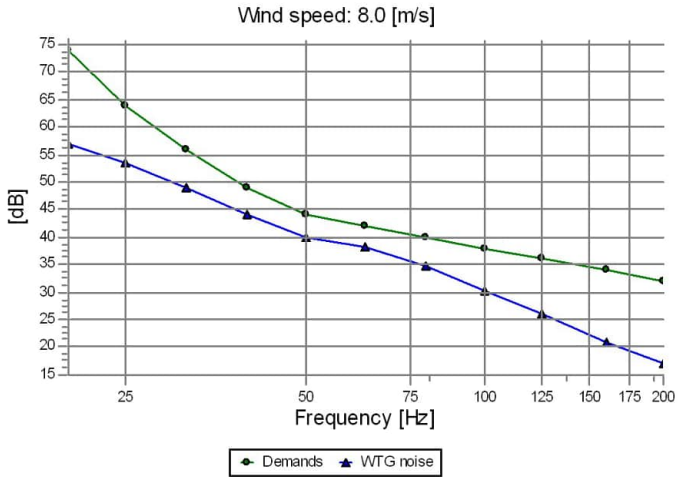
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.92	Yes
25.0	64.00	53.56	Yes
31.5	56.00	49.03	Yes
40.0	49.00	44.08	Yes
50.0	44.00	40.12	Yes
63.0	42.00	38.40	Yes
80.0	40.00	34.86	Yes
100.0	38.00	30.10	Yes
125.0	36.00	26.13	Yes
160.0	34.00	20.80	Yes
200.0	32.00	16.90	Yes

HH Pieni Mäkijärvi Noise sensitive point: Finnish normal frequency - User defined (287)

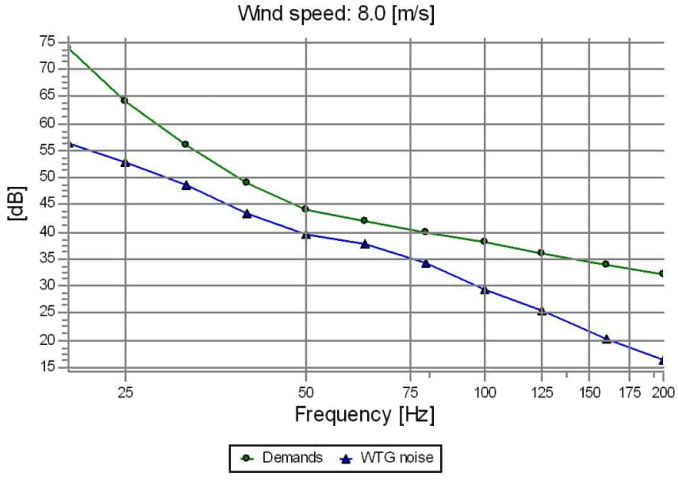
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.83	Yes
25.0	64.00	53.48	Yes
31.5	56.00	48.95	Yes
40.0	49.00	43.99	Yes
50.0	44.00	40.04	Yes
63.0	42.00	38.33	Yes
80.0	40.00	34.79	Yes
100.0	38.00	30.05	Yes
125.0	36.00	26.10	Yes
160.0	34.00	20.79	Yes
200.0	32.00	16.95	Yes

HH Pohjoispäänsuo Noise sensitive point: Finnish normal frequency - User defined (285)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.37	Yes
25.0	64.00	53.01	Yes
31.5	56.00	48.48	Yes
40.0	49.00	43.52	Yes
50.0	44.00	39.56	Yes
63.0	42.00	37.84	Yes
80.0	40.00	34.30	Yes
100.0	38.00	29.53	Yes
125.0	36.00	25.55	Yes
160.0	34.00	20.20	Yes
200.0	32.00	16.29	Yes

Project:
Junnunmäen tuulivoimahanke

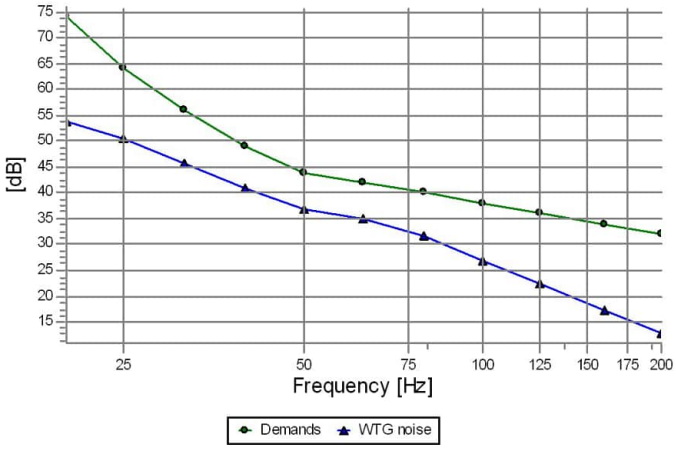
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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Rampsunniemi Noise sensitive point: Finnish normal frequency - User defined (302)

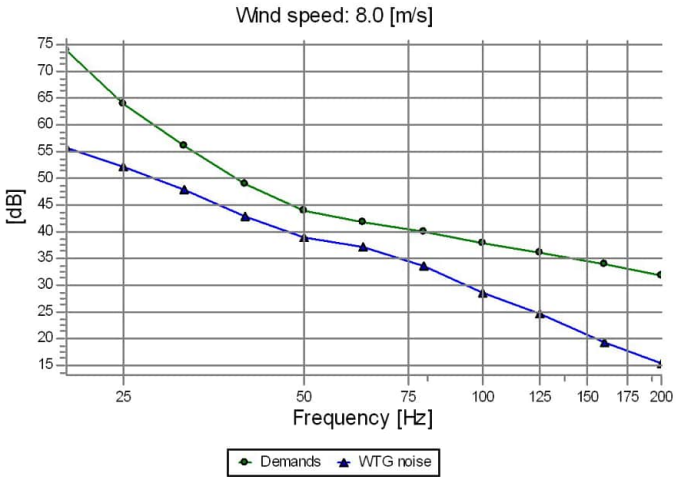
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	53.80	Yes
25.0	64.00	50.42	Yes
31.5	56.00	45.88	Yes
40.0	49.00	40.90	Yes
50.0	44.00	36.92	Yes
63.0	42.00	35.16	Yes
80.0	40.00	31.56	Yes
100.0	38.00	26.71	Yes
125.0	36.00	22.60	Yes
160.0	34.00	17.08	Yes
200.0	32.00	12.96	Yes

HH Rantala 1 Noise sensitive point: Finnish normal frequency - User defined (288)

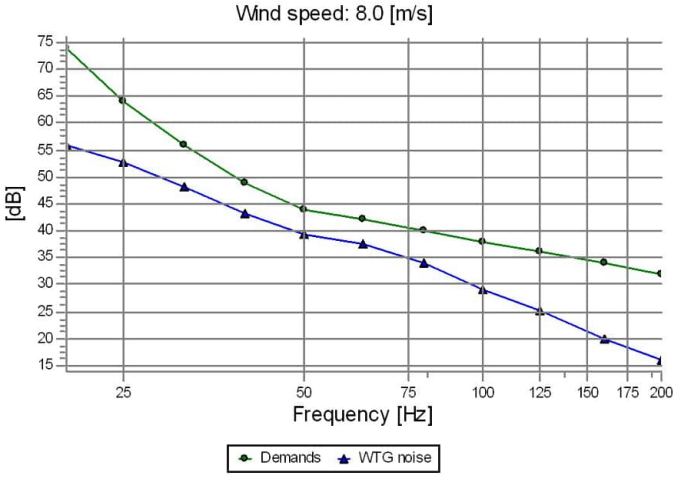
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.66	Yes
25.0	64.00	52.30	Yes
31.5	56.00	47.76	Yes
40.0	49.00	42.80	Yes
50.0	44.00	38.83	Yes
63.0	42.00	37.10	Yes
80.0	40.00	33.54	Yes
100.0	38.00	28.75	Yes
125.0	36.00	24.73	Yes
160.0	34.00	19.33	Yes
200.0	32.00	15.36	Yes

HH Suonpää 1 Noise sensitive point: Finnish normal frequency - User defined (286)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.07	Yes
25.0	64.00	52.70	Yes
31.5	56.00	48.17	Yes
40.0	49.00	43.21	Yes
50.0	44.00	39.25	Yes
63.0	42.00	37.53	Yes
80.0	40.00	33.97	Yes
100.0	38.00	29.20	Yes
125.0	36.00	25.21	Yes
160.0	34.00	19.85	Yes
200.0	32.00	15.93	Yes

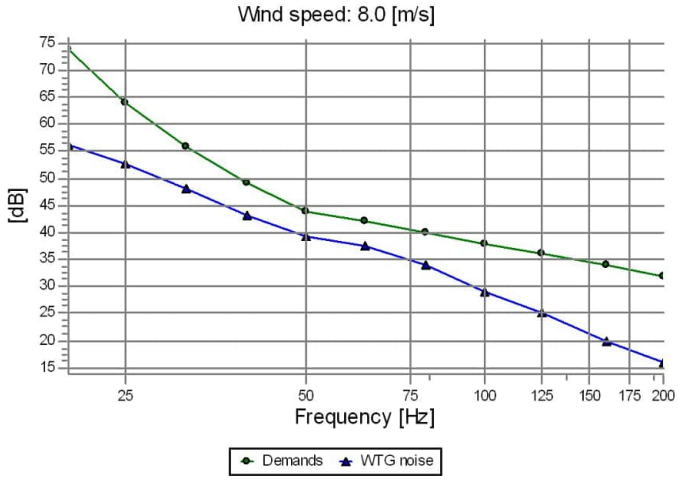
Project:
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DE-28211 Bremen
+49 7142 77810
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DECIBEL - Detailed results, graphic

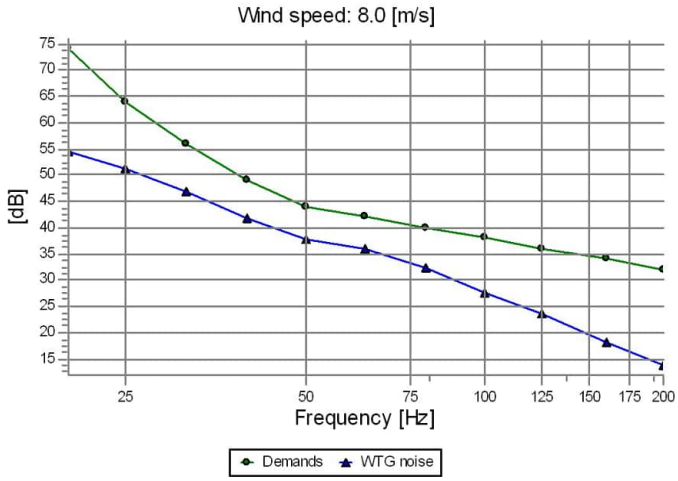
Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Viitajärvi 3 Noise sensitive point: Finnish normal frequency - User defined (306)



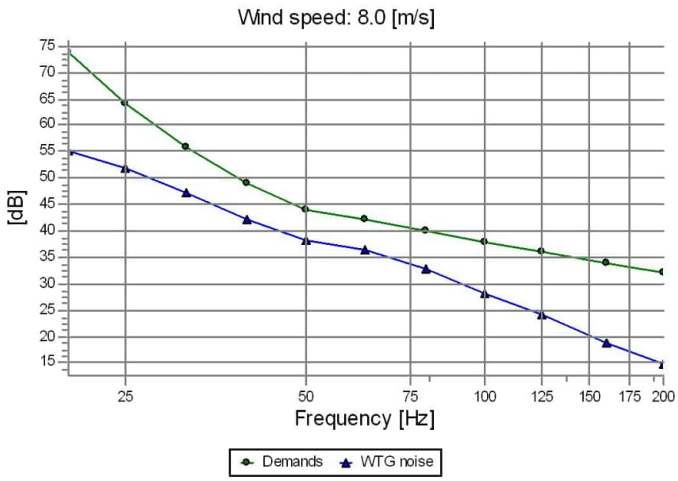
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.06	Yes
25.0	64.00	52.70	Yes
31.5	56.00	48.16	Yes
40.0	49.00	43.20	Yes
50.0	44.00	39.24	Yes
63.0	42.00	37.51	Yes
80.0	40.00	33.96	Yes
100.0	38.00	29.18	Yes
125.0	36.00	25.18	Yes
160.0	34.00	19.80	Yes
200.0	32.00	15.86	Yes

RH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (322)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.63	Yes
25.0	64.00	51.25	Yes
31.5	56.00	46.71	Yes
40.0	49.00	41.74	Yes
50.0	44.00	37.76	Yes
63.0	42.00	36.01	Yes
80.0	40.00	32.43	Yes
100.0	38.00	27.60	Yes
125.0	36.00	23.52	Yes
160.0	34.00	18.03	Yes
200.0	32.00	13.93	Yes

RH Hiekkala Noise sensitive point: Finnish normal frequency - User defined (311)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.13	Yes
25.0	64.00	51.76	Yes
31.5	56.00	47.23	Yes
40.0	49.00	42.26	Yes
50.0	44.00	38.29	Yes
63.0	42.00	36.55	Yes
80.0	40.00	32.97	Yes
100.0	38.00	28.16	Yes
125.0	36.00	24.11	Yes
160.0	34.00	18.67	Yes
200.0	32.00	14.63	Yes

Project:
Junnunmäen tuulivoimahanke

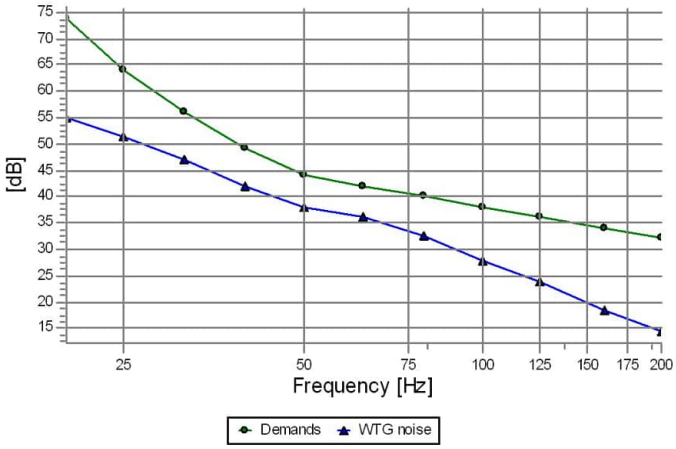
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Honkala Noise sensitive point: Finnish normal frequency - User defined (329)

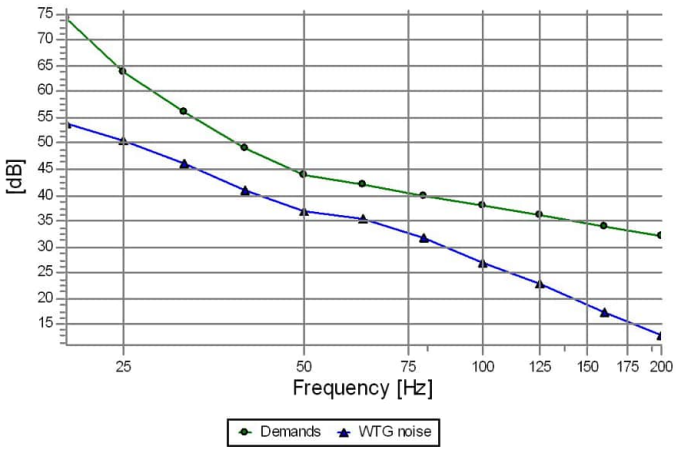
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.81	Yes
25.0	64.00	51.44	Yes
31.5	56.00	46.90	Yes
40.0	49.00	41.93	Yes
50.0	44.00	37.96	Yes
63.0	42.00	36.21	Yes
80.0	40.00	32.63	Yes
100.0	38.00	27.81	Yes
125.0	36.00	23.74	Yes
160.0	34.00	18.27	Yes
200.0	32.00	14.21	Yes

RH Kauvanjärvi 2 Noise sensitive point: Finnish normal frequency - User defined (324)

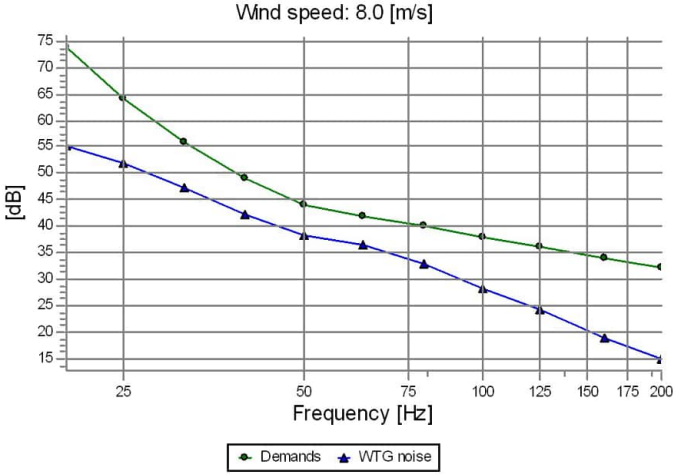
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	53.86	Yes
25.0	64.00	50.48	Yes
31.5	56.00	45.94	Yes
40.0	49.00	40.96	Yes
50.0	44.00	36.98	Yes
63.0	42.00	35.22	Yes
80.0	40.00	31.62	Yes
100.0	38.00	26.77	Yes
125.0	36.00	22.67	Yes
160.0	34.00	17.15	Yes
200.0	32.00	13.03	Yes

RH Kirnumäki Noise sensitive point: Finnish normal frequency - User defined (307)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.22	Yes
25.0	64.00	51.85	Yes
31.5	56.00	47.32	Yes
40.0	49.00	42.35	Yes
50.0	44.00	38.38	Yes
63.0	42.00	36.64	Yes
80.0	40.00	33.07	Yes
100.0	38.00	28.26	Yes
125.0	36.00	24.22	Yes
160.0	34.00	18.79	Yes
200.0	32.00	14.77	Yes

Project:
Junnunmäen tuulivoimahanke

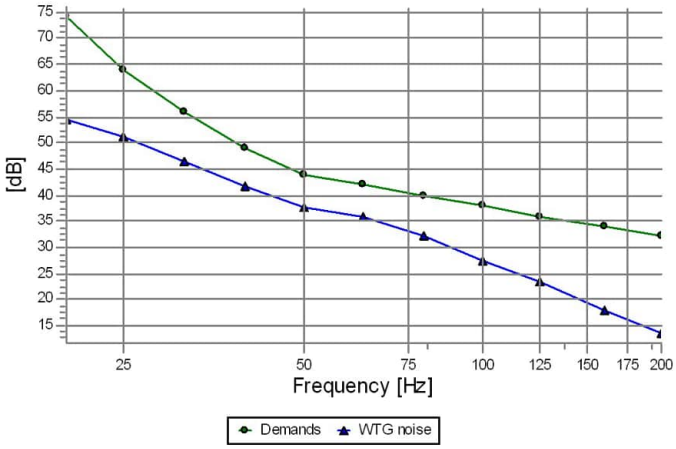
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Koivuniemi Noise sensitive point: Finnish normal frequency - User defined (330)

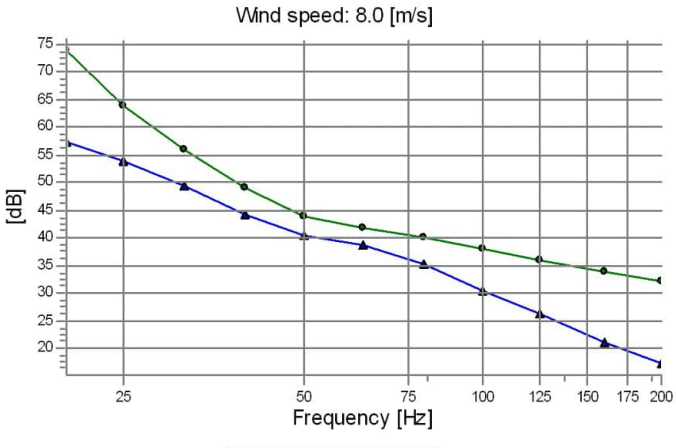
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.48	Yes
25.0	64.00	51.11	Yes
31.5	56.00	46.57	Yes
40.0	49.00	41.59	Yes
50.0	44.00	37.62	Yes
63.0	42.00	35.86	Yes
80.0	40.00	32.27	Yes
100.0	38.00	27.43	Yes
125.0	36.00	23.34	Yes
160.0	34.00	17.84	Yes
200.0	32.00	13.72	Yes

RH Kotiranta Noise sensitive point: Finnish normal frequency - User defined (312)

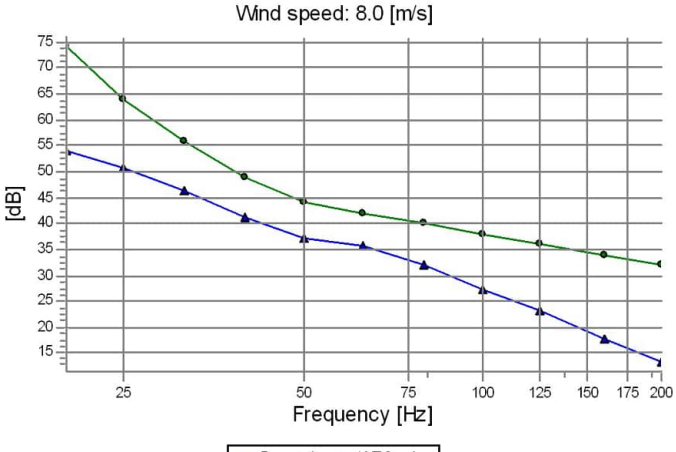
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	57.20	Yes
25.0	64.00	53.85	Yes
31.5	56.00	49.32	Yes
40.0	49.00	44.36	Yes
50.0	44.00	40.41	Yes
63.0	42.00	38.69	Yes
80.0	40.00	35.16	Yes
100.0	38.00	30.41	Yes
125.0	36.00	26.45	Yes
160.0	34.00	21.13	Yes
200.0	32.00	17.26	Yes

RH Leväniemi Noise sensitive point: Finnish normal frequency - User defined (325)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.16	Yes
25.0	64.00	50.79	Yes
31.5	56.00	46.25	Yes
40.0	49.00	41.27	Yes
50.0	44.00	37.30	Yes
63.0	42.00	35.55	Yes
80.0	40.00	31.96	Yes
100.0	38.00	27.12	Yes
125.0	36.00	23.05	Yes
160.0	34.00	17.57	Yes
200.0	32.00	13.50	Yes

Project:
Junnunmäen tuulivoimahanke

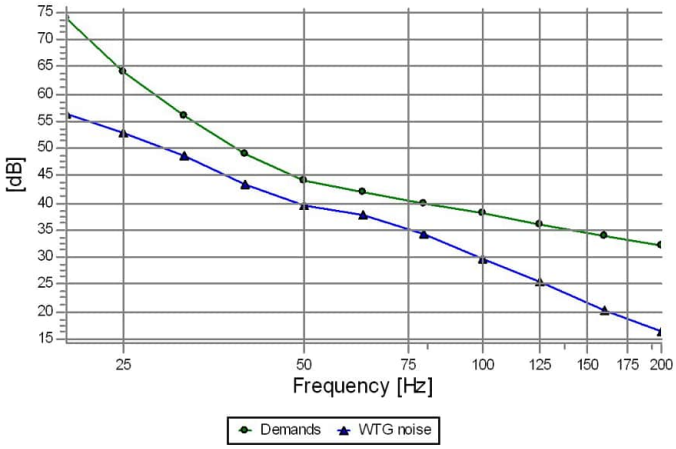
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DE-28211 Bremen
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DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Mäkelä Noise sensitive point: Finnish normal frequency - User defined (315)

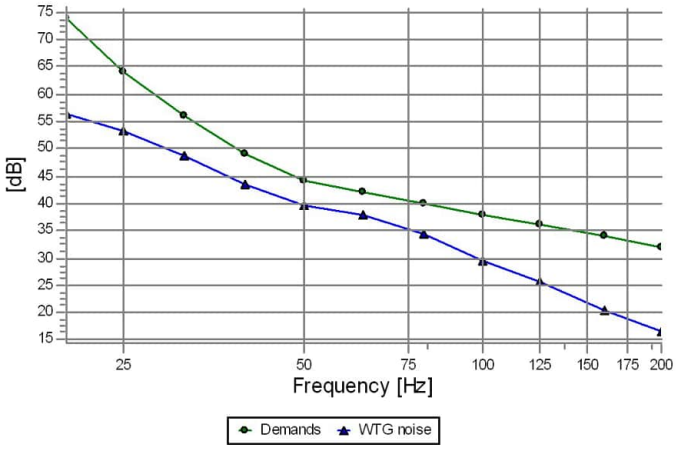
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.34	Yes
25.0	64.00	52.98	Yes
31.5	56.00	48.45	Yes
40.0	49.00	43.49	Yes
50.0	44.00	39.53	Yes
63.0	42.00	37.81	Yes
80.0	40.00	34.26	Yes
100.0	38.00	29.49	Yes
125.0	36.00	25.50	Yes
160.0	34.00	20.14	Yes
200.0	32.00	16.21	Yes

RH Mäntylä Noise sensitive point: Finnish normal frequency - User defined (317)

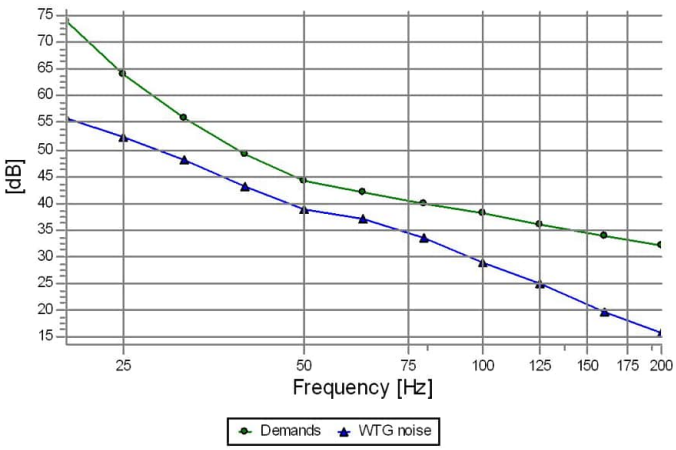
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.48	Yes
25.0	64.00	53.12	Yes
31.5	56.00	48.59	Yes
40.0	49.00	43.63	Yes
50.0	44.00	39.67	Yes
63.0	42.00	37.95	Yes
80.0	40.00	34.41	Yes
100.0	38.00	29.65	Yes
125.0	36.00	25.68	Yes
160.0	34.00	20.34	Yes
200.0	32.00	16.45	Yes

RH Mikkola Noise sensitive point: Finnish normal frequency - User defined (328)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.79	Yes
25.0	64.00	52.43	Yes
31.5	56.00	47.90	Yes
40.0	49.00	42.94	Yes
50.0	44.00	38.98	Yes
63.0	42.00	37.26	Yes
80.0	40.00	33.71	Yes
100.0	38.00	28.95	Yes
125.0	36.00	24.97	Yes
160.0	34.00	19.64	Yes
200.0	32.00	15.76	Yes

Project:
Junnunmäen tuulivoimahanke

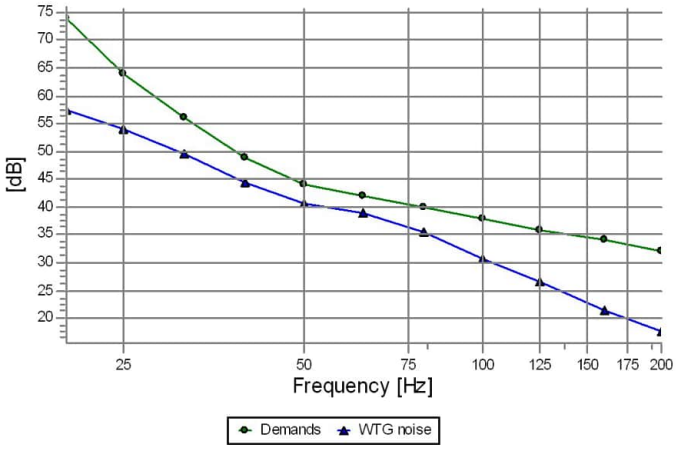
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Niskala Noise sensitive point: Finnish normal frequency - User defined (326)

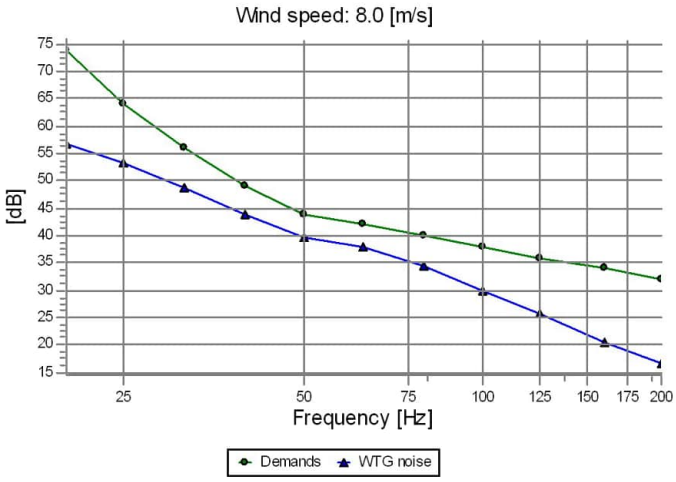
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	57.41	Yes
25.0	64.00	54.06	Yes
31.5	56.00	49.53	Yes
40.0	49.00	44.58	Yes
50.0	44.00	40.63	Yes
63.0	42.00	38.92	Yes
80.0	40.00	35.39	Yes
100.0	38.00	30.66	Yes
125.0	36.00	26.72	Yes
160.0	34.00	21.43	Yes
200.0	32.00	17.61	Yes

RH Pajaniemi Noise sensitive point: Finnish normal frequency - User defined (316)

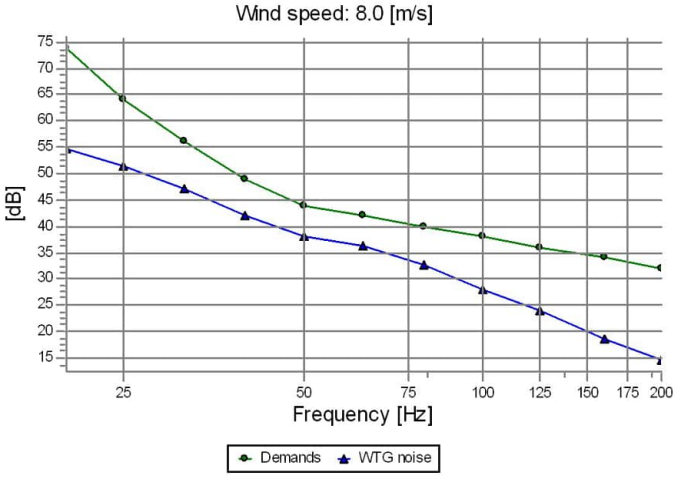
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	56.63	Yes
25.0	64.00	53.27	Yes
31.5	56.00	48.74	Yes
40.0	49.00	43.78	Yes
50.0	44.00	39.82	Yes
63.0	42.00	38.10	Yes
80.0	40.00	34.55	Yes
100.0	38.00	29.78	Yes
125.0	36.00	25.80	Yes
160.0	34.00	20.44	Yes
200.0	32.00	16.52	Yes

RH Purola Noise sensitive point: Finnish normal frequency - User defined (319)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.86	Yes
25.0	64.00	51.49	Yes
31.5	56.00	46.95	Yes
40.0	49.00	41.98	Yes
50.0	44.00	38.01	Yes
63.0	42.00	36.27	Yes
80.0	40.00	32.70	Yes
100.0	38.00	27.89	Yes
125.0	36.00	23.85	Yes
160.0	34.00	18.42	Yes
200.0	32.00	14.42	Yes

Project:
Junnunmäen tuulivoimahanke

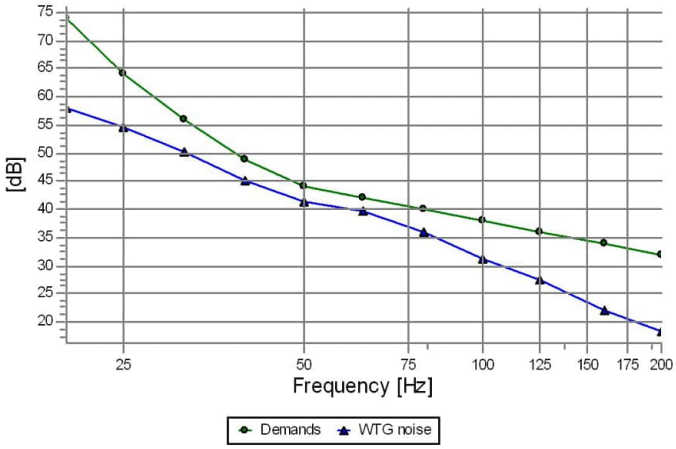
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Rinne 1 Noise sensitive point: Finnish normal frequency - User defined (314)

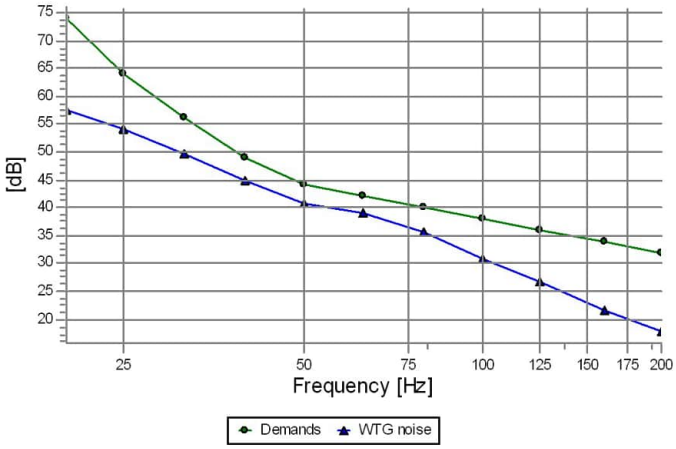
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	58.03	Yes
25.0	64.00	54.68	Yes
31.5	56.00	50.15	Yes
40.0	49.00	45.20	Yes
50.0	44.00	41.25	Yes
63.0	42.00	39.55	Yes
80.0	40.00	36.03	Yes
100.0	38.00	31.31	Yes
125.0	36.00	27.39	Yes
160.0	34.00	22.13	Yes
200.0	32.00	18.33	Yes

RH Rinne 2 Noise sensitive point: Finnish normal frequency - User defined (313)

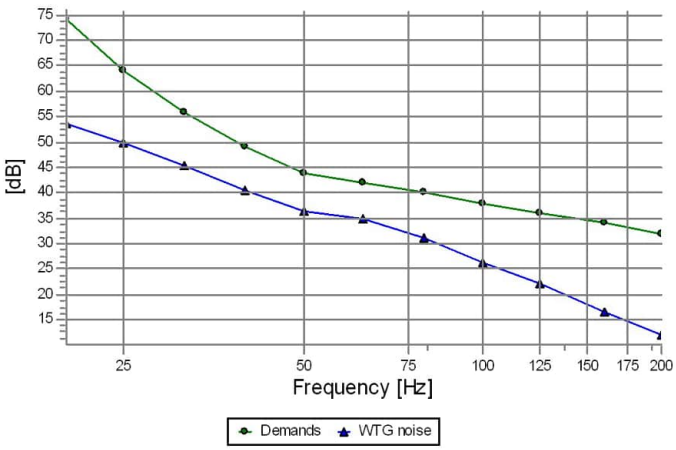
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	57.57	Yes
25.0	64.00	54.22	Yes
31.5	56.00	49.69	Yes
40.0	49.00	44.74	Yes
50.0	44.00	40.78	Yes
63.0	42.00	39.08	Yes
80.0	40.00	35.55	Yes
100.0	38.00	30.81	Yes
125.0	36.00	26.87	Yes
160.0	34.00	21.58	Yes
200.0	32.00	17.74	Yes

RH Riuttalantie 2 Noise sensitive point: Finnish normal frequency - User defined (323)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	53.40	Yes
25.0	64.00	50.02	Yes
31.5	56.00	45.47	Yes
40.0	49.00	40.49	Yes
50.0	44.00	36.50	Yes
63.0	42.00	34.73	Yes
80.0	40.00	31.11	Yes
100.0	38.00	26.22	Yes
125.0	36.00	22.06	Yes
160.0	34.00	16.46	Yes
200.0	32.00	12.21	Yes

Project:
Junnunmäen tuulivoimahanke

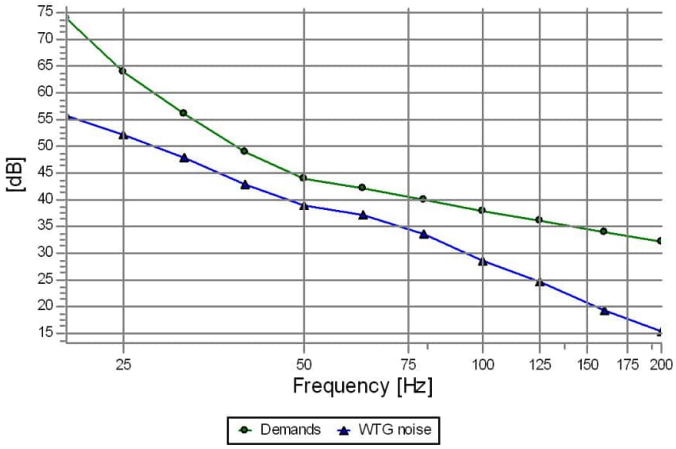
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Riuttasjärvi Noise sensitive point: Finnish normal frequency - User defined (308)

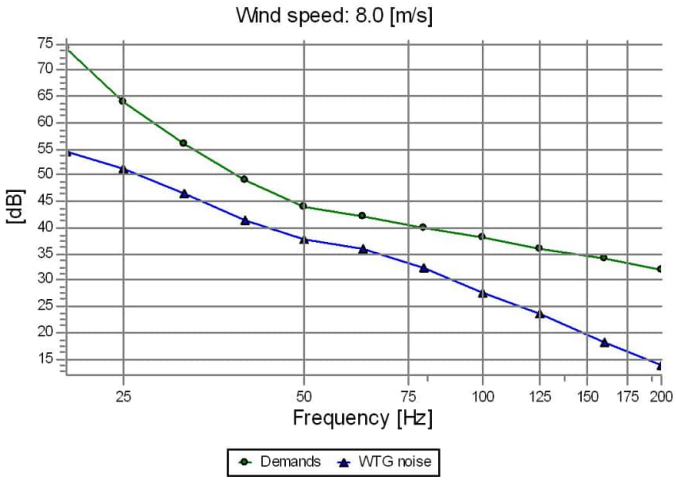
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.57	Yes
25.0	64.00	52.21	Yes
31.5	56.00	47.67	Yes
40.0	49.00	42.71	Yes
50.0	44.00	38.74	Yes
63.0	42.00	37.01	Yes
80.0	40.00	33.44	Yes
100.0	38.00	28.65	Yes
125.0	36.00	24.62	Yes
160.0	34.00	19.21	Yes
200.0	32.00	15.21	Yes

RH Ruunaharju Noise sensitive point: Finnish normal frequency - User defined (321)

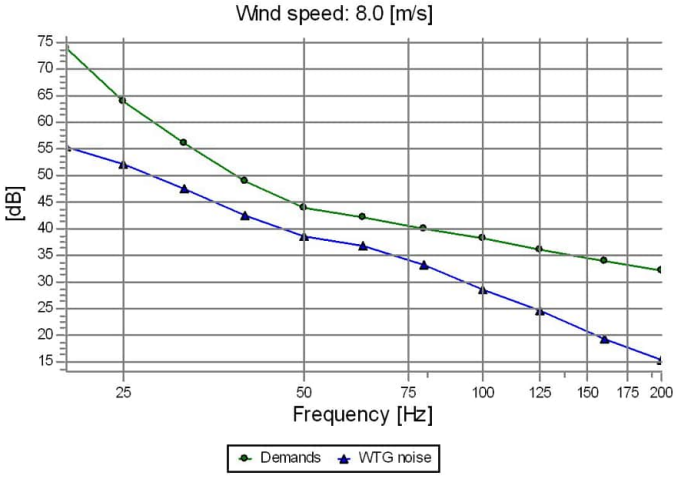
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	54.47	Yes
25.0	64.00	51.10	Yes
31.5	56.00	46.56	Yes
40.0	49.00	41.59	Yes
50.0	44.00	37.62	Yes
63.0	42.00	35.87	Yes
80.0	40.00	32.30	Yes
100.0	38.00	27.48	Yes
125.0	36.00	23.42	Yes
160.0	34.00	17.98	Yes
200.0	32.00	13.96	Yes

RH Suoniemi Noise sensitive point: Finnish normal frequency - User defined (327)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.39	Yes
25.0	64.00	52.02	Yes
31.5	56.00	47.49	Yes
40.0	49.00	42.53	Yes
50.0	44.00	38.56	Yes
63.0	42.00	36.83	Yes
80.0	40.00	33.27	Yes
100.0	38.00	28.49	Yes
125.0	36.00	24.49	Yes
160.0	34.00	19.11	Yes
200.0	32.00	15.18	Yes

Project:
Junnunmäen tuulivoimahanke

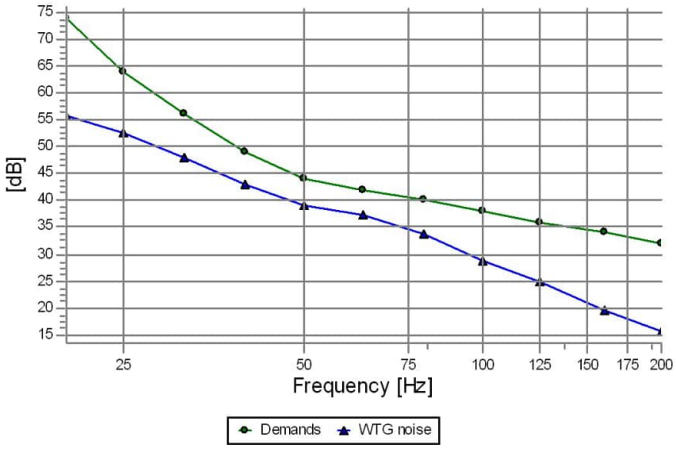
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Suonpää Noise sensitive point: Finnish normal frequency - User defined (309)

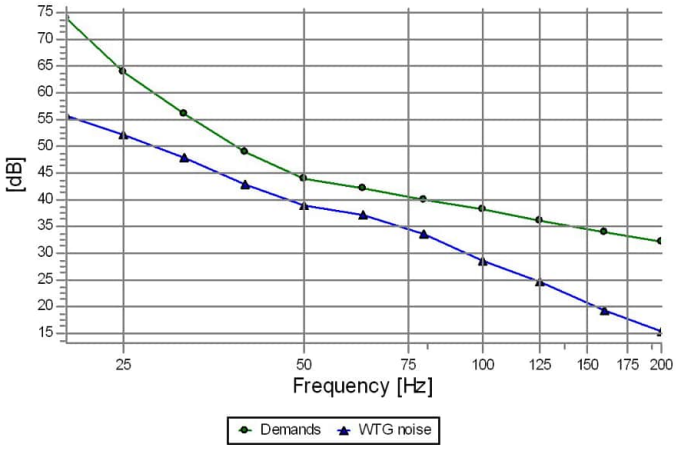
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.76	Yes
25.0	64.00	52.40	Yes
31.5	56.00	47.87	Yes
40.0	49.00	42.90	Yes
50.0	44.00	38.94	Yes
63.0	42.00	37.21	Yes
80.0	40.00	33.65	Yes
100.0	38.00	28.87	Yes
125.0	36.00	24.86	Yes
160.0	34.00	19.48	Yes
200.0	32.00	15.52	Yes

RH Törmäharju 2 Noise sensitive point: Finnish normal frequency - User defined (318)

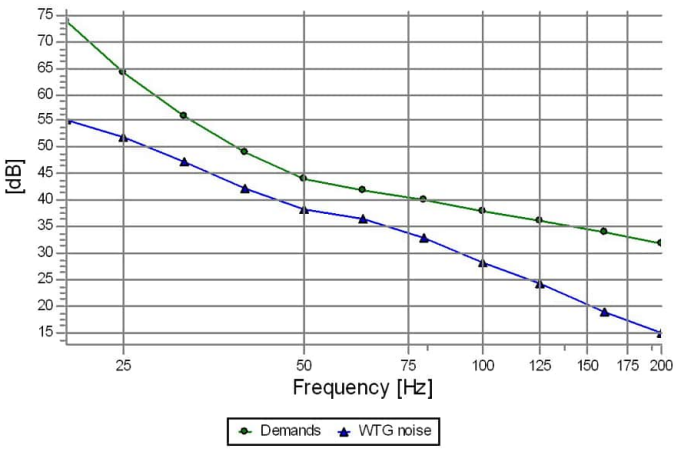
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.49	Yes
25.0	64.00	52.13	Yes
31.5	56.00	47.59	Yes
40.0	49.00	42.63	Yes
50.0	44.00	38.66	Yes
63.0	42.00	36.92	Yes
80.0	40.00	33.36	Yes
100.0	38.00	28.56	Yes
125.0	36.00	24.53	Yes
160.0	34.00	19.11	Yes
200.0	32.00	15.11	Yes

RH Tuomaala Noise sensitive point: Finnish normal frequency - User defined (310)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	55.21	Yes
25.0	64.00	51.85	Yes
31.5	56.00	47.31	Yes
40.0	49.00	42.34	Yes
50.0	44.00	38.37	Yes
63.0	42.00	36.64	Yes
80.0	40.00	33.07	Yes
100.0	38.00	28.26	Yes
125.0	36.00	24.23	Yes
160.0	34.00	18.81	Yes
200.0	32.00	14.80	Yes

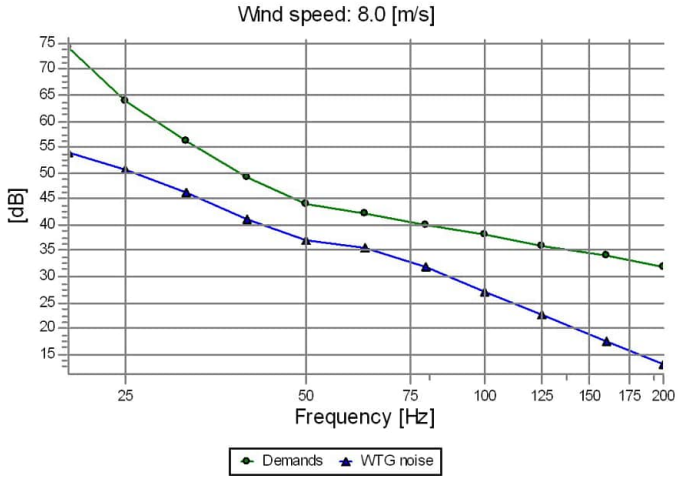
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
06-Oct-24 18:00/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE1 33xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Yläpelto Noise sensitive point: Finnish normal frequency - User defined (320)



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	53.99	Yes
25.0	64.00	50.61	Yes
31.5	56.00	46.08	Yes
40.0	49.00	41.10	Yes
50.0	44.00	37.12	Yes
63.0	42.00	35.37	Yes
80.0	40.00	31.77	Yes
100.0	38.00	26.93	Yes
125.0	36.00	22.85	Yes
160.0	34.00	17.35	Yes
200.0	32.00	13.27	Yes

Project:
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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise calculation model:
Finland Low frequency
Wind speed (in 10 m height):
Highest noise value at receptor
Spectral distribution:
From 20.0 Hz to 200.0 Hz
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure tone penalty is subtracted from demand
Model: 5.0 dB(A)
Height above ground level, when no value in NSA object:
4.0 m; Don't allow override of model height with height from NSA object
Uncertainty margin:
0.0 dB; Uncertainty margin in NSA has priority
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)
Low frequency calculation
dLsigma

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
7.6	8.3	9.2	10.3	11.5	13.0	14.8	16.8	18.8	21.1	22.8

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89

WTG: VESTAS V172-7.2 (3rd Oct) 7200 200.0 !O!
Noise: Level PO7200-0S

Source	Source/Date	Creator	Edited
DMS no.: 0128-4336_00, Date 2022-06-30	24-Nov-22	USER	24-Nov-22 08:29
DMS no.: 0128-4336_00, Date 2022-06-30			

Status	Hub height	Wind speed	LwA,ref	20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
	[m]	[m/s]	[dB(A)]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From other hub height	200.0	8.0	102.54	59.3	65.2	70.6	76.0	80.9	85.3	89.1	92.3	94.9	97.0	98.4

Noise sensitive area: HH Etelälahti 2 Noise sensitive point: Finnish normal frequency - User defined (305)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Etelälahti 5 Noise sensitive point: Finnish normal frequency - User defined (303)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Project:
Junnunmäen tuulivoimahanke

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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise sensitive area: HH Eteläniemi 1 Noise sensitive point: Finnish normal frequency - User defined (304)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Eteläniemi 2 Noise sensitive point: Finnish normal frequency - User defined (284)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (295)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Haukijärvi 2 Noise sensitive point: Finnish normal frequency - User defined (296)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Haukijärvi 3 Noise sensitive point: Finnish normal frequency - User defined (294)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Hiekkaranta Noise sensitive point: Finnish normal frequency - User defined (300)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Iso Mäkijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (292)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kallioniemi 2 Noise sensitive point: Finnish normal frequency - User defined (290)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kauvanjärvi 5 Noise sensitive point: Finnish normal frequency - User defined (301)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kellarimäentie Noise sensitive point: Finnish normal frequency - User defined (331)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Koivuharju Noise sensitive point: Finnish normal frequency - User defined (281)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Koivula 3 Noise sensitive point: Finnish normal frequency - User defined (291)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Korsu 1 Noise sensitive point: Finnish normal frequency - User defined (299)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Kuusela Noise sensitive point: Finnish normal frequency - User defined (298)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Lammaslahti 2 Noise sensitive point: Finnish normal frequency - User defined (283)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Lehtoharju 2 Noise sensitive point: Finnish normal frequency - User defined (293)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Leinolanlahti Noise sensitive point: Finnish normal frequency - User defined (297)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise sensitive area: HH Mustalahti 1 Noise sensitive point: Finnish normal frequency - User defined (280)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Mustalahti 6 Noise sensitive point: Finnish normal frequency - User defined (282)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Pajaniemi 1 Noise sensitive point: Finnish normal frequency - User defined (289)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Pieni Mäkijärvi Noise sensitive point: Finnish normal frequency - User defined (287)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Pohjoispäänsuo Noise sensitive point: Finnish normal frequency - User defined (285)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Rampsunniemi Noise sensitive point: Finnish normal frequency - User defined (302)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Rantala 1 Noise sensitive point: Finnish normal frequency - User defined (288)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Suonpää 1 Noise sensitive point: Finnish normal frequency - User defined (286)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: HH Viitajärvi 3 Noise sensitive point: Finnish normal frequency - User defined (306)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (322)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Hiekkala Noise sensitive point: Finnish normal frequency - User defined (311)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Honkala Noise sensitive point: Finnish normal frequency - User defined (329)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Kauvanjärvi 2 Noise sensitive point: Finnish normal frequency - User defined (324)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Kirnumäki Noise sensitive point: Finnish normal frequency - User defined (307)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Koivuniemi Noise sensitive point: Finnish normal frequency - User defined (330)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Kotiranta Noise sensitive point: Finnish normal frequency - User defined (312)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Leväniemi Noise sensitive point: Finnish normal frequency - User defined (325)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise sensitive area: RH Mäkelä Noise sensitive point: Finnish normal frequency - User defined (315)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Mäntylä Noise sensitive point: Finnish normal frequency - User defined (317)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Mikkola Noise sensitive point: Finnish normal frequency - User defined (328)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Niskala Noise sensitive point: Finnish normal frequency - User defined (326)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Pajaniemi Noise sensitive point: Finnish normal frequency - User defined (316)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Purola Noise sensitive point: Finnish normal frequency - User defined (319)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Rinne 1 Noise sensitive point: Finnish normal frequency - User defined (314)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Rinne 2 Noise sensitive point: Finnish normal frequency - User defined (313)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Riuttalantie 2 Noise sensitive point: Finnish normal frequency - User defined (323)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Riuttasjärvi Noise sensitive point: Finnish normal frequency - User defined (308)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Ruunaharju Noise sensitive point: Finnish normal frequency - User defined (321)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Suoniemi Noise sensitive point: Finnish normal frequency - User defined (327)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Assumptions for noise calculation

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Suonpää Noise sensitive point: Finnish normal frequency - User defined (309)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Törmäharju 2 Noise sensitive point: Finnish normal frequency - User defined (318)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Tuomaala Noise sensitive point: Finnish normal frequency - User defined (310)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Noise sensitive area: RH Yläpelto Noise sensitive point: Finnish normal frequency - User defined (320)

Predefined calculation standard: Residential health guide 2003, indoor - night
Immission height(a.g.l.): Use standard value from calculation model
Uncertainty margin: Use default value from calculation model

Noise demand:

20.0 Hz	25.0 Hz	31.5 Hz	40.0 Hz	50.0 Hz	63.0 Hz	80.0 Hz	100.0 Hz	125.0 Hz	160.0 Hz	200.0 Hz
74.0 dB	64.0 dB	56.0 dB	49.0 dB	44.0 dB	42.0 dB	40.0 dB	38.0 dB	36.0 dB	34.0 dB	32.0 dB

No distance demand

Project:
Junnunmäen tuulivoimahanke

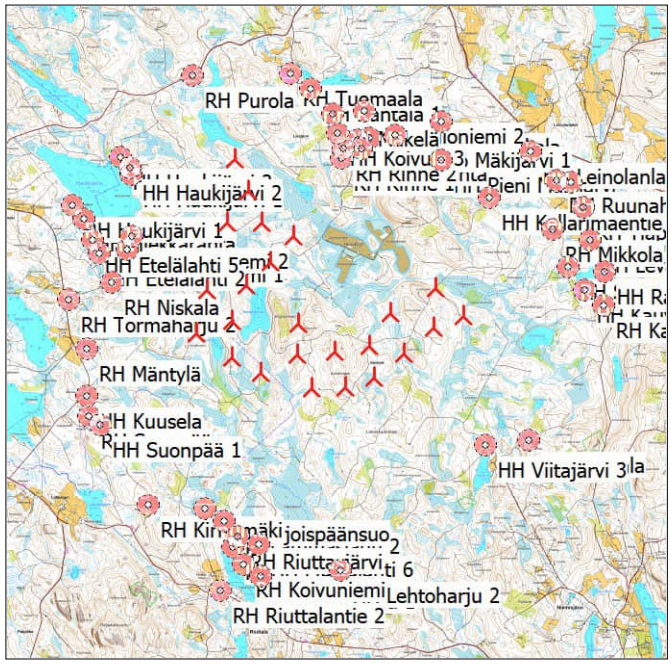
Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Main Result

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

Noise calculation model:
Finland Low frequency
Wind speed (in 10 m height):
Highest noise value at receptor
Spectral distribution:
From 20.0 Hz to 200.0 Hz
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure tone penalty is subtracted from demand
Model: 5.0 dB(A)
Height above ground level, when no value in NSA object:
4.0 m; Don't allow override of model height with height from NSA object
Uncertainty margin:
0.0 dB; Uncertainty margin in NSA has priority
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89



Scale 1:125,000
New WTG
Noise sensitive area

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89

WTGs

	East	North	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Noise data Creator	Name	First wind speed	LwaRef	Last wind speed	LwaRef	
			[m]					[kW]	[m]	[m]			[m/s]	[dB(A)]	[m/s]	[dB(A)]	
1	506,228	6,991,024	141.2	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
2	506,093	6,989,975	144.7	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
3	506,452	6,990,494	149.6	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
4	506,676	6,989,980	149.2	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
5	507,189	6,989,762	147.1	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
6	505,759	6,988,872	149.8	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
7	506,410	6,988,944	145.8	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
8	506,818	6,989,332	147.7	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
9	505,590	6,988,149	146.7	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
10	506,171	6,988,361	151.8	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
11	506,171	6,987,759	147.7	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
12	506,660	6,987,495	144.8	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
13	507,262	6,987,801	171.6	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
14	507,281	6,988,309	170.5	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
15	507,877	6,987,851	191.5	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
16	508,449	6,987,951	160.0	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
17	508,802	6,988,487	146.6	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
18	507,501	6,987,253	157.7	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
19	508,050	6,987,256	183.5	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
20	508,524	6,987,415	172.0	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
21	509,014	6,987,821	157.5	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
22	509,520	6,988,245	167.0	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
23	509,545	6,988,903	141.8	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f
24	510,011	6,988,431	139.4	VESTAS V172-7.2 (3rd Oct)...	Yes	VESTAS	V172-7.2 (3rd Oct)-7,200	7,200	200.0	200.0	USER	Level PO7200-0S	8.0	102.5	8.0	102.5	f

f) From other hub height

Calculation Results

Sound level

Noise sensitive area No.	Name	East	North	Z	Immission height	Most critical demand Frequency	Noise	Predicted sound level WTG noise	Demands fulfilled ? Noise
				[m]	[m]	[Hz]	[dB]	[dB]	
HH Etelälahti 2	Noise sensitive point: Finnish normal frequency - User defined (305)	503,994	6,989,467	133.0	4.0	63.0	42.00	35.36	Yes
HH Etelälahti 5	Noise sensitive point: Finnish normal frequency - User defined (303)	503,879	6,989,692	132.9	4.0	63.0	42.00	34.88	Yes
HH Eteläniemi 1	Noise sensitive point: Finnish normal frequency - User defined (304)	504,445	6,989,536	135.3	4.0	63.0	42.00	36.79	Yes
HH Eteläniemi 2	Noise sensitive point: Finnish normal frequency - User defined (284)	504,526	6,989,762	133.6	4.0	63.0	42.00	36.85	Yes
HH Haukijärvi 1	Noise sensitive point: Finnish normal frequency - User defined (295)	504,507	6,990,771	135.5	4.0	63.0	42.00	35.56	Yes
HH Haukijärvi 2	Noise sensitive point: Finnish normal frequency - User defined (296)	504,502	6,990,875	137.3	4.0	63.0	42.00	35.39	Yes
HH Haukijärvi 3	Noise sensitive point: Finnish normal frequency - User defined (294)	504,343	6,991,054	134.4	4.0	63.0	42.00	34.67	Yes
HH Hiekkaranta	Noise sensitive point: Finnish normal frequency - User defined (300)	503,729	6,990,045	133.7	4.0	63.0	42.00	34.20	Yes
HH Iso Mäkijärvi 1	Noise sensitive point: Finnish normal frequency - User defined (292)	508,878	6,991,419	127.5	4.0	63.0	42.00	34.76	Yes
HH Kallioniemi 2	Noise sensitive point: Finnish normal frequency - User defined (290)	508,375	6,991,822	113.0	4.0	63.0	42.00	34.56	Yes

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Main Result

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

...continued from previous page

Noise sensitive area No.	Name	East	North	Z	Immission height	Most critical demand Frequency	Most critical demand Noise	Predicted sound level WTG noise	Demands fulfilled ? Noise
				[m]	[m]	[Hz]	[dB]	[dB]	
HH Kauvanjärvi 5	Noise sensitive point: Finnish normal frequency - User defined (301)	512,006	6,988,865	103.6	4.0	63.0	42.00	33.09	Yes
HH Kellarimäentie	Noise sensitive point: Finnish normal frequency - User defined (331)	510,437	6,990,387	134.4	4.0	63.0	42.00	34.82	Yes
HH Koivuharju	Noise sensitive point: Finnish normal frequency - User defined (281)	506,199	6,984,607	136.1	4.0	63.0	42.00	32.96	Yes
HH Koivula 3	Noise sensitive point: Finnish normal frequency - User defined (291)	507,929	6,991,452	116.7	4.0	63.0	42.00	36.13	Yes
HH Korsu 1	Noise sensitive point: Finnish normal frequency - User defined (299)	511,781	6,990,650	115.5	4.0	63.0	42.00	31.85	Yes
HH Kuusela	Noise sensitive point: Finnish normal frequency - User defined (298)	503,785	6,987,116	121.7	4.0	63.0	42.00	33.98	Yes
HH Lammaslahti 2	Noise sensitive point: Finnish normal frequency - User defined (283)	506,054	6,985,044	137.6	4.0	63.0	42.00	33.85	Yes
HH Lehtoharju 2	Noise sensitive point: Finnish normal frequency - User defined (293)	507,975	6,984,227	177.6	4.0	63.0	42.00	32.58	Yes
HH Leinolanlahti	Noise sensitive point: Finnish normal frequency - User defined (297)	511,109	6,991,156	118.0	4.0	63.0	42.00	32.25	Yes
HH Mustalahti 1	Noise sensitive point: Finnish normal frequency - User defined (280)	506,652	6,984,134	136.9	4.0	63.0	42.00	32.18	Yes
HH Mustalahti 6	Noise sensitive point: Finnish normal frequency - User defined (282)	506,623	6,984,659	144.1	4.0	63.0	42.00	33.34	Yes
HH Pajaniemi 1	Noise sensitive point: Finnish normal frequency - User defined (289)	508,263	6,991,335	111.0	4.0	63.0	42.00	35.84	Yes
HH Pieni Mäkijärvi	Noise sensitive point: Finnish normal frequency - User defined (287)	509,646	6,991,011	128.0	4.0	63.0	42.00	34.62	Yes
HH Pohjoispäänsuo	Noise sensitive point: Finnish normal frequency - User defined (285)	505,736	6,985,245	135.1	4.0	63.0	42.00	34.00	Yes
HH Rampsunniemi	Noise sensitive point: Finnish normal frequency - User defined (302)	512,334	6,989,169	103.7	4.0	63.0	42.00	32.12	Yes
HH Rantala 1	Noise sensitive point: Finnish normal frequency - User defined (288)	507,480	6,992,179	111.7	4.0	63.0	42.00	34.81	Yes
HH Suonpää 1	Noise sensitive point: Finnish normal frequency - User defined (286)	504,003	6,986,640	125.8	4.0	63.0	42.00	33.86	Yes
HH Viitajärvi 3	Noise sensitive point: Finnish normal frequency - User defined (306)	510,367	6,986,315	153.1	4.0	63.0	42.00	35.16	Yes
RH Haukijärvi 1	Noise sensitive point: Finnish normal frequency - User defined (322)	503,550	6,990,267	137.8	4.0	63.0	42.00	33.57	Yes
RH Hiekkala	Noise sensitive point: Finnish normal frequency - User defined (311)	509,639	6,991,647	116.1	4.0	63.0	42.00	33.36	Yes
RH Honkala	Noise sensitive point: Finnish normal frequency - User defined (329)	511,077	6,986,393	167.2	4.0	63.0	42.00	33.78	Yes
RH Kauvanjärvi 2	Noise sensitive point: Finnish normal frequency - User defined (324)	512,325	6,988,609	104.5	4.0	63.0	42.00	32.34	Yes
RH Kirnumäki	Noise sensitive point: Finnish normal frequency - User defined (307)	504,794	6,985,307	151.2	4.0	63.0	42.00	32.95	Yes
RH Koivuniemi	Noise sensitive point: Finnish normal frequency - User defined (330)	506,372	6,984,325	138.7	4.0	63.0	42.00	32.45	Yes
RH Kotiranta	Noise sensitive point: Finnish normal frequency - User defined (312)	508,315	6,991,192	117.9	4.0	63.0	42.00	36.09	Yes
RH Leväniemi	Noise sensitive point: Finnish normal frequency - User defined (325)	512,094	6,989,693	101.1	4.0	63.0	42.00	32.28	Yes
RH Mikkola	Noise sensitive point: Finnish normal frequency - User defined (328)	511,477	6,989,862	101.5	4.0	63.0	42.00	33.53	Yes
RH Mäkelä	Noise sensitive point: Finnish normal frequency - User defined (315)	507,841	6,991,773	110.5	4.0	63.0	42.00	35.43	Yes
RH Mäntylä	Noise sensitive point: Finnish normal frequency - User defined (317)	503,784	6,987,891	118.4	4.0	63.0	42.00	34.73	Yes
RH Niskala	Noise sensitive point: Finnish normal frequency - User defined (326)	504,198	6,988,992	136.4	4.0	63.0	42.00	36.29	Yes
RH Pajaniemi	Noise sensitive point: Finnish normal frequency - User defined (316)	508,448	6,991,378	119.3	4.0	63.0	42.00	35.45	Yes
RH Purola	Noise sensitive point: Finnish normal frequency - User defined (319)	505,527	6,992,413	136.4	4.0	63.0	42.00	34.15	Yes
RH Rinne 1	Noise sensitive point: Finnish normal frequency - User defined (314)	507,984	6,991,040	122.5	4.0	63.0	42.00	37.10	Yes
RH Rinne 2	Noise sensitive point: Finnish normal frequency - User defined (313)	508,027	6,991,194	122.5	4.0	63.0	42.00	36.61	Yes
RH Riuttalantie 2	Noise sensitive point: Finnish normal frequency - User defined (323)	505,986	6,983,903	144.9	4.0	63.0	42.00	31.40	Yes
RH Riuttasjärvi	Noise sensitive point: Finnish normal frequency - User defined (308)	506,280	6,984,785	154.5	4.0	63.0	42.00	33.42	Yes
RH Ruunaharju	Noise sensitive point: Finnish normal frequency - User defined (321)	511,546	6,990,671	118.2	4.0	63.0	42.00	32.24	Yes
RH Suoniemi	Noise sensitive point: Finnish normal frequency - User defined (327)	511,736	6,989,254	102.9	4.0	63.0	42.00	33.57	Yes
RH Suonpää	Noise sensitive point: Finnish normal frequency - User defined (309)	503,816	6,986,791	120.3	4.0	63.0	42.00	33.65	Yes
RH Tuomaala	Noise sensitive point: Finnish normal frequency - User defined (310)	507,154	6,992,433	113.8	4.0	63.0	42.00	34.39	Yes
RH Törmäharju 2	Noise sensitive point: Finnish normal frequency - User defined (318)	503,481	6,988,712	118.1	4.0	63.0	42.00	34.10	Yes
RH Yläpelto	Noise sensitive point: Finnish normal frequency - User defined (320)	511,983	6,990,235	102.2	4.0	63.0	42.00	31.97	Yes

*)Spectral distribution, please see details in report "Detailed results"

Distances (m)

NSA	WTG 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
HH Etelälahti 2	2723	2160	2664	2731	3209	1863	2473	2828	2070	2443	2768	3317	3668	3485	4206	4707	4907	4148	4619	4974	5283	5660
HH Etelälahti 5	2700	2233	2695	2812	3311	2052	2640	2961	2304	2651	2999	3545	3876	3673	4401	4891	5068	4367	4830	5173	5465	5824
HH Eteläniemi 1	2322	1706	2224	2275	2754	1473	2053	2382	1798	2088	2477	3012	3308	3090	3823	4307	4482	3815	4265	4598	4880	5237
HH Eteläniemi 2	2119	1582	2060	2161	2663	1521	2054	2332	1932	2161	2592	3113	3366	3115	3857	4321	4462	3892	4324	4636	4889	5219
HH Haukijärvi 1	1739	1774	1964	2308	2865	2274	2638	2722	2836	2928	3440	3919	4050	3708	4458	4847	4864	4619	4990	5234	5386	5613
HH Haukijärvi 2	1732	1828	1987	2351	2909	2365	2715	2783	2934	3017	3535	4010	4131	3782	4531	4912	4918	4702	5067	5305	5448	5665
HH Haukijärvi 3	1885	2056	2182	2568	3126	2601	2954	3015	3161	3254	3768	4246	4370	4020	4769	5147	5145	4942	5306	5543	5680	5889
HH Hiekkaranta	2684	2365	2759	2948	3472	2345	2898	3170	2656	2966	3345	3885	4185	3953	4692	5164	5307	4693	5142	5469	5733	6064
HH Iso Mäkijärvi 1	2679	3136	2596	2630	2366	4026	3495	2932	4637	4083	4552	4507	3962	3496	3705	3494	2933	4387	4244	4019	3600	3238
HH Kallioniemi 2	2291	2935	2337	2506	2377	3943	3485	2937	4609	4103	4622	4654	4172	3679	4001	3871	3362	4652	4577	4409	4051	3756
HH Kauvanjärvi 5	6168	6016	5788	5445	4899	6247	5596	5209	6456	5856	5938	5518	4862	4757	4252	3672	3226	4784	4271	3772	3169	2562
HH Kellarimäentie	4257	4363	3987	3783	3308	4918	4278	3770	5339	4723	5011	4757	4096	3779	3604	3144	2507	4295	3938	3535	2935	2331
HH Koivuharju	6416	5369	5892	5393	5248	4287	4342	4765	3594	3754	3152	2924	3366	3856	3652	4030	4671	2948	3231	3645	4272	4925
HH Koivula 3	1754	2356	1761	1933	1845	3371	2932	2394	4047	3556	4090	4155	3712	3209	3601	3540	3091	4221	4198	4081	3790	3580
HH Korsu 1	5565	5727	5331	5148	4676	6279	5635	5135	6677	6058	6310	6014	5342	5072	4803	4287	3682	5464	5044	4591	3957	3301
HH Kuusela	4609	3675	4303	4069	4311	2642	3199	3756	2079	2692	2471	2900	3543	3694	4157	4738	5200	3718	4266	4748	5276	5844
HH Lammaslahti 2	5982	4931	5464	4975	4852	3839	3916	4355	3140	3319	2718	2525	3010	3488	3347	3767	4405	2641	2979	3424	4058	4718
HH Lehtoharju 2	7018	6048	6449	5897	5590	5146	4970	5234	4591	4510	3966	3523	3644	4140	3626	3754	4339	3063	3030	3235	3741	4304
HH Leinolanlahti	4883	5153	4704	4586	4160	5817	5193	4663	6285	5674	5993	5761	5105	4771	4623	4165	3528	5315	4957	4548	3939	3317
HH Mustalahti 1	6903	5868	6363	5846	5654	4821	4816	5201	4154	4255	3657	3362	3718	4222	3914	4219	4855	3233	3421	3778	4379	5013
HH Mustalahti 6	6377	5342	5837	5321	5134	4300	4290	4677	3640	3729	3133	2836	3206	3709	3429	3764	4404	2738	2963	3347	3964	4609
HH Pajaniemi 1	2059	2561	1998	2087	1905	3513	3025	2470	4159	3636	4143	4161	3673	3181	3505	3389	2899	4153	4084	3929	3593	3336
HH Pieni Mäkijärvi	3419	3701	3236	3144	2756	4437	3840	3289	4964	4370	4759	4613	3999	3591	3621	3286	2662	4327	4080	3767	3252	2769
HH Pohjoispäänsuo	5800	4744	5297	4827	4745	3627	3760	4228	2908	3147	2552	2433	2977	3432	3373	3832	4462	2673	3065	3533	4169	4828
HH Rampsunniemi	6382	6293	6030	5716	5179	6582	5928	5519	6821	6215	6322	5915	5254	5126	4648	4071	3598	5199	4692	4194	3583	2962
HH Rantala 1	1704	2604	1974	2342	2435	3728	3407	2923	4451	4036	4610	4755	4383	3875	4346	4338	3922	4926	4955	4877	4620	4432
HH Suonpää 1	4916	3936	4566	4278	4461	2840	3332	3895	2190	2769	2440	2792	3459	3678	4059	4636	5142	3552	4093	4587	5148	5745
HH Viitajärvi 3	6269	5627	5726	5201	4688	5270	4751	4658	5118	4668	4438	3890	3443	3675	2927	2521	2677	3016	2502	2147	2025	2108
RH Haukijärvi 1	2783	2560	2910	3139	3674	2613	3151	3399	2940	3241	3628	4166	4456	4213	4955	5419	5545	4969	5414	5733	5986	6303
RH Hiekkala	3468	3920	3390	3400	3091	4770	4211	3649	5351	4777	5210	5110	4521	4087	4184	3882	3269	4886	4669	4376	3876	3404

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Main Result

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

...continued from previous page

	WTG																					
NSA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
RH Honkala	6705	6137	6181	5677	5144	5867	5318	5174	5761	5285	5092	4552	4066	4252	3517	3054	3092	3678	3148	2750	2509	2419
RH Kauvanjärvi 2	6558	6379	6168	5813	5263	6571	5924	5554	6751	6159	6212	5773	5127	5053	4512	3931	3525	5011	4484	3984	3404	2829
RH Kirnumäki	5894	4846	5445	5038	5058	3693	3980	4505	2952	3351	2813	2876	3509	3899	3997	4512	5116	3334	3795	4285	4912	5565
RH Koivuniemi	6700	5657	6169	5663	5498	4588	4619	5026	3904	4041	3440	3183	3588	4086	3834	4179	4819	3138	3377	3765	4382	5027
RH Kotiranta	2094	2533	1990	2038	1820	3452	2946	2388	4085	3551	4047	4050	3551	3063	3369	3244	2749	4022	3944	3783	3442	3184
RH Leväniemi	6016	6008	5699	5426	4906	6388	5733	5289	6685	6071	6231	5862	5190	5008	4602	4040	3507	5201	4722	4235	3605	2954
RH Mikkola	5376	5385	5065	4802	4289	5803	5149	4689	6131	5513	5707	5366	4692	4474	4123	3580	3008	4755	4305	3835	3199	2539
RH Mäkelä	1778	2507	1889	2138	2114	3571	3170	2647	4266	3798	4347	4438	4014	3509	3922	3870	3424	4533	4521	4411	4122	3907
RH Mäntylä	3973	3111	3727	3567	3885	2205	2830	3359	1824	2433	2391	2904	3479	3522	4093	4666	5053	3772	4313	4764	5230	5747
RH Niskala	2872	2135	2708	2667	3088	1565	2212	2642	1626	2071	2326	2881	3286	3157	3851	4377	4631	3732	4224	4604	4955	5373
RH Pajaniemi	2249	2742	2184	2258	2049	3676	3175	2617	4313	3780	4276	4275	3769	3284	3573	3427	2913	4233	4141	3964	3602	3312
RH Purola	1556	2503	2130	2691	3129	3549	3579	3341	4264	4102	4698	5046	4927	4463	5131	5334	5113	5525	5740	5828	5765	5772
RH Rinne 1	1757	2171	1627	1684	1506	3107	2622	2069	3754	3235	3749	3784	3319	2820	3191	3124	2681	3818	3784	3665	3380	3189
RH Rinne 2	1807	2286	1724	1817	1660	3246	2771	2221	3900	3387	3904	3943	3479	2980	3346	3271	2816	3976	3938	3812	3515	3306
RH Riuttalantie 2	7125	6073	6607	6115	5981	4973	5059	5492	4264	4462	3860	3655	4101	4592	4378	4739	5379	3676	3937	4333	4951	5598
RH Riuttasjärvi	6239	5193	5711	5210	5059	4120	4161	4578	3435	3578	2976	2737	3172	3663	3457	3838	4479	2753	3039	3457	4085	4740
RH Ruunaharju	5329	5496	5097	4918	4450	6060	5418	4914	6468	5850	6112	5827	5156	4875	4627	4121	3507	5295	4887	4442	3812	3161
RH Suoniemi	5785	5688	5428	5112	4575	5989	5335	4919	6245	5636	5762	5372	4704	4554	4106	3535	3033	4684	4193	3701	3076	2435
RH Suonpää	4872	3914	4545	4283	4495	2847	3371	3933	2234	2830	2546	2930	3590	3783	4196	4776	5266	3714	4259	4749	5298	5886
RH Tuomaala	1686	2677	2063	2500	2671	3825	3567	3119	4560	4189	4776	4962	4633	4126	4638	4665	4276	5192	5253	5202	4972	4810
RH Törmäharju 2	3591	2902	3464	3438	3854	2284	2939	3394	2182	2713	2854	3404	3889	3821	4479	5027	5326	4277	4795	5207	5604	6057
RH Yläpelto	5808	5895	5537	5313	4816	6371	5720	5243	6725	6106	6317	5986	5312	5081	4748	4207	3630	5383	4934	4463	3827	3167

	WTG	
NSA	23	24
HH Etelälahti 2	5580	6106
HH Etelälahti 5	5721	6260
HH Eteläniemi 1	5139	5675
HH Eteläniemi 2	5092	5644
HH Haukijärvi 1	5372	5980
HH Haukijärvi 2	5414	6027
HH Haukijärvi 3	5629	6245
HH Hiekkaranta	5927	6486
HH Iso Mäkijärvi 1	2603	3196
HH Kallioniemi 2	3145	3765
HH Kauvanjärvi 5	2462	2042
HH Kellarimäentie	1732	2003
HH Koivuharju	5444	5399
HH Koivula 3	3019	3669
HH Korsu 1	2838	2839
HH Kuusela	6030	6363
HH Lammaslahti 2	5203	5208
HH Lehtoharju 2	4932	4671
HH Leinolanlahti	2743	2938
HH Mustalahti 1	5578	5454
HH Mustalahti 6	5152	5069
HH Pajaniemi 1	2749	3389
HH Pieni Mäkijärvi	2111	2606
HH Pohjoispäänsuo	5280	5331
HH Rampsunniemi	2802	2438
HH Rantala 1	3873	4523
HH Suonpää 1	5986	6269
HH Viitajärvi 3	2715	2145
RH Haukijärvi 1	6148	6716
RH Hiekkala	2746	3237
RH Honkala	2940	2299
RH Kauvanjärvi 2	2796	2321
RH Kirnumäki	5958	6081
RH Koivuniemi	5569	5486
RH Kotiranta	2599	3240
RH Leväniemi	2669	2436
RH Mikkola	2157	2049
RH Mäkelä	3338	3985
RH Mäntylä	5849	6250
RH Niskala	5347	5839
RH Pajaniemi	2708	3336
RH Purola	5335	5997

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Main Result

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019)

...continued from previous page

	WTG	
NSA	23	24
RH Rinne 1	2646	3304
RH Rinne 2	2749	3402
RH Riuttalantie 2	6137	6058
RH Riuttasjärvi	5255	5216
RH Ruunaharju	2670	2716
RH Suoniemi	2219	1911
RH Suonpää	6105	6408
RH Tuomaala	4263	4917
RH Törmäharju 2	6067	6536
RH Yläpelto	2778	2673

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Assumptions

Cmet: Meteorological correction

Calculation Results

Noise sensitive area: HH Etelälahti 2 Noise sensitive point: Finnish normal frequency - User defined (305)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,723	2,731						
1			20	28.03	59.3	0.00	5.60	7.60
1			25	27.17	65.2	0.05	5.40	8.30
1			32	26.15	70.6	0.08	5.20	9.20
1			40	25.39	76.0	0.14	5.00	10.30
1			50	24.34	80.9	0.19	4.70	11.50
1			63	22.73	85.3	0.30	4.30	13.00
1			80	20.29	89.1	0.44	3.70	14.80
1			100	17.14	92.3	0.68	3.00	16.80
1			125	13.24	94.9	1.04	1.80	18.80
1			160	7.97	97.0	1.56	0.00	21.10
1			200	4.54	98.4	2.24	0.00	22.80
10	2,443	2,452						
10			20	28.96	59.3	0.00	5.60	7.60
10			25	28.12	65.2	0.05	5.40	8.30
10			32	27.09	70.6	0.07	5.20	9.20
10			40	26.34	76.0	0.12	5.00	10.30
10			50	25.29	80.9	0.17	4.70	11.50
10			63	23.69	85.3	0.27	4.30	13.00
10			80	21.27	89.1	0.39	3.70	14.80
10			100	18.15	92.3	0.61	3.00	16.80
10			125	14.28	94.9	0.93	1.80	18.80
10			160	9.06	97.0	1.40	0.00	21.10
10			200	5.70	98.4	2.01	0.00	22.80
11	2,768	2,776						
11			20	27.89	59.3	0.00	5.60	7.60
11			25	27.03	65.2	0.06	5.40	8.30
11			32	26.00	70.6	0.08	5.20	9.20
11			40	25.25	76.0	0.14	5.00	10.30
11			50	24.19	80.9	0.19	4.70	11.50
11			63	22.58	85.3	0.31	4.30	13.00
11			80	20.14	89.1	0.44	3.70	14.80
11			100	16.99	92.3	0.69	3.00	16.80
11			125	13.08	94.9	1.05	1.80	18.80
11			160	7.80	97.0	1.58	0.00	21.10
11			200	4.36	98.4	2.28	0.00	22.80
12	3,317	3,323						
12			20	26.32	59.3	0.00	5.60	7.60
12			25	25.46	65.2	0.07	5.40	8.30
12			32	24.42	70.6	0.10	5.20	9.20
12			40	23.66	76.0	0.17	5.00	10.30
12			50	22.59	80.9	0.23	4.70	11.50
12			63	20.95	85.3	0.37	4.30	13.00
12			80	18.49	89.1	0.53	3.70	14.80
12			100	15.29	92.3	0.83	3.00	16.80
12			125	11.31	94.9	1.26	1.80	18.80
12			160	5.93	97.0	1.89	0.00	21.10
12			200	2.34	98.4	2.73	0.00	22.80
13	3,668	3,676						
13			20	25.45	59.3	0.00	5.60	7.60
13			25	24.57	65.2	0.07	5.40	8.30
13			32	23.54	70.6	0.11	5.20	9.20
13			40	22.76	76.0	0.18	5.00	10.30
13			50	21.69	80.9	0.26	4.70	11.50
13			63	20.04	85.3	0.40	4.30	13.00
13			80	17.56	89.1	0.59	3.70	14.80
13			100	14.33	92.3	0.92	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			125	10.30	94.9	1.40	1.80	18.80
13			160	4.85	97.0	2.10	0.00	21.10
13			200	1.18	98.4	3.01	0.00	22.80
14	3,485	3,493						
14			20	25.89	59.3	0.00	5.60	7.60
14			25	25.02	65.2	0.07	5.40	8.30
14			32	23.99	70.6	0.10	5.20	9.20
14			40	23.22	76.0	0.17	5.00	10.30
14			50	22.14	80.9	0.24	4.70	11.50
14			63	20.50	85.3	0.38	4.30	13.00
14			80	18.03	89.1	0.56	3.70	14.80
14			100	14.81	92.3	0.87	3.00	16.80
14			125	10.81	94.9	1.33	1.80	18.80
14			160	5.40	97.0	1.99	0.00	21.10
14			200	1.77	98.4	2.86	0.00	22.80
15	4,206	4,214						
15			20	24.26	59.3	0.00	5.60	7.60
15			25	23.38	65.2	0.08	5.40	8.30
15			32	22.34	70.6	0.13	5.20	9.20
15			40	21.55	76.0	0.21	5.00	10.30
15			50	20.46	80.9	0.29	4.70	11.50
15			63	18.80	85.3	0.46	4.30	13.00
15			80	16.28	89.1	0.67	3.70	14.80
15			100	13.01	92.3	1.05	3.00	16.80
15			125	8.91	94.9	1.60	1.80	18.80
15			160	3.36	97.0	2.40	0.00	21.10
15			200	-0.45	98.4	3.46	0.00	22.80
16	4,707	4,712						
16			20	23.29	59.3	0.00	5.60	7.60
16			25	22.40	65.2	0.09	5.40	8.30
16			32	21.35	70.6	0.14	5.20	9.20
16			40	20.55	76.0	0.24	5.00	10.30
16			50	19.46	80.9	0.33	4.70	11.50
16			63	17.77	85.3	0.52	4.30	13.00
16			80	15.23	89.1	0.75	3.70	14.80
16			100	11.91	92.3	1.18	3.00	16.80
16			125	7.75	94.9	1.79	1.80	18.80
16			160	2.10	97.0	2.69	0.00	21.10
16			200	-1.83	98.4	3.86	0.00	22.80
17	4,907	4,912						
17			20	22.93	59.3	0.00	5.60	7.60
17			25	22.03	65.2	0.10	5.40	8.30
17			32	20.98	70.6	0.15	5.20	9.20
17			40	20.18	76.0	0.25	5.00	10.30
17			50	19.08	80.9	0.34	4.70	11.50
17			63	17.39	85.3	0.54	4.30	13.00
17			80	14.84	89.1	0.79	3.70	14.80
17			100	11.50	92.3	1.23	3.00	16.80
17			125	7.31	94.9	1.87	1.80	18.80
17			160	1.63	97.0	2.80	0.00	21.10
17			200	-2.35	98.4	4.03	0.00	22.80
18	4,148	4,154						
18			20	24.39	59.3	0.00	5.60	7.60
18			25	23.50	65.2	0.08	5.40	8.30
18			32	22.46	70.6	0.12	5.20	9.20
18			40	21.68	76.0	0.21	5.00	10.30
18			50	20.59	80.9	0.29	4.70	11.50
18			63	18.93	85.3	0.46	4.30	13.00
18			80	16.42	89.1	0.66	3.70	14.80
18			100	13.14	92.3	1.04	3.00	16.80
18			125	9.05	94.9	1.58	1.80	18.80
18			160	3.51	97.0	2.37	0.00	21.10
18			200	-0.28	98.4	3.41	0.00	22.80
19	4,619	4,626						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			20	23.45	59.3	0.00	5.60	7.60
19			25	22.56	65.2	0.09	5.40	8.30
19			32	21.51	70.6	0.14	5.20	9.20
19			40	20.72	76.0	0.23	5.00	10.30
19			50	19.62	80.9	0.32	4.70	11.50
19			63	17.94	85.3	0.51	4.30	13.00
19			80	15.41	89.1	0.74	3.70	14.80
19			100	12.09	92.3	1.16	3.00	16.80
19			125	7.94	94.9	1.76	1.80	18.80
19			160	2.31	97.0	2.64	0.00	21.10
19			200	-1.60	98.4	3.79	0.00	22.80
2	2,160	2,170						
2			20	30.02	59.3	0.00	5.60	7.60
2			25	29.18	65.2	0.04	5.40	8.30
2			32	28.16	70.6	0.07	5.20	9.20
2			40	27.42	76.0	0.11	5.00	10.30
2			50	26.37	80.9	0.15	4.70	11.50
2			63	24.78	85.3	0.24	4.30	13.00
2			80	22.37	89.1	0.35	3.70	14.80
2			100	19.28	92.3	0.54	3.00	16.80
2			125	15.45	94.9	0.82	1.80	18.80
2			160	10.28	97.0	1.24	0.00	21.10
2			200	6.99	98.4	1.78	0.00	22.80
20	4,974	4,979						
20			20	22.81	59.3	0.00	5.60	7.60
20			25	21.91	65.2	0.10	5.40	8.30
20			32	20.86	70.6	0.15	5.20	9.20
20			40	20.06	76.0	0.25	5.00	10.30
20			50	18.96	80.9	0.35	4.70	11.50
20			63	17.26	85.3	0.55	4.30	13.00
20			80	14.71	89.1	0.80	3.70	14.80
20			100	11.36	92.3	1.24	3.00	16.80
20			125	7.16	94.9	1.89	1.80	18.80
20			160	1.47	97.0	2.84	0.00	21.10
20			200	-2.53	98.4	4.08	0.00	22.80
21	5,283	5,288						
21			20	22.29	59.3	0.00	5.60	7.60
21			25	21.38	65.2	0.11	5.40	8.30
21			32	20.33	70.6	0.16	5.20	9.20
21			40	19.53	76.0	0.26	5.00	10.30
21			50	18.42	80.9	0.37	4.70	11.50
21			63	16.70	85.3	0.58	4.30	13.00
21			80	14.14	89.1	0.85	3.70	14.80
21			100	10.76	92.3	1.32	3.00	16.80
21			125	6.53	94.9	2.01	1.80	18.80
21			160	0.77	97.0	3.01	0.00	21.10
21			200	-3.30	98.4	4.34	0.00	22.80
22	5,660	5,664						
22			20	21.69	59.3	0.00	5.60	7.60
22			25	20.78	65.2	0.11	5.40	8.30
22			32	19.72	70.6	0.17	5.20	9.20
22			40	18.91	76.0	0.28	5.00	10.30
22			50	17.79	80.9	0.40	4.70	11.50
22			63	16.07	85.3	0.62	4.30	13.00
22			80	13.48	89.1	0.91	3.70	14.80
22			100	10.07	92.3	1.42	3.00	16.80
22			125	5.78	94.9	2.15	1.80	18.80
22			160	-0.04	97.0	3.23	0.00	21.10
22			200	-4.21	98.4	4.64	0.00	22.80
23	5,580	5,583						
23			20	21.82	59.3	0.00	5.60	7.60
23			25	20.91	65.2	0.11	5.40	8.30
23			32	19.85	70.6	0.17	5.20	9.20
23			40	19.04	76.0	0.28	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			50	17.92	80.9	0.39	4.70	11.50
23			63	16.20	85.3	0.61	4.30	13.00
23			80	13.62	89.1	0.89	3.70	14.80
23			100	10.22	92.3	1.40	3.00	16.80
23			125	5.94	94.9	2.12	1.80	18.80
23			160	0.13	97.0	3.18	0.00	21.10
23			200	-4.02	98.4	4.58	0.00	22.80
24	6,106	6,109						
24			20	21.04	59.3	0.00	5.60	7.60
24			25	20.11	65.2	0.12	5.40	8.30
24			32	19.05	70.6	0.18	5.20	9.20
24			40	18.23	76.0	0.31	5.00	10.30
24			50	17.10	80.9	0.43	4.70	11.50
24			63	15.36	85.3	0.67	4.30	13.00
24			80	12.75	89.1	0.98	3.70	14.80
24			100	9.30	92.3	1.53	3.00	16.80
24			125	4.96	94.9	2.32	1.80	18.80
24			160	-0.95	97.0	3.48	0.00	21.10
24			200	-5.23	98.4	5.01	0.00	22.80
3	2,664	2,672						
3			20	28.22	59.3	0.00	5.60	7.60
3			25	27.36	65.2	0.05	5.40	8.30
3			32	26.34	70.6	0.08	5.20	9.20
3			40	25.58	76.0	0.13	5.00	10.30
3			50	24.53	80.9	0.19	4.70	11.50
3			63	22.92	85.3	0.29	4.30	13.00
3			80	20.49	89.1	0.43	3.70	14.80
3			100	17.35	92.3	0.67	3.00	16.80
3			125	13.45	94.9	1.02	1.80	18.80
3			160	8.19	97.0	1.52	0.00	21.10
3			200	4.77	98.4	2.19	0.00	22.80
4	2,731	2,739						
4			20	28.00	59.3	0.00	5.60	7.60
4			25	27.15	65.2	0.05	5.40	8.30
4			32	26.12	70.6	0.08	5.20	9.20
4			40	25.37	76.0	0.14	5.00	10.30
4			50	24.31	80.9	0.19	4.70	11.50
4			63	22.70	85.3	0.30	4.30	13.00
4			80	20.26	89.1	0.44	3.70	14.80
4			100	17.11	92.3	0.68	3.00	16.80
4			125	13.21	94.9	1.04	1.80	18.80
4			160	7.94	97.0	1.56	0.00	21.10
4			200	4.50	98.4	2.25	0.00	22.80
5	3,209	3,216						
5			20	26.61	59.3	0.00	5.60	7.60
5			25	25.74	65.2	0.06	5.40	8.30
5			32	24.71	70.6	0.10	5.20	9.20
5			40	23.95	76.0	0.16	5.00	10.30
5			50	22.88	80.9	0.23	4.70	11.50
5			63	21.25	85.3	0.35	4.30	13.00
5			80	18.79	89.1	0.51	3.70	14.80
5			100	15.60	92.3	0.80	3.00	16.80
5			125	11.63	94.9	1.22	1.80	18.80
5			160	6.27	97.0	1.83	0.00	21.10
5			200	2.72	98.4	2.64	0.00	22.80
6	1,863	1,875						
6			20	31.29	59.3	0.00	5.60	7.60
6			25	30.45	65.2	0.04	5.40	8.30
6			32	29.44	70.6	0.06	5.20	9.20
6			40	28.70	76.0	0.09	5.00	10.30
6			50	27.66	80.9	0.13	4.70	11.50
6			63	26.08	85.3	0.21	4.30	13.00
6			80	23.69	89.1	0.30	3.70	14.80
6			100	20.62	92.3	0.47	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			125	16.83	94.9	0.71	1.80	18.80
6			160	11.72	97.0	1.07	0.00	21.10
6			200	8.50	98.4	1.54	0.00	22.80
7	2,473	2,481						
7			20	28.86	59.3	0.00	5.60	7.60
7			25	28.01	65.2	0.05	5.40	8.30
7			32	26.99	70.6	0.07	5.20	9.20
7			40	26.24	76.0	0.12	5.00	10.30
7			50	25.18	80.9	0.17	4.70	11.50
7			63	23.58	85.3	0.27	4.30	13.00
7			80	21.16	89.1	0.40	3.70	14.80
7			100	18.04	92.3	0.62	3.00	16.80
7			125	14.16	94.9	0.94	1.80	18.80
7			160	8.94	97.0	1.41	0.00	21.10
7			200	5.57	98.4	2.03	0.00	22.80
8	2,828	2,835						
8			20	27.70	59.3	0.00	5.60	7.60
8			25	26.85	65.2	0.06	5.40	8.30
8			32	25.82	70.6	0.09	5.20	9.20
8			40	25.06	76.0	0.14	5.00	10.30
8			50	24.00	80.9	0.20	4.70	11.50
8			63	22.39	85.3	0.31	4.30	13.00
8			80	19.95	89.1	0.45	3.70	14.80
8			100	16.79	92.3	0.71	3.00	16.80
8			125	12.87	94.9	1.08	1.80	18.80
8			160	7.58	97.0	1.62	0.00	21.10
8			200	4.12	98.4	2.33	0.00	22.80
9	2,070	2,081						
9			20	30.39	59.3	0.00	5.60	7.60
9			25	29.55	65.2	0.04	5.40	8.30
9			32	28.53	70.6	0.06	5.20	9.20
9			40	27.79	76.0	0.10	5.00	10.30
9			50	26.74	80.9	0.15	4.70	11.50
9			63	25.16	85.3	0.23	4.30	13.00
9			80	22.76	89.1	0.33	3.70	14.80
9			100	19.67	92.3	0.52	3.00	16.80
9			125	15.85	94.9	0.79	1.80	18.80
9			160	10.70	97.0	1.19	0.00	21.10
9			200	7.43	98.4	1.71	0.00	22.80
Sum								
Sum			20	40.69				
Sum			25	39.83				
Sum			32	38.80				
Sum			40	38.04				
Sum			50	36.98				
Sum			63	35.36				
Sum			80	32.92				
Sum			100	29.76				
Sum			125	25.83				
Sum			160	20.54				
Sum			200	17.09				

Noise sensitive area: HH Etelälahti 5 Noise sensitive point: Finnish normal frequency - User defined (303)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,700	2,708						
1			20	28.10	59.3	0.00	5.60	7.60
1			25	27.25	65.2	0.05	5.40	8.30
1			32	26.22	70.6	0.08	5.20	9.20
1			40	25.47	76.0	0.14	5.00	10.30
1			50	24.41	80.9	0.19	4.70	11.50
1			63	22.80	85.3	0.30	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			80	20.37	89.1	0.43	3.70	14.80
1			100	17.22	92.3	0.68	3.00	16.80
1			125	13.32	94.9	1.03	1.80	18.80
1			160	8.05	97.0	1.54	0.00	21.10
1			200	4.63	98.4	2.22	0.00	22.80
10	2,651	2,660						
10			20	28.26	59.3	0.00	5.60	7.60
10			25	27.41	65.2	0.05	5.40	8.30
10			32	26.38	70.6	0.08	5.20	9.20
10			40	25.63	76.0	0.13	5.00	10.30
10			50	24.57	80.9	0.19	4.70	11.50
10			63	22.96	85.3	0.29	4.30	13.00
10			80	20.53	89.1	0.43	3.70	14.80
10			100	17.39	92.3	0.66	3.00	16.80
10			125	13.49	94.9	1.01	1.80	18.80
10			160	8.24	97.0	1.52	0.00	21.10
10			200	4.82	98.4	2.18	0.00	22.80
11	2,999	3,006						
11			20	27.19	59.3	0.00	5.60	7.60
11			25	26.33	65.2	0.06	5.40	8.30
11			32	25.30	70.6	0.09	5.20	9.20
11			40	24.54	76.0	0.15	5.00	10.30
11			50	23.48	80.9	0.21	4.70	11.50
11			63	21.86	85.3	0.33	4.30	13.00
11			80	19.41	89.1	0.48	3.70	14.80
11			100	16.24	92.3	0.75	3.00	16.80
11			125	12.30	94.9	1.14	1.80	18.80
11			160	6.98	97.0	1.71	0.00	21.10
11			200	3.47	98.4	2.47	0.00	22.80
12	3,545	3,551						
12			20	25.75	59.3	0.00	5.60	7.60
12			25	24.88	65.2	0.07	5.40	8.30
12			32	23.84	70.6	0.11	5.20	9.20
12			40	23.07	76.0	0.18	5.00	10.30
12			50	22.00	80.9	0.25	4.70	11.50
12			63	20.35	85.3	0.39	4.30	13.00
12			80	17.88	89.1	0.57	3.70	14.80
12			100	14.66	92.3	0.89	3.00	16.80
12			125	10.64	94.9	1.35	1.80	18.80
12			160	5.22	97.0	2.02	0.00	21.10
12			200	1.58	98.4	2.91	0.00	22.80
13	3,876	3,883						
13			20	24.97	59.3	0.00	5.60	7.60
13			25	24.09	65.2	0.08	5.40	8.30
13			32	23.06	70.6	0.12	5.20	9.20
13			40	22.28	76.0	0.19	5.00	10.30
13			50	21.20	80.9	0.27	4.70	11.50
13			63	19.54	85.3	0.43	4.30	13.00
13			80	17.05	89.1	0.62	3.70	14.80
13			100	13.80	92.3	0.97	3.00	16.80
13			125	9.74	94.9	1.48	1.80	18.80
13			160	4.26	97.0	2.21	0.00	21.10
13			200	0.53	98.4	3.18	0.00	22.80
14	3,673	3,680						
14			20	25.44	59.3	0.00	5.60	7.60
14			25	24.56	65.2	0.07	5.40	8.30
14			32	23.53	70.6	0.11	5.20	9.20
14			40	22.75	76.0	0.18	5.00	10.30
14			50	21.68	80.9	0.26	4.70	11.50
14			63	20.03	85.3	0.40	4.30	13.00
14			80	17.55	89.1	0.59	3.70	14.80
14			100	14.31	92.3	0.92	3.00	16.80
14			125	10.28	94.9	1.40	1.80	18.80
14			160	4.84	97.0	2.10	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			200	1.17	98.4	3.02	0.00	22.80
15	4,401	4,409						
15			20	23.87	59.3	0.00	5.60	7.60
15			25	22.98	65.2	0.09	5.40	8.30
15			32	21.94	70.6	0.13	5.20	9.20
15			40	21.15	76.0	0.22	5.00	10.30
15			50	20.06	80.9	0.31	4.70	11.50
15			63	18.38	85.3	0.48	4.30	13.00
15			80	15.86	89.1	0.71	3.70	14.80
15			100	12.56	92.3	1.10	3.00	16.80
15			125	8.44	94.9	1.68	1.80	18.80
15			160	2.85	97.0	2.51	0.00	21.10
15			200	-1.00	98.4	3.62	0.00	22.80
16	4,891	4,896						
16			20	22.96	59.3	0.00	5.60	7.60
16			25	22.06	65.2	0.10	5.40	8.30
16			32	21.01	70.6	0.15	5.20	9.20
16			40	20.21	76.0	0.24	5.00	10.30
16			50	19.11	80.9	0.34	4.70	11.50
16			63	17.42	85.3	0.54	4.30	13.00
16			80	14.87	89.1	0.78	3.70	14.80
16			100	11.53	92.3	1.22	3.00	16.80
16			125	7.34	94.9	1.86	1.80	18.80
16			160	1.66	97.0	2.79	0.00	21.10
16			200	-2.31	98.4	4.01	0.00	22.80
17	5,068	5,073						
17			20	22.65	59.3	0.00	5.60	7.60
17			25	21.75	65.2	0.10	5.40	8.30
17			32	20.70	70.6	0.15	5.20	9.20
17			40	19.90	76.0	0.25	5.00	10.30
17			50	18.79	80.9	0.36	4.70	11.50
17			63	17.09	85.3	0.56	4.30	13.00
17			80	14.53	89.1	0.81	3.70	14.80
17			100	11.18	92.3	1.27	3.00	16.80
17			125	6.97	94.9	1.93	1.80	18.80
17			160	1.26	97.0	2.89	0.00	21.10
17			200	-2.76	98.4	4.16	0.00	22.80
18	4,367	4,373						
18			20	23.94	59.3	0.00	5.60	7.60
18			25	23.05	65.2	0.09	5.40	8.30
18			32	22.01	70.6	0.13	5.20	9.20
18			40	21.22	76.0	0.22	5.00	10.30
18			50	20.13	80.9	0.31	4.70	11.50
18			63	18.46	85.3	0.48	4.30	13.00
18			80	15.94	89.1	0.70	3.70	14.80
18			100	12.64	92.3	1.09	3.00	16.80
18			125	8.52	94.9	1.66	1.80	18.80
18			160	2.94	97.0	2.49	0.00	21.10
18			200	-0.90	98.4	3.59	0.00	22.80
19	4,830	4,836						
19			20	23.06	59.3	0.00	5.60	7.60
19			25	22.17	65.2	0.10	5.40	8.30
19			32	21.12	70.6	0.15	5.20	9.20
19			40	20.32	76.0	0.24	5.00	10.30
19			50	19.22	80.9	0.34	4.70	11.50
19			63	17.53	85.3	0.53	4.30	13.00
19			80	14.99	89.1	0.77	3.70	14.80
19			100	11.65	92.3	1.21	3.00	16.80
19			125	7.47	94.9	1.84	1.80	18.80
19			160	1.80	97.0	2.76	0.00	21.10
19			200	-2.16	98.4	3.97	0.00	22.80
2	2,233	2,242						
2			20	29.74	59.3	0.00	5.60	7.60
2			25	28.90	65.2	0.04	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			32	27.87	70.6	0.07	5.20	9.20
2			40	27.13	76.0	0.11	5.00	10.30
2			50	26.08	80.9	0.16	4.70	11.50
2			63	24.49	85.3	0.25	4.30	13.00
2			80	22.08	89.1	0.36	3.70	14.80
2			100	18.98	92.3	0.56	3.00	16.80
2			125	15.13	94.9	0.85	1.80	18.80
2			160	9.96	97.0	1.28	0.00	21.10
2			200	6.65	98.4	1.84	0.00	22.80
20	5,173	5,179						
20			20	22.47	59.3	0.00	5.60	7.60
20			25	21.57	65.2	0.10	5.40	8.30
20			32	20.51	70.6	0.16	5.20	9.20
20			40	19.71	76.0	0.26	5.00	10.30
20			50	18.60	80.9	0.36	4.70	11.50
20			63	16.90	85.3	0.57	4.30	13.00
20			80	14.34	89.1	0.83	3.70	14.80
20			100	10.97	92.3	1.29	3.00	16.80
20			125	6.75	94.9	1.97	1.80	18.80
20			160	1.02	97.0	2.95	0.00	21.10
20			200	-3.03	98.4	4.25	0.00	22.80
21	5,465	5,470						
21			20	22.00	59.3	0.00	5.60	7.60
21			25	21.09	65.2	0.11	5.40	8.30
21			32	20.03	70.6	0.16	5.20	9.20
21			40	19.22	76.0	0.27	5.00	10.30
21			50	18.11	80.9	0.38	4.70	11.50
21			63	16.39	85.3	0.60	4.30	13.00
21			80	13.82	89.1	0.88	3.70	14.80
21			100	10.43	92.3	1.37	3.00	16.80
21			125	6.16	94.9	2.08	1.80	18.80
21			160	0.37	97.0	3.12	0.00	21.10
21			200	-3.74	98.4	4.49	0.00	22.80
22	5,824	5,828						
22			20	21.44	59.3	0.00	5.60	7.60
22			25	20.53	65.2	0.12	5.40	8.30
22			32	19.47	70.6	0.17	5.20	9.20
22			40	18.65	76.0	0.29	5.00	10.30
22			50	17.53	80.9	0.41	4.70	11.50
22			63	15.80	85.3	0.64	4.30	13.00
22			80	13.21	89.1	0.93	3.70	14.80
22			100	9.78	92.3	1.46	3.00	16.80
22			125	5.47	94.9	2.21	1.80	18.80
22			160	-0.38	97.0	3.32	0.00	21.10
22			200	-4.59	98.4	4.78	0.00	22.80
23	5,721	5,724						
23			20	21.60	59.3	0.00	5.60	7.60
23			25	20.69	65.2	0.11	5.40	8.30
23			32	19.63	70.6	0.17	5.20	9.20
23			40	18.81	76.0	0.29	5.00	10.30
23			50	17.70	80.9	0.40	4.70	11.50
23			63	15.97	85.3	0.63	4.30	13.00
23			80	13.38	89.1	0.92	3.70	14.80
23			100	9.97	92.3	1.43	3.00	16.80
23			125	5.67	94.9	2.18	1.80	18.80
23			160	-0.17	97.0	3.26	0.00	21.10
23			200	-4.35	98.4	4.69	0.00	22.80
24	6,260	6,264						
24			20	20.82	59.3	0.00	5.60	7.60
24			25	19.89	65.2	0.13	5.40	8.30
24			32	18.83	70.6	0.19	5.20	9.20
24			40	18.00	76.0	0.31	5.00	10.30
24			50	16.88	80.9	0.44	4.70	11.50
24			63	15.13	85.3	0.69	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			80	12.51	89.1	1.00	3.70	14.80
24			100	9.05	92.3	1.57	3.00	16.80
24			125	4.68	94.9	2.38	1.80	18.80
24			160	-1.26	97.0	3.57	0.00	21.10
24			200	-5.57	98.4	5.14	0.00	22.80
3	2,695	2,703						
3			20	28.12	59.3	0.00	5.60	7.60
3			25	27.26	65.2	0.05	5.40	8.30
3			32	26.24	70.6	0.08	5.20	9.20
3			40	25.48	76.0	0.14	5.00	10.30
3			50	24.42	80.9	0.19	4.70	11.50
3			63	22.82	85.3	0.30	4.30	13.00
3			80	20.38	89.1	0.43	3.70	14.80
3			100	17.24	92.3	0.68	3.00	16.80
3			125	13.34	94.9	1.03	1.80	18.80
3			160	8.07	97.0	1.54	0.00	21.10
3			200	4.65	98.4	2.22	0.00	22.80
4	2,812	2,820						
4			20	27.75	59.3	0.00	5.60	7.60
4			25	26.89	65.2	0.06	5.40	8.30
4			32	25.87	70.6	0.08	5.20	9.20
4			40	25.11	76.0	0.14	5.00	10.30
4			50	24.05	80.9	0.20	4.70	11.50
4			63	22.44	85.3	0.31	4.30	13.00
4			80	20.00	89.1	0.45	3.70	14.80
4			100	16.84	92.3	0.70	3.00	16.80
4			125	12.92	94.9	1.07	1.80	18.80
4			160	7.64	97.0	1.61	0.00	21.10
4			200	4.18	98.4	2.31	0.00	22.80
5	3,311	3,318						
5			20	26.34	59.3	0.00	5.60	7.60
5			25	25.47	65.2	0.07	5.40	8.30
5			32	24.44	70.6	0.10	5.20	9.20
5			40	23.67	76.0	0.17	5.00	10.30
5			50	22.60	80.9	0.23	4.70	11.50
5			63	20.97	85.3	0.36	4.30	13.00
5			80	18.50	89.1	0.53	3.70	14.80
5			100	15.30	92.3	0.83	3.00	16.80
5			125	11.32	94.9	1.26	1.80	18.80
5			160	5.94	97.0	1.89	0.00	21.10
5			200	2.36	98.4	2.72	0.00	22.80
6	2,052	2,063						
6			20	30.47	59.3	0.00	5.60	7.60
6			25	29.62	65.2	0.04	5.40	8.30
6			32	28.60	70.6	0.06	5.20	9.20
6			40	27.86	76.0	0.10	5.00	10.30
6			50	26.82	80.9	0.14	4.70	11.50
6			63	25.24	85.3	0.23	4.30	13.00
6			80	22.83	89.1	0.33	3.70	14.80
6			100	19.75	92.3	0.52	3.00	16.80
6			125	15.93	94.9	0.78	1.80	18.80
6			160	10.79	97.0	1.18	0.00	21.10
6			200	7.52	98.4	1.69	0.00	22.80
7	2,640	2,648						
7			20	28.30	59.3	0.00	5.60	7.60
7			25	27.44	65.2	0.05	5.40	8.30
7			32	26.42	70.6	0.08	5.20	9.20
7			40	25.66	76.0	0.13	5.00	10.30
7			50	24.61	80.9	0.19	4.70	11.50
7			63	23.00	85.3	0.29	4.30	13.00
7			80	20.57	89.1	0.42	3.70	14.80
7			100	17.43	92.3	0.66	3.00	16.80
7			125	13.54	94.9	1.01	1.80	18.80
7			160	8.28	97.0	1.51	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			200	4.87	98.4	2.17	0.00	22.80
8	2,961	2,969						
8			20	27.30	59.3	0.00	5.60	7.60
8			25	26.44	65.2	0.06	5.40	8.30
8			32	25.41	70.6	0.09	5.20	9.20
8			40	24.65	76.0	0.15	5.00	10.30
8			50	23.59	80.9	0.21	4.70	11.50
8			63	21.97	85.3	0.33	4.30	13.00
8			80	19.53	89.1	0.48	3.70	14.80
8			100	16.36	92.3	0.74	3.00	16.80
8			125	12.42	94.9	1.13	1.80	18.80
8			160	7.11	97.0	1.69	0.00	21.10
8			200	3.61	98.4	2.43	0.00	22.80
9	2,304	2,313						
9			20	29.47	59.3	0.00	5.60	7.60
9			25	28.62	65.2	0.05	5.40	8.30
9			32	27.60	70.6	0.07	5.20	9.20
9			40	26.85	76.0	0.12	5.00	10.30
9			50	25.80	80.9	0.16	4.70	11.50
9			63	24.21	85.3	0.25	4.30	13.00
9			80	21.80	89.1	0.37	3.70	14.80
9			100	18.69	92.3	0.58	3.00	16.80
9			125	14.84	94.9	0.88	1.80	18.80
9			160	9.65	97.0	1.32	0.00	21.10
9			200	6.32	98.4	1.90	0.00	22.80
Sum								
Sum			20	40.22				
Sum			25	39.36				
Sum			32	38.33				
Sum			40	37.57				
Sum			50	36.50				
Sum			63	34.88				
Sum			80	32.42				
Sum			100	29.24				
Sum			125	25.30				
Sum			160	19.97				
Sum			200	16.48				

Noise sensitive area: HH Eteläniemi 1 Noise sensitive point: Finnish normal frequency - User defined (304)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,322	2,331						
1			20	29.40	59.3	0.00	5.60	7.60
1			25	28.56	65.2	0.05	5.40	8.30
1			32	27.53	70.6	0.07	5.20	9.20
1			40	26.79	76.0	0.12	5.00	10.30
1			50	25.74	80.9	0.16	4.70	11.50
1			63	24.14	85.3	0.26	4.30	13.00
1			80	21.73	89.1	0.37	3.70	14.80
1			100	18.62	92.3	0.58	3.00	16.80
1			125	14.76	94.9	0.89	1.80	18.80
1			160	9.57	97.0	1.33	0.00	21.10
1			200	6.24	98.4	1.91	0.00	22.80
10	2,088	2,099						
10			20	30.31	59.3	0.00	5.60	7.60
10			25	29.47	65.2	0.04	5.40	8.30
10			32	28.45	70.6	0.06	5.20	9.20
10			40	27.71	76.0	0.10	5.00	10.30
10			50	26.66	80.9	0.15	4.70	11.50
10			63	25.08	85.3	0.23	4.30	13.00
10			80	22.68	89.1	0.34	3.70	14.80
10			100	19.59	92.3	0.52	3.00	16.80

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			125	15.76	94.9	0.80	1.80	18.80
10			160	10.61	97.0	1.20	0.00	21.10
10			200	7.34	98.4	1.72	0.00	22.80
11	2,477	2,486						
11			20	28.84	59.3	0.00	5.60	7.60
11			25	27.99	65.2	0.05	5.40	8.30
11			32	26.97	70.6	0.07	5.20	9.20
11			40	26.22	76.0	0.12	5.00	10.30
11			50	25.17	80.9	0.17	4.70	11.50
11			63	23.57	85.3	0.27	4.30	13.00
11			80	21.14	89.1	0.40	3.70	14.80
11			100	18.02	92.3	0.62	3.00	16.80
11			125	14.14	94.9	0.94	1.80	18.80
11			160	8.92	97.0	1.42	0.00	21.10
11			200	5.55	98.4	2.04	0.00	22.80
12	3,012	3,019						
12			20	27.16	59.3	0.00	5.60	7.60
12			25	26.30	65.2	0.06	5.40	8.30
12			32	25.27	70.6	0.09	5.20	9.20
12			40	24.51	76.0	0.15	5.00	10.30
12			50	23.44	80.9	0.21	4.70	11.50
12			63	21.82	85.3	0.33	4.30	13.00
12			80	19.37	89.1	0.48	3.70	14.80
12			100	16.20	92.3	0.75	3.00	16.80
12			125	12.26	94.9	1.15	1.80	18.80
12			160	6.93	97.0	1.72	0.00	21.10
12			200	3.43	98.4	2.48	0.00	22.80
13	3,308	3,316						
13			20	26.34	59.3	0.00	5.60	7.60
13			25	25.47	65.2	0.07	5.40	8.30
13			32	24.44	70.6	0.10	5.20	9.20
13			40	23.68	76.0	0.17	5.00	10.30
13			50	22.61	80.9	0.23	4.70	11.50
13			63	20.97	85.3	0.36	4.30	13.00
13			80	18.51	89.1	0.53	3.70	14.80
13			100	15.31	92.3	0.83	3.00	16.80
13			125	11.33	94.9	1.26	1.80	18.80
13			160	5.95	97.0	1.89	0.00	21.10
13			200	2.37	98.4	2.72	0.00	22.80
14	3,090	3,099						
14			20	26.93	59.3	0.00	5.60	7.60
14			25	26.07	65.2	0.06	5.40	8.30
14			32	25.04	70.6	0.09	5.20	9.20
14			40	24.28	76.0	0.15	5.00	10.30
14			50	23.21	80.9	0.22	4.70	11.50
14			63	21.59	85.3	0.34	4.30	13.00
14			80	19.13	89.1	0.50	3.70	14.80
14			100	15.95	92.3	0.77	3.00	16.80
14			125	12.00	94.9	1.18	1.80	18.80
14			160	6.66	97.0	1.77	0.00	21.10
14			200	3.14	98.4	2.54	0.00	22.80
15	3,823	3,831						
15			20	25.09	59.3	0.00	5.60	7.60
15			25	24.21	65.2	0.08	5.40	8.30
15			32	23.17	70.6	0.11	5.20	9.20
15			40	22.40	76.0	0.19	5.00	10.30
15			50	21.32	80.9	0.27	4.70	11.50
15			63	19.66	85.3	0.42	4.30	13.00
15			80	17.17	89.1	0.61	3.70	14.80
15			100	13.93	92.3	0.96	3.00	16.80
15			125	9.88	94.9	1.46	1.80	18.80
15			160	4.40	97.0	2.18	0.00	21.10
15			200	0.69	98.4	3.14	0.00	22.80
16	4,307	4,313						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			20	24.06	59.3	0.00	5.60	7.60
16			25	23.17	65.2	0.09	5.40	8.30
16			32	22.13	70.6	0.13	5.20	9.20
16			40	21.34	76.0	0.22	5.00	10.30
16			50	20.25	80.9	0.30	4.70	11.50
16			63	18.58	85.3	0.47	4.30	13.00
16			80	16.07	89.1	0.69	3.70	14.80
16			100	12.78	92.3	1.08	3.00	16.80
16			125	8.67	94.9	1.64	1.80	18.80
16			160	3.10	97.0	2.46	0.00	21.10
16			200	-0.73	98.4	3.54	0.00	22.80
17	4,482	4,486						
17			20	23.72	59.3	0.00	5.60	7.60
17			25	22.83	65.2	0.09	5.40	8.30
17			32	21.78	70.6	0.13	5.20	9.20
17			40	20.99	76.0	0.22	5.00	10.30
17			50	19.90	80.9	0.31	4.70	11.50
17			63	18.22	85.3	0.49	4.30	13.00
17			80	15.70	89.1	0.72	3.70	14.80
17			100	12.39	92.3	1.12	3.00	16.80
17			125	8.26	94.9	1.70	1.80	18.80
17			160	2.66	97.0	2.56	0.00	21.10
17			200	-1.22	98.4	3.68	0.00	22.80
18	3,815	3,821						
18			20	25.11	59.3	0.00	5.60	7.60
18			25	24.23	65.2	0.08	5.40	8.30
18			32	23.20	70.6	0.11	5.20	9.20
18			40	22.42	76.0	0.19	5.00	10.30
18			50	21.34	80.9	0.27	4.70	11.50
18			63	19.69	85.3	0.42	4.30	13.00
18			80	17.20	89.1	0.61	3.70	14.80
18			100	13.95	92.3	0.96	3.00	16.80
18			125	9.90	94.9	1.45	1.80	18.80
18			160	4.43	97.0	2.18	0.00	21.10
18			200	0.72	98.4	3.13	0.00	22.80
19	4,265	4,272						
19			20	24.14	59.3	0.00	5.60	7.60
19			25	23.26	65.2	0.09	5.40	8.30
19			32	22.21	70.6	0.13	5.20	9.20
19			40	21.43	76.0	0.21	5.00	10.30
19			50	20.34	80.9	0.30	4.70	11.50
19			63	18.67	85.3	0.47	4.30	13.00
19			80	16.16	89.1	0.68	3.70	14.80
19			100	12.87	92.3	1.07	3.00	16.80
19			125	8.76	94.9	1.62	1.80	18.80
19			160	3.20	97.0	2.44	0.00	21.10
19			200	-0.62	98.4	3.50	0.00	22.80
2	1,706	1,718						
2			20	32.05	59.3	0.00	5.60	7.60
2			25	31.22	65.2	0.03	5.40	8.30
2			32	30.20	70.6	0.05	5.20	9.20
2			40	29.47	76.0	0.09	5.00	10.30
2			50	28.43	80.9	0.12	4.70	11.50
2			63	26.86	85.3	0.19	4.30	13.00
2			80	24.47	89.1	0.27	3.70	14.80
2			100	21.42	92.3	0.43	3.00	16.80
2			125	17.64	94.9	0.65	1.80	18.80
2			160	12.57	97.0	0.98	0.00	21.10
2			200	9.39	98.4	1.41	0.00	22.80
20	4,598	4,604						
20			20	23.49	59.3	0.00	5.60	7.60
20			25	22.60	65.2	0.09	5.40	8.30
20			32	21.55	70.6	0.14	5.20	9.20
20			40	20.76	76.0	0.23	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			50	19.67	80.9	0.32	4.70	11.50
20			63	17.98	85.3	0.51	4.30	13.00
20			80	15.45	89.1	0.74	3.70	14.80
20			100	12.14	92.3	1.15	3.00	16.80
20			125	7.99	94.9	1.75	1.80	18.80
20			160	2.37	97.0	2.62	0.00	21.10
20			200	-1.54	98.4	3.77	0.00	22.80
21	4,880	4,885						
21			20	22.98	59.3	0.00	5.60	7.60
21			25	22.08	65.2	0.10	5.40	8.30
21			32	21.03	70.6	0.15	5.20	9.20
21			40	20.23	76.0	0.24	5.00	10.30
21			50	19.13	80.9	0.34	4.70	11.50
21			63	17.44	85.3	0.54	4.30	13.00
21			80	14.89	89.1	0.78	3.70	14.80
21			100	11.55	92.3	1.22	3.00	16.80
21			125	7.37	94.9	1.86	1.80	18.80
21			160	1.69	97.0	2.78	0.00	21.10
21			200	-2.28	98.4	4.01	0.00	22.80
22	5,237	5,241						
22			20	22.37	59.3	0.00	5.60	7.60
22			25	21.46	65.2	0.10	5.40	8.30
22			32	20.41	70.6	0.16	5.20	9.20
22			40	19.60	76.0	0.26	5.00	10.30
22			50	18.50	80.9	0.37	4.70	11.50
22			63	16.79	85.3	0.58	4.30	13.00
22			80	14.22	89.1	0.84	3.70	14.80
22			100	10.85	92.3	1.31	3.00	16.80
22			125	6.62	94.9	1.99	1.80	18.80
22			160	0.87	97.0	2.99	0.00	21.10
22			200	-3.19	98.4	4.30	0.00	22.80
23	5,139	5,143						
23			20	22.53	59.3	0.00	5.60	7.60
23			25	21.63	65.2	0.10	5.40	8.30
23			32	20.58	70.6	0.15	5.20	9.20
23			40	19.77	76.0	0.26	5.00	10.30
23			50	18.67	80.9	0.36	4.70	11.50
23			63	16.96	85.3	0.57	4.30	13.00
23			80	14.40	89.1	0.82	3.70	14.80
23			100	11.04	92.3	1.29	3.00	16.80
23			125	6.82	94.9	1.95	1.80	18.80
23			160	1.10	97.0	2.93	0.00	21.10
23			200	-2.94	98.4	4.22	0.00	22.80
24	5,675	5,678						
24			20	21.67	59.3	0.00	5.60	7.60
24			25	20.76	65.2	0.11	5.40	8.30
24			32	19.70	70.6	0.17	5.20	9.20
24			40	18.89	76.0	0.28	5.00	10.30
24			50	17.77	80.9	0.40	4.70	11.50
24			63	16.04	85.3	0.62	4.30	13.00
24			80	13.46	89.1	0.91	3.70	14.80
24			100	10.05	92.3	1.42	3.00	16.80
24			125	5.76	94.9	2.16	1.80	18.80
24			160	-0.07	97.0	3.24	0.00	21.10
24			200	-4.24	98.4	4.66	0.00	22.80
3	2,224	2,234						
3			20	29.77	59.3	0.00	5.60	7.60
3			25	28.93	65.2	0.04	5.40	8.30
3			32	27.91	70.6	0.07	5.20	9.20
3			40	27.16	76.0	0.11	5.00	10.30
3			50	26.12	80.9	0.16	4.70	11.50
3			63	24.53	85.3	0.25	4.30	13.00
3			80	22.11	89.1	0.36	3.70	14.80
3			100	19.01	92.3	0.56	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			125	15.17	94.9	0.85	1.80	18.80
3			160	10.00	97.0	1.27	0.00	21.10
3			200	6.69	98.4	1.83	0.00	22.80
4	2,275	2,285						
4			20	29.58	59.3	0.00	5.60	7.60
4			25	28.73	65.2	0.05	5.40	8.30
4			32	27.71	70.6	0.07	5.20	9.20
4			40	26.96	76.0	0.11	5.00	10.30
4			50	25.92	80.9	0.16	4.70	11.50
4			63	24.32	85.3	0.25	4.30	13.00
4			80	21.91	89.1	0.37	3.70	14.80
4			100	18.80	92.3	0.57	3.00	16.80
4			125	14.96	94.9	0.87	1.80	18.80
4			160	9.77	97.0	1.30	0.00	21.10
4			200	6.45	98.4	1.87	0.00	22.80
5	2,754	2,762						
5			20	27.93	59.3	0.00	5.60	7.60
5			25	27.08	65.2	0.06	5.40	8.30
5			32	26.05	70.6	0.08	5.20	9.20
5			40	25.29	76.0	0.14	5.00	10.30
5			50	24.23	80.9	0.19	4.70	11.50
5			63	22.62	85.3	0.30	4.30	13.00
5			80	20.19	89.1	0.44	3.70	14.80
5			100	17.04	92.3	0.69	3.00	16.80
5			125	13.13	94.9	1.05	1.80	18.80
5			160	7.85	97.0	1.57	0.00	21.10
5			200	4.41	98.4	2.26	0.00	22.80
6	1,473	1,488						
6			20	33.30	59.3	0.00	5.60	7.60
6			25	32.47	65.2	0.03	5.40	8.30
6			32	31.46	70.6	0.04	5.20	9.20
6			40	30.73	76.0	0.07	5.00	10.30
6			50	29.70	80.9	0.10	4.70	11.50
6			63	28.14	85.3	0.16	4.30	13.00
6			80	25.76	89.1	0.24	3.70	14.80
6			100	22.73	92.3	0.37	3.00	16.80
6			125	18.98	94.9	0.57	1.80	18.80
6			160	13.95	97.0	0.85	0.00	21.10
6			200	10.83	98.4	1.22	0.00	22.80
7	2,053	2,063						
7			20	30.46	59.3	0.00	5.60	7.60
7			25	29.62	65.2	0.04	5.40	8.30
7			32	28.60	70.6	0.06	5.20	9.20
7			40	27.86	76.0	0.10	5.00	10.30
7			50	26.82	80.9	0.14	4.70	11.50
7			63	25.23	85.3	0.23	4.30	13.00
7			80	22.83	89.1	0.33	3.70	14.80
7			100	19.75	92.3	0.52	3.00	16.80
7			125	15.93	94.9	0.78	1.80	18.80
7			160	10.79	97.0	1.18	0.00	21.10
7			200	7.52	98.4	1.69	0.00	22.80
8	2,382	2,391						
8			20	29.18	59.3	0.00	5.60	7.60
8			25	28.34	65.2	0.05	5.40	8.30
8			32	27.31	70.6	0.07	5.20	9.20
8			40	26.56	76.0	0.12	5.00	10.30
8			50	25.51	80.9	0.17	4.70	11.50
8			63	23.92	85.3	0.26	4.30	13.00
8			80	21.50	89.1	0.38	3.70	14.80
8			100	18.38	92.3	0.60	3.00	16.80
8			125	14.52	94.9	0.91	1.80	18.80
8			160	9.32	97.0	1.36	0.00	21.10
8			200	5.97	98.4	1.96	0.00	22.80
9	1,798	1,810						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			20	31.60	59.3	0.00	5.60	7.60
9			25	30.76	65.2	0.04	5.40	8.30
9			32	29.75	70.6	0.05	5.20	9.20
9			40	29.01	76.0	0.09	5.00	10.30
9			50	27.97	80.9	0.13	4.70	11.50
9			63	26.40	85.3	0.20	4.30	13.00
9			80	24.01	89.1	0.29	3.70	14.80
9			100	20.95	92.3	0.45	3.00	16.80
9			125	17.16	94.9	0.69	1.80	18.80
9			160	12.07	97.0	1.03	0.00	21.10
9			200	8.86	98.4	1.48	0.00	22.80
Sum								
Sum			20	42.06				
Sum			25	41.21				
Sum			32	40.19				
Sum			40	39.44				
Sum			50	38.39				
Sum			63	36.79				
Sum			80	34.37				
Sum			100	31.25				
Sum			125	27.38				
Sum			160	22.18				
Sum			200	18.84				

Noise sensitive area: HH Eteläniemi 2 Noise sensitive point: Finnish normal frequency - User defined (284)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,119	2,128						
1			20	30.19	59.3	0.00	5.60	7.60
1			25	29.35	65.2	0.04	5.40	8.30
1			32	28.33	70.6	0.06	5.20	9.20
1			40	27.59	76.0	0.11	5.00	10.30
1			50	26.54	80.9	0.15	4.70	11.50
1			63	24.96	85.3	0.23	4.30	13.00
1			80	22.55	89.1	0.34	3.70	14.80
1			100	19.46	92.3	0.53	3.00	16.80
1			125	15.63	94.9	0.81	1.80	18.80
1			160	10.48	97.0	1.21	0.00	21.10
1			200	7.19	98.4	1.75	0.00	22.80
10	2,161	2,171						
10			20	30.02	59.3	0.00	5.60	7.60
10			25	29.18	65.2	0.04	5.40	8.30
10			32	28.16	70.6	0.07	5.20	9.20
10			40	27.41	76.0	0.11	5.00	10.30
10			50	26.37	80.9	0.15	4.70	11.50
10			63	24.78	85.3	0.24	4.30	13.00
10			80	22.37	89.1	0.35	3.70	14.80
10			100	19.27	92.3	0.54	3.00	16.80
10			125	15.44	94.9	0.83	1.80	18.80
10			160	10.28	97.0	1.24	0.00	21.10
10			200	6.98	98.4	1.78	0.00	22.80
11	2,592	2,600						
11			20	28.45	59.3	0.00	5.60	7.60
11			25	27.60	65.2	0.05	5.40	8.30
11			32	26.58	70.6	0.08	5.20	9.20
11			40	25.82	76.0	0.13	5.00	10.30
11			50	24.77	80.9	0.18	4.70	11.50
11			63	23.16	85.3	0.29	4.30	13.00
11			80	20.73	89.1	0.42	3.70	14.80
11			100	17.60	92.3	0.65	3.00	16.80
11			125	13.71	94.9	0.99	1.80	18.80
11			160	8.47	97.0	1.48	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			200	5.07	98.4	2.13	0.00	22.80
12	3,113	3,120						
12			20	26.87	59.3	0.00	5.60	7.60
12			25	26.01	65.2	0.06	5.40	8.30
12			32	24.98	70.6	0.09	5.20	9.20
12			40	24.22	76.0	0.16	5.00	10.30
12			50	23.15	80.9	0.22	4.70	11.50
12			63	21.52	85.3	0.34	4.30	13.00
12			80	19.07	89.1	0.50	3.70	14.80
12			100	15.89	92.3	0.78	3.00	16.80
12			125	11.93	94.9	1.19	1.80	18.80
12			160	6.59	97.0	1.78	0.00	21.10
12			200	3.06	98.4	2.56	0.00	22.80
13	3,366	3,374						
13			20	26.19	59.3	0.00	5.60	7.60
13			25	25.32	65.2	0.07	5.40	8.30
13			32	24.29	70.6	0.10	5.20	9.20
13			40	23.52	76.0	0.17	5.00	10.30
13			50	22.45	80.9	0.24	4.70	11.50
13			63	20.82	85.3	0.37	4.30	13.00
13			80	18.35	89.1	0.54	3.70	14.80
13			100	15.15	92.3	0.84	3.00	16.80
13			125	11.16	94.9	1.28	1.80	18.80
13			160	5.77	97.0	1.92	0.00	21.10
13			200	2.17	98.4	2.77	0.00	22.80
14	3,115	3,123						
14			20	26.86	59.3	0.00	5.60	7.60
14			25	26.00	65.2	0.06	5.40	8.30
14			32	24.97	70.6	0.09	5.20	9.20
14			40	24.21	76.0	0.16	5.00	10.30
14			50	23.14	80.9	0.22	4.70	11.50
14			63	21.52	85.3	0.34	4.30	13.00
14			80	19.06	89.1	0.50	3.70	14.80
14			100	15.88	92.3	0.78	3.00	16.80
14			125	11.92	94.9	1.19	1.80	18.80
14			160	6.58	97.0	1.78	0.00	21.10
14			200	3.05	98.4	2.56	0.00	22.80
15	3,857	3,865						
15			20	25.01	59.3	0.00	5.60	7.60
15			25	24.13	65.2	0.08	5.40	8.30
15			32	23.10	70.6	0.12	5.20	9.20
15			40	22.32	76.0	0.19	5.00	10.30
15			50	21.24	80.9	0.27	4.70	11.50
15			63	19.58	85.3	0.43	4.30	13.00
15			80	17.09	89.1	0.62	3.70	14.80
15			100	13.84	92.3	0.97	3.00	16.80
15			125	9.79	94.9	1.47	1.80	18.80
15			160	4.30	97.0	2.20	0.00	21.10
15			200	0.59	98.4	3.17	0.00	22.80
16	4,321	4,327						
16			20	24.03	59.3	0.00	5.60	7.60
16			25	23.14	65.2	0.09	5.40	8.30
16			32	22.10	70.6	0.13	5.20	9.20
16			40	21.31	76.0	0.22	5.00	10.30
16			50	20.23	80.9	0.30	4.70	11.50
16			63	18.55	85.3	0.48	4.30	13.00
16			80	16.04	89.1	0.69	3.70	14.80
16			100	12.75	92.3	1.08	3.00	16.80
16			125	8.63	94.9	1.64	1.80	18.80
16			160	3.06	97.0	2.47	0.00	21.10
16			200	-0.77	98.4	3.55	0.00	22.80
17	4,462	4,467						
17			20	23.75	59.3	0.00	5.60	7.60
17			25	22.87	65.2	0.09	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			32	21.82	70.6	0.13	5.20	9.20
17			40	21.03	76.0	0.22	5.00	10.30
17			50	19.94	80.9	0.31	4.70	11.50
17			63	18.26	85.3	0.49	4.30	13.00
17			80	15.74	89.1	0.71	3.70	14.80
17			100	12.44	92.3	1.12	3.00	16.80
17			125	8.30	94.9	1.70	1.80	18.80
17			160	2.71	97.0	2.55	0.00	21.10
17			200	-1.16	98.4	3.66	0.00	22.80
18	3,892	3,898						
18			20	24.94	59.3	0.00	5.60	7.60
18			25	24.06	65.2	0.08	5.40	8.30
18			32	23.02	70.6	0.12	5.20	9.20
18			40	22.24	76.0	0.19	5.00	10.30
18			50	21.16	80.9	0.27	4.70	11.50
18			63	19.51	85.3	0.43	4.30	13.00
18			80	17.01	89.1	0.62	3.70	14.80
18			100	13.76	92.3	0.97	3.00	16.80
18			125	9.70	94.9	1.48	1.80	18.80
18			160	4.21	97.0	2.22	0.00	21.10
18			200	0.49	98.4	3.20	0.00	22.80
19	4,324	4,330						
19			20	24.02	59.3	0.00	5.60	7.60
19			25	23.14	65.2	0.09	5.40	8.30
19			32	22.09	70.6	0.13	5.20	9.20
19			40	21.31	76.0	0.22	5.00	10.30
19			50	20.22	80.9	0.30	4.70	11.50
19			63	18.54	85.3	0.48	4.30	13.00
19			80	16.03	89.1	0.69	3.70	14.80
19			100	12.74	92.3	1.08	3.00	16.80
19			125	8.62	94.9	1.65	1.80	18.80
19			160	3.05	97.0	2.47	0.00	21.10
19			200	-0.78	98.4	3.55	0.00	22.80
2	1,582	1,595						
2			20	32.70	59.3	0.00	5.60	7.60
2			25	31.87	65.2	0.03	5.40	8.30
2			32	30.85	70.6	0.05	5.20	9.20
2			40	30.12	76.0	0.08	5.00	10.30
2			50	29.08	80.9	0.11	4.70	11.50
2			63	27.52	85.3	0.18	4.30	13.00
2			80	25.14	89.1	0.26	3.70	14.80
2			100	22.10	92.3	0.40	3.00	16.80
2			125	18.34	94.9	0.61	1.80	18.80
2			160	13.29	97.0	0.91	0.00	21.10
2			200	10.14	98.4	1.31	0.00	22.80
20	4,636	4,642						
20			20	23.42	59.3	0.00	5.60	7.60
20			25	22.53	65.2	0.09	5.40	8.30
20			32	21.48	70.6	0.14	5.20	9.20
20			40	20.69	76.0	0.23	5.00	10.30
20			50	19.59	80.9	0.32	4.70	11.50
20			63	17.91	85.3	0.51	4.30	13.00
20			80	15.38	89.1	0.74	3.70	14.80
20			100	12.06	92.3	1.16	3.00	16.80
20			125	7.90	94.9	1.76	1.80	18.80
20			160	2.27	97.0	2.65	0.00	21.10
20			200	-1.64	98.4	3.81	0.00	22.80
21	4,889	4,894						
21			20	22.96	59.3	0.00	5.60	7.60
21			25	22.06	65.2	0.10	5.40	8.30
21			32	21.01	70.6	0.15	5.20	9.20
21			40	20.22	76.0	0.24	5.00	10.30
21			50	19.12	80.9	0.34	4.70	11.50
21			63	17.42	85.3	0.54	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			80	14.87	89.1	0.78	3.70	14.80
21			100	11.53	92.3	1.22	3.00	16.80
21			125	7.35	94.9	1.86	1.80	18.80
21			160	1.67	97.0	2.79	0.00	21.10
21			200	-2.31	98.4	4.01	0.00	22.80
22	5,219	5,224						
22			20	22.39	59.3	0.00	5.60	7.60
22			25	21.49	65.2	0.10	5.40	8.30
22			32	20.44	70.6	0.16	5.20	9.20
22			40	19.63	76.0	0.26	5.00	10.30
22			50	18.53	80.9	0.37	4.70	11.50
22			63	16.82	85.3	0.57	4.30	13.00
22			80	14.26	89.1	0.84	3.70	14.80
22			100	10.89	92.3	1.31	3.00	16.80
22			125	6.65	94.9	1.99	1.80	18.80
22			160	0.91	97.0	2.98	0.00	21.10
22			200	-3.14	98.4	4.28	0.00	22.80
23	5,092	5,096						
23			20	22.61	59.3	0.00	5.60	7.60
23			25	21.71	65.2	0.10	5.40	8.30
23			32	20.66	70.6	0.15	5.20	9.20
23			40	19.86	76.0	0.25	5.00	10.30
23			50	18.75	80.9	0.36	4.70	11.50
23			63	17.05	85.3	0.56	4.30	13.00
23			80	14.49	89.1	0.82	3.70	14.80
23			100	11.13	92.3	1.27	3.00	16.80
23			125	6.92	94.9	1.94	1.80	18.80
23			160	1.20	97.0	2.90	0.00	21.10
23			200	-2.82	98.4	4.18	0.00	22.80
24	5,644	5,648						
24			20	21.72	59.3	0.00	5.60	7.60
24			25	20.80	65.2	0.11	5.40	8.30
24			32	19.75	70.6	0.17	5.20	9.20
24			40	18.94	76.0	0.28	5.00	10.30
24			50	17.82	80.9	0.40	4.70	11.50
24			63	16.09	85.3	0.62	4.30	13.00
24			80	13.51	89.1	0.90	3.70	14.80
24			100	10.10	92.3	1.41	3.00	16.80
24			125	5.82	94.9	2.15	1.80	18.80
24			160	0.00	97.0	3.22	0.00	21.10
24			200	-4.17	98.4	4.63	0.00	22.80
3	2,060	2,071						
3			20	30.43	59.3	0.00	5.60	7.60
3			25	29.59	65.2	0.04	5.40	8.30
3			32	28.57	70.6	0.06	5.20	9.20
3			40	27.83	76.0	0.10	5.00	10.30
3			50	26.78	80.9	0.14	4.70	11.50
3			63	25.20	85.3	0.23	4.30	13.00
3			80	22.80	89.1	0.33	3.70	14.80
3			100	19.71	92.3	0.52	3.00	16.80
3			125	15.89	94.9	0.79	1.80	18.80
3			160	10.75	97.0	1.18	0.00	21.10
3			200	7.48	98.4	1.70	0.00	22.80
4	2,161	2,171						
4			20	30.02	59.3	0.00	5.60	7.60
4			25	29.18	65.2	0.04	5.40	8.30
4			32	28.16	70.6	0.07	5.20	9.20
4			40	27.41	76.0	0.11	5.00	10.30
4			50	26.37	80.9	0.15	4.70	11.50
4			63	24.78	85.3	0.24	4.30	13.00
4			80	22.37	89.1	0.35	3.70	14.80
4			100	19.27	92.3	0.54	3.00	16.80
4			125	15.44	94.9	0.83	1.80	18.80
4			160	10.28	97.0	1.24	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			200	6.99	98.4	1.78	0.00	22.80
5	2,663	2,672						
5			20	28.22	59.3	0.00	5.60	7.60
5			25	27.37	65.2	0.05	5.40	8.30
5			32	26.34	70.6	0.08	5.20	9.20
5			40	25.59	76.0	0.13	5.00	10.30
5			50	24.53	80.9	0.19	4.70	11.50
5			63	22.92	85.3	0.29	4.30	13.00
5			80	20.49	89.1	0.43	3.70	14.80
5			100	17.35	92.3	0.67	3.00	16.80
5			125	13.45	94.9	1.02	1.80	18.80
5			160	8.19	97.0	1.52	0.00	21.10
5			200	4.77	98.4	2.19	0.00	22.80
6	1,521	1,536						
6			20	33.03	59.3	0.00	5.60	7.60
6			25	32.20	65.2	0.03	5.40	8.30
6			32	31.18	70.6	0.05	5.20	9.20
6			40	30.45	76.0	0.08	5.00	10.30
6			50	29.42	80.9	0.11	4.70	11.50
6			63	27.86	85.3	0.17	4.30	13.00
6			80	25.48	89.1	0.25	3.70	14.80
6			100	22.44	92.3	0.38	3.00	16.80
6			125	18.69	94.9	0.58	1.80	18.80
6			160	13.65	97.0	0.88	0.00	21.10
6			200	10.52	98.4	1.26	0.00	22.80
7	2,054	2,065						
7			20	30.46	59.3	0.00	5.60	7.60
7			25	29.62	65.2	0.04	5.40	8.30
7			32	28.60	70.6	0.06	5.20	9.20
7			40	27.85	76.0	0.10	5.00	10.30
7			50	26.81	80.9	0.14	4.70	11.50
7			63	25.23	85.3	0.23	4.30	13.00
7			80	22.82	89.1	0.33	3.70	14.80
7			100	19.74	92.3	0.52	3.00	16.80
7			125	15.92	94.9	0.78	1.80	18.80
7			160	10.78	97.0	1.18	0.00	21.10
7			200	7.51	98.4	1.69	0.00	22.80
8	2,332	2,341						
8			20	29.37	59.3	0.00	5.60	7.60
8			25	28.52	65.2	0.05	5.40	8.30
8			32	27.49	70.6	0.07	5.20	9.20
8			40	26.75	76.0	0.12	5.00	10.30
8			50	25.70	80.9	0.16	4.70	11.50
8			63	24.10	85.3	0.26	4.30	13.00
8			80	21.69	89.1	0.37	3.70	14.80
8			100	18.58	92.3	0.59	3.00	16.80
8			125	14.72	94.9	0.89	1.80	18.80
8			160	9.53	97.0	1.33	0.00	21.10
8			200	6.19	98.4	1.92	0.00	22.80
9	1,932	1,943						
9			20	30.99	59.3	0.00	5.60	7.60
9			25	30.15	65.2	0.04	5.40	8.30
9			32	29.13	70.6	0.06	5.20	9.20
9			40	28.39	76.0	0.10	5.00	10.30
9			50	27.35	80.9	0.14	4.70	11.50
9			63	25.77	85.3	0.21	4.30	13.00
9			80	23.37	89.1	0.31	3.70	14.80
9			100	20.30	92.3	0.49	3.00	16.80
9			125	16.49	94.9	0.74	1.80	18.80
9			160	11.37	97.0	1.11	0.00	21.10
9			200	8.14	98.4	1.59	0.00	22.80
Sum								
Sum			20	42.12				
Sum			25	41.27				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			32	40.25				
Sum			40	39.50				
Sum			50	38.45				
Sum			63	36.85				
Sum			80	34.43				
Sum			100	31.31				
Sum			125	27.45				
Sum			160	22.25				
Sum			200	18.92				

Noise sensitive area: HH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (295)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,739	1,751						
1			20	31.89	59.3	0.00	5.60	7.60
1			25	31.06	65.2	0.04	5.40	8.30
1			32	30.04	70.6	0.05	5.20	9.20
1			40	29.30	76.0	0.09	5.00	10.30
1			50	28.26	80.9	0.12	4.70	11.50
1			63	26.69	85.3	0.19	4.30	13.00
1			80	24.31	89.1	0.28	3.70	14.80
1			100	21.25	92.3	0.44	3.00	16.80
1			125	17.47	94.9	0.67	1.80	18.80
1			160	12.39	97.0	1.00	0.00	21.10
1			200	9.20	98.4	1.44	0.00	22.80
10	2,928	2,936						
10			20	27.40	59.3	0.00	5.60	7.60
10			25	26.54	65.2	0.06	5.40	8.30
10			32	25.51	70.6	0.09	5.20	9.20
10			40	24.75	76.0	0.15	5.00	10.30
10			50	23.69	80.9	0.21	4.70	11.50
10			63	22.07	85.3	0.32	4.30	13.00
10			80	19.63	89.1	0.47	3.70	14.80
10			100	16.46	92.3	0.73	3.00	16.80
10			125	12.53	94.9	1.12	1.80	18.80
10			160	7.22	97.0	1.67	0.00	21.10
10			200	3.74	98.4	2.41	0.00	22.80
11	3,440	3,447						
11			20	26.01	59.3	0.00	5.60	7.60
11			25	25.14	65.2	0.07	5.40	8.30
11			32	24.10	70.6	0.10	5.20	9.20
11			40	23.33	76.0	0.17	5.00	10.30
11			50	22.26	80.9	0.24	4.70	11.50
11			63	20.62	85.3	0.38	4.30	13.00
11			80	18.15	89.1	0.55	3.70	14.80
11			100	14.94	92.3	0.86	3.00	16.80
11			125	10.94	94.9	1.31	1.80	18.80
11			160	5.54	97.0	1.96	0.00	21.10
11			200	1.93	98.4	2.83	0.00	22.80
12	3,919	3,925						
12			20	24.88	59.3	0.00	5.60	7.60
12			25	24.00	65.2	0.08	5.40	8.30
12			32	22.96	70.6	0.12	5.20	9.20
12			40	22.18	76.0	0.20	5.00	10.30
12			50	21.10	80.9	0.27	4.70	11.50
12			63	19.44	85.3	0.43	4.30	13.00
12			80	16.95	89.1	0.63	3.70	14.80
12			100	13.69	92.3	0.98	3.00	16.80
12			125	9.63	94.9	1.49	1.80	18.80
12			160	4.14	97.0	2.24	0.00	21.10
12			200	0.41	98.4	3.22	0.00	22.80
13	4,050	4,057						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			20	24.59	59.3	0.00	5.60	7.60
13			25	23.71	65.2	0.08	5.40	8.30
13			32	22.67	70.6	0.12	5.20	9.20
13			40	21.89	76.0	0.20	5.00	10.30
13			50	20.80	80.9	0.28	4.70	11.50
13			63	19.14	85.3	0.45	4.30	13.00
13			80	16.64	89.1	0.65	3.70	14.80
13			100	13.37	92.3	1.01	3.00	16.80
13			125	9.29	94.9	1.54	1.80	18.80
13			160	3.78	97.0	2.31	0.00	21.10
13			200	0.01	98.4	3.33	0.00	22.80
14	3,708	3,715						
14			20	25.35	59.3	0.00	5.60	7.60
14			25	24.48	65.2	0.07	5.40	8.30
14			32	23.44	70.6	0.11	5.20	9.20
14			40	22.67	76.0	0.19	5.00	10.30
14			50	21.59	80.9	0.26	4.70	11.50
14			63	19.94	85.3	0.41	4.30	13.00
14			80	17.46	89.1	0.59	3.70	14.80
14			100	14.22	92.3	0.93	3.00	16.80
14			125	10.19	94.9	1.41	1.80	18.80
14			160	4.73	97.0	2.12	0.00	21.10
14			200	1.05	98.4	3.05	0.00	22.80
15	4,458	4,465						
15			20	23.76	59.3	0.00	5.60	7.60
15			25	22.87	65.2	0.09	5.40	8.30
15			32	21.82	70.6	0.13	5.20	9.20
15			40	21.04	76.0	0.22	5.00	10.30
15			50	19.94	80.9	0.31	4.70	11.50
15			63	18.26	85.3	0.49	4.30	13.00
15			80	15.74	89.1	0.71	3.70	14.80
15			100	12.44	92.3	1.12	3.00	16.80
15			125	8.31	94.9	1.70	1.80	18.80
15			160	2.71	97.0	2.55	0.00	21.10
15			200	-1.16	98.4	3.66	0.00	22.80
16	4,847	4,852						
16			20	23.04	59.3	0.00	5.60	7.60
16			25	22.14	65.2	0.10	5.40	8.30
16			32	21.09	70.6	0.15	5.20	9.20
16			40	20.29	76.0	0.24	5.00	10.30
16			50	19.19	80.9	0.34	4.70	11.50
16			63	17.50	85.3	0.53	4.30	13.00
16			80	14.96	89.1	0.78	3.70	14.80
16			100	11.62	92.3	1.21	3.00	16.80
16			125	7.44	94.9	1.84	1.80	18.80
16			160	1.77	97.0	2.77	0.00	21.10
16			200	-2.20	98.4	3.98	0.00	22.80
17	4,864	4,868						
17			20	23.01	59.3	0.00	5.60	7.60
17			25	22.11	65.2	0.10	5.40	8.30
17			32	21.06	70.6	0.15	5.20	9.20
17			40	20.26	76.0	0.24	5.00	10.30
17			50	19.16	80.9	0.34	4.70	11.50
17			63	17.47	85.3	0.54	4.30	13.00
17			80	14.93	89.1	0.78	3.70	14.80
17			100	11.59	92.3	1.22	3.00	16.80
17			125	7.40	94.9	1.85	1.80	18.80
17			160	1.73	97.0	2.77	0.00	21.10
17			200	-2.24	98.4	3.99	0.00	22.80
18	4,619	4,624						
18			20	23.45	59.3	0.00	5.60	7.60
18			25	22.56	65.2	0.09	5.40	8.30
18			32	21.52	70.6	0.14	5.20	9.20
18			40	20.72	76.0	0.23	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			50	19.63	80.9	0.32	4.70	11.50
18			63	17.94	85.3	0.51	4.30	13.00
18			80	15.41	89.1	0.74	3.70	14.80
18			100	12.09	92.3	1.16	3.00	16.80
18			125	7.94	94.9	1.76	1.80	18.80
18			160	2.31	97.0	2.64	0.00	21.10
18			200	-1.59	98.4	3.79	0.00	22.80
19	4,990	4,996						
19			20	22.78	59.3	0.00	5.60	7.60
19			25	21.88	65.2	0.10	5.40	8.30
19			32	20.83	70.6	0.15	5.20	9.20
19			40	20.03	76.0	0.25	5.00	10.30
19			50	18.93	80.9	0.35	4.70	11.50
19			63	17.23	85.3	0.55	4.30	13.00
19			80	14.68	89.1	0.80	3.70	14.80
19			100	11.33	92.3	1.25	3.00	16.80
19			125	7.13	94.9	1.90	1.80	18.80
19			160	1.43	97.0	2.85	0.00	21.10
19			200	-2.57	98.4	4.10	0.00	22.80
2	1,774	1,786						
2			20	31.72	59.3	0.00	5.60	7.60
2			25	30.88	65.2	0.04	5.40	8.30
2			32	29.86	70.6	0.05	5.20	9.20
2			40	29.13	76.0	0.09	5.00	10.30
2			50	28.09	80.9	0.13	4.70	11.50
2			63	26.52	85.3	0.20	4.30	13.00
2			80	24.13	89.1	0.29	3.70	14.80
2			100	21.07	92.3	0.45	3.00	16.80
2			125	17.28	94.9	0.68	1.80	18.80
2			160	12.20	97.0	1.02	0.00	21.10
2			200	9.00	98.4	1.46	0.00	22.80
20	5,234	5,239						
20			20	22.37	59.3	0.00	5.60	7.60
20			25	21.47	65.2	0.10	5.40	8.30
20			32	20.41	70.6	0.16	5.20	9.20
20			40	19.61	76.0	0.26	5.00	10.30
20			50	18.50	80.9	0.37	4.70	11.50
20			63	16.79	85.3	0.58	4.30	13.00
20			80	14.23	89.1	0.84	3.70	14.80
20			100	10.86	92.3	1.31	3.00	16.80
20			125	6.62	94.9	1.99	1.80	18.80
20			160	0.88	97.0	2.99	0.00	21.10
20			200	-3.18	98.4	4.30	0.00	22.80
21	5,386	5,390						
21			20	22.12	59.3	0.00	5.60	7.60
21			25	21.22	65.2	0.11	5.40	8.30
21			32	20.16	70.6	0.16	5.20	9.20
21			40	19.35	76.0	0.27	5.00	10.30
21			50	18.24	80.9	0.38	4.70	11.50
21			63	16.53	85.3	0.59	4.30	13.00
21			80	13.96	89.1	0.86	3.70	14.80
21			100	10.57	92.3	1.35	3.00	16.80
21			125	6.32	94.9	2.05	1.80	18.80
21			160	0.55	97.0	3.07	0.00	21.10
21			200	-3.55	98.4	4.42	0.00	22.80
22	5,613	5,617						
22			20	21.76	59.3	0.00	5.60	7.60
22			25	20.85	65.2	0.11	5.40	8.30
22			32	19.80	70.6	0.17	5.20	9.20
22			40	18.98	76.0	0.28	5.00	10.30
22			50	17.87	80.9	0.39	4.70	11.50
22			63	16.14	85.3	0.62	4.30	13.00
22			80	13.56	89.1	0.90	3.70	14.80
22			100	10.16	92.3	1.40	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			125	5.87	94.9	2.13	1.80	18.80
22			160	0.06	97.0	3.20	0.00	21.10
22			200	-4.10	98.4	4.61	0.00	22.80
23	5,372	5,376						
23			20	22.15	59.3	0.00	5.60	7.60
23			25	21.24	65.2	0.11	5.40	8.30
23			32	20.18	70.6	0.16	5.20	9.20
23			40	19.38	76.0	0.27	5.00	10.30
23			50	18.27	80.9	0.38	4.70	11.50
23			63	16.55	85.3	0.59	4.30	13.00
23			80	13.98	89.1	0.86	3.70	14.80
23			100	10.60	92.3	1.34	3.00	16.80
23			125	6.35	94.9	2.04	1.80	18.80
23			160	0.58	97.0	3.06	0.00	21.10
23			200	-3.52	98.4	4.41	0.00	22.80
24	5,980	5,983						
24			20	21.22	59.3	0.00	5.60	7.60
24			25	20.30	65.2	0.12	5.40	8.30
24			32	19.24	70.6	0.18	5.20	9.20
24			40	18.42	76.0	0.30	5.00	10.30
24			50	17.29	80.9	0.42	4.70	11.50
24			63	15.55	85.3	0.66	4.30	13.00
24			80	12.96	89.1	0.96	3.70	14.80
24			100	9.52	92.3	1.50	3.00	16.80
24			125	5.19	94.9	2.27	1.80	18.80
24			160	-0.70	97.0	3.41	0.00	21.10
24			200	-4.95	98.4	4.91	0.00	22.80
3	1,964	1,975						
3			20	30.84	59.3	0.00	5.60	7.60
3			25	30.00	65.2	0.04	5.40	8.30
3			32	28.98	70.6	0.06	5.20	9.20
3			40	28.24	76.0	0.10	5.00	10.30
3			50	27.20	80.9	0.14	4.70	11.50
3			63	25.62	85.3	0.22	4.30	13.00
3			80	23.22	89.1	0.32	3.70	14.80
3			100	20.15	92.3	0.49	3.00	16.80
3			125	16.34	94.9	0.75	1.80	18.80
3			160	11.21	97.0	1.13	0.00	21.10
3			200	7.97	98.4	1.62	0.00	22.80
4	2,308	2,318						
4			20	29.45	59.3	0.00	5.60	7.60
4			25	28.61	65.2	0.05	5.40	8.30
4			32	27.58	70.6	0.07	5.20	9.20
4			40	26.84	76.0	0.12	5.00	10.30
4			50	25.79	80.9	0.16	4.70	11.50
4			63	24.20	85.3	0.25	4.30	13.00
4			80	21.78	89.1	0.37	3.70	14.80
4			100	18.67	92.3	0.58	3.00	16.80
4			125	14.82	94.9	0.88	1.80	18.80
4			160	9.63	97.0	1.32	0.00	21.10
4			200	6.30	98.4	1.90	0.00	22.80
5	2,865	2,873						
5			20	27.59	59.3	0.00	5.60	7.60
5			25	26.73	65.2	0.06	5.40	8.30
5			32	25.70	70.6	0.09	5.20	9.20
5			40	24.94	76.0	0.14	5.00	10.30
5			50	23.88	80.9	0.20	4.70	11.50
5			63	22.27	85.3	0.32	4.30	13.00
5			80	19.83	89.1	0.46	3.70	14.80
5			100	16.67	92.3	0.72	3.00	16.80
5			125	12.74	94.9	1.09	1.80	18.80
5			160	7.45	97.0	1.64	0.00	21.10
5			200	3.98	98.4	2.36	0.00	22.80
6	2,274	2,284						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			20	29.58	59.3	0.00	5.60	7.60
6			25	28.74	65.2	0.05	5.40	8.30
6			32	27.71	70.6	0.07	5.20	9.20
6			40	26.97	76.0	0.11	5.00	10.30
6			50	25.92	80.9	0.16	4.70	11.50
6			63	24.33	85.3	0.25	4.30	13.00
6			80	21.91	89.1	0.37	3.70	14.80
6			100	18.81	92.3	0.57	3.00	16.80
6			125	14.96	94.9	0.87	1.80	18.80
6			160	9.78	97.0	1.30	0.00	21.10
6			200	6.45	98.4	1.87	0.00	22.80
7	2,638	2,646						
7			20	28.30	59.3	0.00	5.60	7.60
7			25	27.45	65.2	0.05	5.40	8.30
7			32	26.42	70.6	0.08	5.20	9.20
7			40	25.67	76.0	0.13	5.00	10.30
7			50	24.62	80.9	0.19	4.70	11.50
7			63	23.01	85.3	0.29	4.30	13.00
7			80	20.58	89.1	0.42	3.70	14.80
7			100	17.44	92.3	0.66	3.00	16.80
7			125	13.54	94.9	1.01	1.80	18.80
7			160	8.29	97.0	1.51	0.00	21.10
7			200	4.88	98.4	2.17	0.00	22.80
8	2,722	2,730						
8			20	28.03	59.3	0.00	5.60	7.60
8			25	27.18	65.2	0.05	5.40	8.30
8			32	26.15	70.6	0.08	5.20	9.20
8			40	25.40	76.0	0.14	5.00	10.30
8			50	24.34	80.9	0.19	4.70	11.50
8			63	22.73	85.3	0.30	4.30	13.00
8			80	20.29	89.1	0.44	3.70	14.80
8			100	17.15	92.3	0.68	3.00	16.80
8			125	13.24	94.9	1.04	1.80	18.80
8			160	7.97	97.0	1.56	0.00	21.10
8			200	4.54	98.4	2.24	0.00	22.80
9	2,836	2,843						
9			20	27.68	59.3	0.00	5.60	7.60
9			25	26.82	65.2	0.06	5.40	8.30
9			32	25.79	70.6	0.09	5.20	9.20
9			40	25.04	76.0	0.14	5.00	10.30
9			50	23.98	80.9	0.20	4.70	11.50
9			63	22.36	85.3	0.31	4.30	13.00
9			80	19.92	89.1	0.45	3.70	14.80
9			100	16.76	92.3	0.71	3.00	16.80
9			125	12.84	94.9	1.08	1.80	18.80
9			160	7.55	97.0	1.62	0.00	21.10
9			200	4.09	98.4	2.33	0.00	22.80
Sum								
Sum			20	40.87				
Sum			25	40.02				
Sum			32	38.99				
Sum			40	38.23				
Sum			50	37.17				
Sum			63	35.56				
Sum			80	33.12				
Sum			100	29.97				
Sum			125	26.06				
Sum			160	20.80				
Sum			200	17.39				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: HH Haukijärvi 2 Noise sensitive point: Finnish normal frequency - User defined (296)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,732	1,744						
1			20	31.92	59.3	0.00	5.60	7.60
1			25	31.09	65.2	0.03	5.40	8.30
1			32	30.07	70.6	0.05	5.20	9.20
1			40	29.34	76.0	0.09	5.00	10.30
1			50	28.30	80.9	0.12	4.70	11.50
1			63	26.73	85.3	0.19	4.30	13.00
1			80	24.34	89.1	0.28	3.70	14.80
1			100	21.29	92.3	0.44	3.00	16.80
1			125	17.51	94.9	0.66	1.80	18.80
1			160	12.43	97.0	0.99	0.00	21.10
1			200	9.24	98.4	1.43	0.00	22.80
10	3,017	3,025						
10			20	27.14	59.3	0.00	5.60	7.60
10			25	26.28	65.2	0.06	5.40	8.30
10			32	25.25	70.6	0.09	5.20	9.20
10			40	24.49	76.0	0.15	5.00	10.30
10			50	23.43	80.9	0.21	4.70	11.50
10			63	21.81	85.3	0.33	4.30	13.00
10			80	19.35	89.1	0.48	3.70	14.80
10			100	16.18	92.3	0.76	3.00	16.80
10			125	12.24	94.9	1.15	1.80	18.80
10			160	6.91	97.0	1.72	0.00	21.10
10			200	3.41	98.4	2.48	0.00	22.80
11	3,535	3,541						
11			20	25.77	59.3	0.00	5.60	7.60
11			25	24.90	65.2	0.07	5.40	8.30
11			32	23.87	70.6	0.11	5.20	9.20
11			40	23.10	76.0	0.18	5.00	10.30
11			50	22.02	80.9	0.25	4.70	11.50
11			63	20.38	85.3	0.39	4.30	13.00
11			80	17.90	89.1	0.57	3.70	14.80
11			100	14.68	92.3	0.89	3.00	16.80
11			125	10.67	94.9	1.35	1.80	18.80
11			160	5.25	97.0	2.02	0.00	21.10
11			200	1.61	98.4	2.90	0.00	22.80
12	4,010	4,015						
12			20	24.68	59.3	0.00	5.60	7.60
12			25	23.80	65.2	0.08	5.40	8.30
12			32	22.76	70.6	0.12	5.20	9.20
12			40	21.98	76.0	0.20	5.00	10.30
12			50	20.90	80.9	0.28	4.70	11.50
12			63	19.24	85.3	0.44	4.30	13.00
12			80	16.74	89.1	0.64	3.70	14.80
12			100	13.47	92.3	1.00	3.00	16.80
12			125	9.40	94.9	1.53	1.80	18.80
12			160	3.89	97.0	2.29	0.00	21.10
12			200	0.13	98.4	3.29	0.00	22.80
13	4,131	4,137						
13			20	24.42	59.3	0.00	5.60	7.60
13			25	23.54	65.2	0.08	5.40	8.30
13			32	22.50	70.6	0.12	5.20	9.20
13			40	21.71	76.0	0.21	5.00	10.30
13			50	20.63	80.9	0.29	4.70	11.50
13			63	18.96	85.3	0.46	4.30	13.00
13			80	16.46	89.1	0.66	3.70	14.80
13			100	13.18	92.3	1.03	3.00	16.80
13			125	9.09	94.9	1.57	1.80	18.80
13			160	3.56	97.0	2.36	0.00	21.10
13			200	-0.23	98.4	3.39	0.00	22.80
14	3,782	3,789						
14			20	25.18	59.3	0.00	5.60	7.60
14			25	24.31	65.2	0.08	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	23.27	70.6	0.11	5.20	9.20
14			40	22.49	76.0	0.19	5.00	10.30
14			50	21.42	80.9	0.27	4.70	11.50
14			63	19.76	85.3	0.42	4.30	13.00
14			80	17.27	89.1	0.61	3.70	14.80
14			100	14.03	92.3	0.95	3.00	16.80
14			125	9.99	94.9	1.44	1.80	18.80
14			160	4.52	97.0	2.16	0.00	21.10
14			200	0.82	98.4	3.11	0.00	22.80
15	4,531	4,538						
15			20	23.62	59.3	0.00	5.60	7.60
15			25	22.73	65.2	0.09	5.40	8.30
15			32	21.68	70.6	0.14	5.20	9.20
15			40	20.89	76.0	0.23	5.00	10.30
15			50	19.80	80.9	0.32	4.70	11.50
15			63	18.12	85.3	0.50	4.30	13.00
15			80	15.59	89.1	0.73	3.70	14.80
15			100	12.28	92.3	1.13	3.00	16.80
15			125	8.14	94.9	1.72	1.80	18.80
15			160	2.53	97.0	2.59	0.00	21.10
15			200	-1.36	98.4	3.72	0.00	22.80
16	4,912	4,917						
16			20	22.92	59.3	0.00	5.60	7.60
16			25	22.02	65.2	0.10	5.40	8.30
16			32	20.97	70.6	0.15	5.20	9.20
16			40	20.17	76.0	0.25	5.00	10.30
16			50	19.07	80.9	0.34	4.70	11.50
16			63	17.38	85.3	0.54	4.30	13.00
16			80	14.83	89.1	0.79	3.70	14.80
16			100	11.49	92.3	1.23	3.00	16.80
16			125	7.30	94.9	1.87	1.80	18.80
16			160	1.61	97.0	2.80	0.00	21.10
16			200	-2.37	98.4	4.03	0.00	22.80
17	4,918	4,923						
17			20	22.91	59.3	0.00	5.60	7.60
17			25	22.01	65.2	0.10	5.40	8.30
17			32	20.96	70.6	0.15	5.20	9.20
17			40	20.16	76.0	0.25	5.00	10.30
17			50	19.06	80.9	0.34	4.70	11.50
17			63	17.37	85.3	0.54	4.30	13.00
17			80	14.82	89.1	0.79	3.70	14.80
17			100	11.48	92.3	1.23	3.00	16.80
17			125	7.29	94.9	1.87	1.80	18.80
17			160	1.60	97.0	2.81	0.00	21.10
17			200	-2.38	98.4	4.04	0.00	22.80
18	4,702	4,707						
18			20	23.30	59.3	0.00	5.60	7.60
18			25	22.40	65.2	0.09	5.40	8.30
18			32	21.36	70.6	0.14	5.20	9.20
18			40	20.56	76.0	0.24	5.00	10.30
18			50	19.47	80.9	0.33	4.70	11.50
18			63	17.78	85.3	0.52	4.30	13.00
18			80	15.24	89.1	0.75	3.70	14.80
18			100	11.92	92.3	1.18	3.00	16.80
18			125	7.76	94.9	1.79	1.80	18.80
18			160	2.11	97.0	2.68	0.00	21.10
18			200	-1.82	98.4	3.86	0.00	22.80
19	5,067	5,073						
19			20	22.65	59.3	0.00	5.60	7.60
19			25	21.75	65.2	0.10	5.40	8.30
19			32	20.70	70.6	0.15	5.20	9.20
19			40	19.90	76.0	0.25	5.00	10.30
19			50	18.79	80.9	0.36	4.70	11.50
19			63	17.09	85.3	0.56	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	14.53	89.1	0.81	3.70	14.80
19			100	11.18	92.3	1.27	3.00	16.80
19			125	6.97	94.9	1.93	1.80	18.80
19			160	1.25	97.0	2.89	0.00	21.10
19			200	-2.77	98.4	4.16	0.00	22.80
2	1,828	1,839						
2			20	31.46	59.3	0.00	5.60	7.60
2			25	30.62	65.2	0.04	5.40	8.30
2			32	29.61	70.6	0.06	5.20	9.20
2			40	28.87	76.0	0.09	5.00	10.30
2			50	27.83	80.9	0.13	4.70	11.50
2			63	26.26	85.3	0.20	4.30	13.00
2			80	23.86	89.1	0.29	3.70	14.80
2			100	20.80	92.3	0.46	3.00	16.80
2			125	17.01	94.9	0.70	1.80	18.80
2			160	11.91	97.0	1.05	0.00	21.10
2			200	8.70	98.4	1.51	0.00	22.80
20	5,305	5,310						
20			20	22.25	59.3	0.00	5.60	7.60
20			25	21.35	65.2	0.11	5.40	8.30
20			32	20.29	70.6	0.16	5.20	9.20
20			40	19.49	76.0	0.27	5.00	10.30
20			50	18.38	80.9	0.37	4.70	11.50
20			63	16.66	85.3	0.58	4.30	13.00
20			80	14.10	89.1	0.85	3.70	14.80
20			100	10.72	92.3	1.33	3.00	16.80
20			125	6.48	94.9	2.02	1.80	18.80
20			160	0.72	97.0	3.03	0.00	21.10
20			200	-3.36	98.4	4.35	0.00	22.80
21	5,448	5,452						
21			20	22.02	59.3	0.00	5.60	7.60
21			25	21.11	65.2	0.11	5.40	8.30
21			32	20.06	70.6	0.16	5.20	9.20
21			40	19.25	76.0	0.27	5.00	10.30
21			50	18.14	80.9	0.38	4.70	11.50
21			63	16.42	85.3	0.60	4.30	13.00
21			80	13.85	89.1	0.87	3.70	14.80
21			100	10.46	92.3	1.36	3.00	16.80
21			125	6.20	94.9	2.07	1.80	18.80
21			160	0.41	97.0	3.11	0.00	21.10
21			200	-3.70	98.4	4.47	0.00	22.80
22	5,665	5,670						
22			20	21.68	59.3	0.00	5.60	7.60
22			25	20.77	65.2	0.11	5.40	8.30
22			32	19.71	70.6	0.17	5.20	9.20
22			40	18.90	76.0	0.28	5.00	10.30
22			50	17.78	80.9	0.40	4.70	11.50
22			63	16.06	85.3	0.62	4.30	13.00
22			80	13.47	89.1	0.91	3.70	14.80
22			100	10.06	92.3	1.42	3.00	16.80
22			125	5.77	94.9	2.15	1.80	18.80
22			160	-0.05	97.0	3.23	0.00	21.10
22			200	-4.22	98.4	4.65	0.00	22.80
23	5,414	5,418						
23			20	22.08	59.3	0.00	5.60	7.60
23			25	21.17	65.2	0.11	5.40	8.30
23			32	20.12	70.6	0.16	5.20	9.20
23			40	19.31	76.0	0.27	5.00	10.30
23			50	18.20	80.9	0.38	4.70	11.50
23			63	16.48	85.3	0.60	4.30	13.00
23			80	13.91	89.1	0.87	3.70	14.80
23			100	10.52	92.3	1.35	3.00	16.80
23			125	6.26	94.9	2.06	1.80	18.80
23			160	0.49	97.0	3.09	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-3.62	98.4	4.44	0.00	22.80
24	6,027	6,030						
24			20	21.15	59.3	0.00	5.60	7.60
24			25	20.23	65.2	0.12	5.40	8.30
24			32	19.17	70.6	0.18	5.20	9.20
24			40	18.35	76.0	0.30	5.00	10.30
24			50	17.22	80.9	0.42	4.70	11.50
24			63	15.48	85.3	0.66	4.30	13.00
24			80	12.88	89.1	0.96	3.70	14.80
24			100	9.44	92.3	1.51	3.00	16.80
24			125	5.10	94.9	2.29	1.80	18.80
24			160	-0.79	97.0	3.44	0.00	21.10
24			200	-5.05	98.4	4.94	0.00	22.80
3	1,987	1,997						
3			20	30.75	59.3	0.00	5.60	7.60
3			25	29.91	65.2	0.04	5.40	8.30
3			32	28.89	70.6	0.06	5.20	9.20
3			40	28.15	76.0	0.10	5.00	10.30
3			50	27.10	80.9	0.14	4.70	11.50
3			63	25.52	85.3	0.22	4.30	13.00
3			80	23.12	89.1	0.32	3.70	14.80
3			100	20.04	92.3	0.50	3.00	16.80
3			125	16.23	94.9	0.76	1.80	18.80
3			160	11.10	97.0	1.14	0.00	21.10
3			200	7.85	98.4	1.64	0.00	22.80
4	2,351	2,360						
4			20	29.30	59.3	0.00	5.60	7.60
4			25	28.45	65.2	0.05	5.40	8.30
4			32	27.42	70.6	0.07	5.20	9.20
4			40	26.68	76.0	0.12	5.00	10.30
4			50	25.63	80.9	0.17	4.70	11.50
4			63	24.03	85.3	0.26	4.30	13.00
4			80	21.61	89.1	0.38	3.70	14.80
4			100	18.50	92.3	0.59	3.00	16.80
4			125	14.64	94.9	0.90	1.80	18.80
4			160	9.45	97.0	1.35	0.00	21.10
4			200	6.11	98.4	1.94	0.00	22.80
5	2,909	2,916						
5			20	27.46	59.3	0.00	5.60	7.60
5			25	26.60	65.2	0.06	5.40	8.30
5			32	25.57	70.6	0.09	5.20	9.20
5			40	24.81	76.0	0.15	5.00	10.30
5			50	23.75	80.9	0.20	4.70	11.50
5			63	22.13	85.3	0.32	4.30	13.00
5			80	19.69	89.1	0.47	3.70	14.80
5			100	16.53	92.3	0.73	3.00	16.80
5			125	12.60	94.9	1.11	1.80	18.80
5			160	7.29	97.0	1.66	0.00	21.10
5			200	3.81	98.4	2.39	0.00	22.80
6	2,365	2,374						
6			20	29.24	59.3	0.00	5.60	7.60
6			25	28.40	65.2	0.05	5.40	8.30
6			32	27.37	70.6	0.07	5.20	9.20
6			40	26.63	76.0	0.12	5.00	10.30
6			50	25.58	80.9	0.17	4.70	11.50
6			63	23.98	85.3	0.26	4.30	13.00
6			80	21.56	89.1	0.38	3.70	14.80
6			100	18.45	92.3	0.59	3.00	16.80
6			125	14.59	94.9	0.90	1.80	18.80
6			160	9.39	97.0	1.35	0.00	21.10
6			200	6.04	98.4	1.95	0.00	22.80
7	2,715	2,722						
7			20	28.06	59.3	0.00	5.60	7.60
7			25	27.20	65.2	0.05	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			32	26.17	70.6	0.08	5.20	9.20
7			40	25.42	76.0	0.14	5.00	10.30
7			50	24.36	80.9	0.19	4.70	11.50
7			63	22.75	85.3	0.30	4.30	13.00
7			80	20.32	89.1	0.44	3.70	14.80
7			100	17.17	92.3	0.68	3.00	16.80
7			125	13.27	94.9	1.03	1.80	18.80
7			160	8.00	97.0	1.55	0.00	21.10
7			200	4.57	98.4	2.23	0.00	22.80
8	2,783	2,791						
8			20	27.84	59.3	0.00	5.60	7.60
8			25	26.98	65.2	0.06	5.40	8.30
8			32	25.96	70.6	0.08	5.20	9.20
8			40	25.20	76.0	0.14	5.00	10.30
8			50	24.14	80.9	0.20	4.70	11.50
8			63	22.53	85.3	0.31	4.30	13.00
8			80	20.09	89.1	0.45	3.70	14.80
8			100	16.94	92.3	0.70	3.00	16.80
8			125	13.03	94.9	1.06	1.80	18.80
8			160	7.75	97.0	1.59	0.00	21.10
8			200	4.30	98.4	2.29	0.00	22.80
9	2,934	2,942						
9			20	27.38	59.3	0.00	5.60	7.60
9			25	26.52	65.2	0.06	5.40	8.30
9			32	25.49	70.6	0.09	5.20	9.20
9			40	24.74	76.0	0.15	5.00	10.30
9			50	23.67	80.9	0.21	4.70	11.50
9			63	22.06	85.3	0.32	4.30	13.00
9			80	19.61	89.1	0.47	3.70	14.80
9			100	16.44	92.3	0.74	3.00	16.80
9			125	12.51	94.9	1.12	1.80	18.80
9			160	7.20	97.0	1.68	0.00	21.10
9			200	3.72	98.4	2.41	0.00	22.80
Sum								
Sum			20	40.71				
Sum			25	39.85				
Sum			32	38.82				
Sum			40	38.06				
Sum			50	37.00				
Sum			63	35.39				
Sum			80	32.95				
Sum			100	29.79				
Sum			125	25.88				
Sum			160	20.61				
Sum			200	17.18				

Noise sensitive area: HH Haukijärvi 3 Noise sensitive point: Finnish normal frequency - User defined (294)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,885	1,896						
1			20	31.20	59.3	0.00	5.60	7.60
1			25	30.36	65.2	0.04	5.40	8.30
1			32	29.34	70.6	0.06	5.20	9.20
1			40	28.60	76.0	0.09	5.00	10.30
1			50	27.56	80.9	0.13	4.70	11.50
1			63	25.99	85.3	0.21	4.30	13.00
1			80	23.59	89.1	0.30	3.70	14.80
1			100	20.52	92.3	0.47	3.00	16.80
1			125	16.72	94.9	0.72	1.80	18.80
1			160	11.61	97.0	1.08	0.00	21.10
1			200	8.39	98.4	1.55	0.00	22.80
10	3,254	3,261						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			20	26.49	59.3	0.00	5.60	7.60
10			25	25.62	65.2	0.07	5.40	8.30
10			32	24.59	70.6	0.10	5.20	9.20
10			40	23.82	76.0	0.16	5.00	10.30
10			50	22.76	80.9	0.23	4.70	11.50
10			63	21.12	85.3	0.36	4.30	13.00
10			80	18.66	89.1	0.52	3.70	14.80
10			100	15.47	92.3	0.82	3.00	16.80
10			125	11.49	94.9	1.24	1.80	18.80
10			160	6.12	97.0	1.86	0.00	21.10
10			200	2.56	98.4	2.67	0.00	22.80
11	3,768	3,774						
11			20	25.22	59.3	0.00	5.60	7.60
11			25	24.34	65.2	0.08	5.40	8.30
11			32	23.31	70.6	0.11	5.20	9.20
11			40	22.53	76.0	0.19	5.00	10.30
11			50	21.45	80.9	0.26	4.70	11.50
11			63	19.80	85.3	0.42	4.30	13.00
11			80	17.31	89.1	0.60	3.70	14.80
11			100	14.07	92.3	0.94	3.00	16.80
11			125	10.03	94.9	1.43	1.80	18.80
11			160	4.57	97.0	2.15	0.00	21.10
11			200	0.87	98.4	3.09	0.00	22.80
12	4,246	4,251						
12			20	24.18	59.3	0.00	5.60	7.60
12			25	23.30	65.2	0.09	5.40	8.30
12			32	22.26	70.6	0.13	5.20	9.20
12			40	21.47	76.0	0.21	5.00	10.30
12			50	20.38	80.9	0.30	4.70	11.50
12			63	18.71	85.3	0.47	4.30	13.00
12			80	16.20	89.1	0.68	3.70	14.80
12			100	12.92	92.3	1.06	3.00	16.80
12			125	8.81	94.9	1.62	1.80	18.80
12			160	3.26	97.0	2.42	0.00	21.10
12			200	-0.56	98.4	3.49	0.00	22.80
13	4,370	4,376						
13			20	23.93	59.3	0.00	5.60	7.60
13			25	23.04	65.2	0.09	5.40	8.30
13			32	22.00	70.6	0.13	5.20	9.20
13			40	21.21	76.0	0.22	5.00	10.30
13			50	20.12	80.9	0.31	4.70	11.50
13			63	18.45	85.3	0.48	4.30	13.00
13			80	15.93	89.1	0.70	3.70	14.80
13			100	12.64	92.3	1.09	3.00	16.80
13			125	8.51	94.9	1.66	1.80	18.80
13			160	2.93	97.0	2.49	0.00	21.10
13			200	-0.91	98.4	3.59	0.00	22.80
14	4,020	4,027						
14			20	24.65	59.3	0.00	5.60	7.60
14			25	23.77	65.2	0.08	5.40	8.30
14			32	22.73	70.6	0.12	5.20	9.20
14			40	21.95	76.0	0.20	5.00	10.30
14			50	20.87	80.9	0.28	4.70	11.50
14			63	19.21	85.3	0.44	4.30	13.00
14			80	16.71	89.1	0.64	3.70	14.80
14			100	13.44	92.3	1.01	3.00	16.80
14			125	9.37	94.9	1.53	1.80	18.80
14			160	3.86	97.0	2.30	0.00	21.10
14			200	0.10	98.4	3.30	0.00	22.80
15	4,769	4,775						
15			20	23.17	59.3	0.00	5.60	7.60
15			25	22.28	65.2	0.10	5.40	8.30
15			32	21.23	70.6	0.14	5.20	9.20
15			40	20.44	76.0	0.24	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			50	19.34	80.9	0.33	4.70	11.50
15			63	17.65	85.3	0.53	4.30	13.00
15			80	15.11	89.1	0.76	3.70	14.80
15			100	11.78	92.3	1.19	3.00	16.80
15			125	7.61	94.9	1.81	1.80	18.80
15			160	1.95	97.0	2.72	0.00	21.10
15			200	-2.00	98.4	3.92	0.00	22.80
16	5,147	5,151						
16			20	22.52	59.3	0.00	5.60	7.60
16			25	21.61	65.2	0.10	5.40	8.30
16			32	20.56	70.6	0.15	5.20	9.20
16			40	19.76	76.0	0.26	5.00	10.30
16			50	18.65	80.9	0.36	4.70	11.50
16			63	16.95	85.3	0.57	4.30	13.00
16			80	14.39	89.1	0.82	3.70	14.80
16			100	11.03	92.3	1.29	3.00	16.80
16			125	6.80	94.9	1.96	1.80	18.80
16			160	1.08	97.0	2.94	0.00	21.10
16			200	-2.96	98.4	4.22	0.00	22.80
17	5,145	5,149						
17			20	22.52	59.3	0.00	5.60	7.60
17			25	21.62	65.2	0.10	5.40	8.30
17			32	20.57	70.6	0.15	5.20	9.20
17			40	19.76	76.0	0.26	5.00	10.30
17			50	18.66	80.9	0.36	4.70	11.50
17			63	16.95	85.3	0.57	4.30	13.00
17			80	14.39	89.1	0.82	3.70	14.80
17			100	11.03	92.3	1.29	3.00	16.80
17			125	6.81	94.9	1.96	1.80	18.80
17			160	1.08	97.0	2.93	0.00	21.10
17			200	-2.96	98.4	4.22	0.00	22.80
18	4,942	4,946						
18			20	22.87	59.3	0.00	5.60	7.60
18			25	21.97	65.2	0.10	5.40	8.30
18			32	20.92	70.6	0.15	5.20	9.20
18			40	20.12	76.0	0.25	5.00	10.30
18			50	19.02	80.9	0.35	4.70	11.50
18			63	17.32	85.3	0.54	4.30	13.00
18			80	14.77	89.1	0.79	3.70	14.80
18			100	11.43	92.3	1.24	3.00	16.80
18			125	7.23	94.9	1.88	1.80	18.80
18			160	1.55	97.0	2.82	0.00	21.10
18			200	-2.44	98.4	4.06	0.00	22.80
19	5,306	5,312						
19			20	22.25	59.3	0.00	5.60	7.60
19			25	21.34	65.2	0.11	5.40	8.30
19			32	20.29	70.6	0.16	5.20	9.20
19			40	19.48	76.0	0.27	5.00	10.30
19			50	18.37	80.9	0.37	4.70	11.50
19			63	16.66	85.3	0.58	4.30	13.00
19			80	14.10	89.1	0.85	3.70	14.80
19			100	10.72	92.3	1.33	3.00	16.80
19			125	6.48	94.9	2.02	1.80	18.80
19			160	0.72	97.0	3.03	0.00	21.10
19			200	-3.36	98.4	4.36	0.00	22.80
2	2,056	2,066						
2			20	30.45	59.3	0.00	5.60	7.60
2			25	29.61	65.2	0.04	5.40	8.30
2			32	28.59	70.6	0.06	5.20	9.20
2			40	27.85	76.0	0.10	5.00	10.30
2			50	26.80	80.9	0.14	4.70	11.50
2			63	25.22	85.3	0.23	4.30	13.00
2			80	22.82	89.1	0.33	3.70	14.80
2			100	19.73	92.3	0.52	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			125	15.91	94.9	0.79	1.80	18.80
2			160	10.77	97.0	1.18	0.00	21.10
2			200	7.50	98.4	1.69	0.00	22.80
20	5,543	5,547						
20			20	21.87	59.3	0.00	5.60	7.60
20			25	20.96	65.2	0.11	5.40	8.30
20			32	19.91	70.6	0.17	5.20	9.20
20			40	19.10	76.0	0.28	5.00	10.30
20			50	17.98	80.9	0.39	4.70	11.50
20			63	16.26	85.3	0.61	4.30	13.00
20			80	13.68	89.1	0.89	3.70	14.80
20			100	10.28	92.3	1.39	3.00	16.80
20			125	6.01	94.9	2.11	1.80	18.80
20			160	0.21	97.0	3.16	0.00	21.10
20			200	-3.93	98.4	4.55	0.00	22.80
21	5,680	5,684						
21			20	21.66	59.3	0.00	5.60	7.60
21			25	20.75	65.2	0.11	5.40	8.30
21			32	19.69	70.6	0.17	5.20	9.20
21			40	18.88	76.0	0.28	5.00	10.30
21			50	17.76	80.9	0.40	4.70	11.50
21			63	16.03	85.3	0.63	4.30	13.00
21			80	13.45	89.1	0.91	3.70	14.80
21			100	10.04	92.3	1.42	3.00	16.80
21			125	5.75	94.9	2.16	1.80	18.80
21			160	-0.08	97.0	3.24	0.00	21.10
21			200	-4.25	98.4	4.66	0.00	22.80
22	5,889	5,894						
22			20	21.35	59.3	0.00	5.60	7.60
22			25	20.43	65.2	0.12	5.40	8.30
22			32	19.37	70.6	0.18	5.20	9.20
22			40	18.55	76.0	0.29	5.00	10.30
22			50	17.43	80.9	0.41	4.70	11.50
22			63	15.70	85.3	0.65	4.30	13.00
22			80	13.10	89.1	0.94	3.70	14.80
22			100	9.67	92.3	1.47	3.00	16.80
22			125	5.35	94.9	2.24	1.80	18.80
22			160	-0.52	97.0	3.36	0.00	21.10
22			200	-4.74	98.4	4.83	0.00	22.80
23	5,629	5,632						
23			20	21.74	59.3	0.00	5.60	7.60
23			25	20.83	65.2	0.11	5.40	8.30
23			32	19.77	70.6	0.17	5.20	9.20
23			40	18.96	76.0	0.28	5.00	10.30
23			50	17.84	80.9	0.39	4.70	11.50
23			63	16.12	85.3	0.62	4.30	13.00
23			80	13.54	89.1	0.90	3.70	14.80
23			100	10.13	92.3	1.41	3.00	16.80
23			125	5.85	94.9	2.14	1.80	18.80
23			160	0.03	97.0	3.21	0.00	21.10
23			200	-4.13	98.4	4.62	0.00	22.80
24	6,245	6,248						
24			20	20.84	59.3	0.00	5.60	7.60
24			25	19.91	65.2	0.12	5.40	8.30
24			32	18.85	70.6	0.19	5.20	9.20
24			40	18.03	76.0	0.31	5.00	10.30
24			50	16.90	80.9	0.44	4.70	11.50
24			63	15.15	85.3	0.69	4.30	13.00
24			80	12.54	89.1	1.00	3.70	14.80
24			100	9.07	92.3	1.56	3.00	16.80
24			125	4.71	94.9	2.37	1.80	18.80
24			160	-1.23	97.0	3.56	0.00	21.10
24			200	-5.54	98.4	5.12	0.00	22.80
3	2,182	2,192						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			20	29.94	59.3	0.00	5.60	7.60
3			25	29.09	65.2	0.04	5.40	8.30
3			32	28.07	70.6	0.07	5.20	9.20
3			40	27.33	76.0	0.11	5.00	10.30
3			50	26.28	80.9	0.15	4.70	11.50
3			63	24.69	85.3	0.24	4.30	13.00
3			80	22.28	89.1	0.35	3.70	14.80
3			100	19.19	92.3	0.55	3.00	16.80
3			125	15.35	94.9	0.83	1.80	18.80
3			160	10.19	97.0	1.25	0.00	21.10
3			200	6.89	98.4	1.80	0.00	22.80
4	2,568	2,577						
4			20	28.53	59.3	0.00	5.60	7.60
4			25	27.68	65.2	0.05	5.40	8.30
4			32	26.66	70.6	0.08	5.20	9.20
4			40	25.90	76.0	0.13	5.00	10.30
4			50	24.85	80.9	0.18	4.70	11.50
4			63	23.25	85.3	0.28	4.30	13.00
4			80	20.82	89.1	0.41	3.70	14.80
4			100	17.69	92.3	0.64	3.00	16.80
4			125	13.80	94.9	0.98	1.80	18.80
4			160	8.56	97.0	1.47	0.00	21.10
4			200	5.17	98.4	2.11	0.00	22.80
5	3,126	3,133						
5			20	26.84	59.3	0.00	5.60	7.60
5			25	25.97	65.2	0.06	5.40	8.30
5			32	24.94	70.6	0.09	5.20	9.20
5			40	24.18	76.0	0.16	5.00	10.30
5			50	23.11	80.9	0.22	4.70	11.50
5			63	21.49	85.3	0.34	4.30	13.00
5			80	19.03	89.1	0.50	3.70	14.80
5			100	15.85	92.3	0.78	3.00	16.80
5			125	11.89	94.9	1.19	1.80	18.80
5			160	6.55	97.0	1.79	0.00	21.10
5			200	3.01	98.4	2.57	0.00	22.80
6	2,601	2,610						
6			20	28.42	59.3	0.00	5.60	7.60
6			25	27.57	65.2	0.05	5.40	8.30
6			32	26.54	70.6	0.08	5.20	9.20
6			40	25.79	76.0	0.13	5.00	10.30
6			50	24.74	80.9	0.18	4.70	11.50
6			63	23.13	85.3	0.29	4.30	13.00
6			80	20.70	89.1	0.42	3.70	14.80
6			100	17.57	92.3	0.65	3.00	16.80
6			125	13.68	94.9	0.99	1.80	18.80
6			160	8.43	97.0	1.49	0.00	21.10
6			200	5.03	98.4	2.14	0.00	22.80
7	2,954	2,961						
7			20	27.33	59.3	0.00	5.60	7.60
7			25	26.47	65.2	0.06	5.40	8.30
7			32	25.44	70.6	0.09	5.20	9.20
7			40	24.68	76.0	0.15	5.00	10.30
7			50	23.62	80.9	0.21	4.70	11.50
7			63	22.00	85.3	0.33	4.30	13.00
7			80	19.55	89.1	0.47	3.70	14.80
7			100	16.38	92.3	0.74	3.00	16.80
7			125	12.45	94.9	1.13	1.80	18.80
7			160	7.14	97.0	1.69	0.00	21.10
7			200	3.64	98.4	2.43	0.00	22.80
8	3,015	3,022						
8			20	27.15	59.3	0.00	5.60	7.60
8			25	26.29	65.2	0.06	5.40	8.30
8			32	25.26	70.6	0.09	5.20	9.20
8			40	24.50	76.0	0.15	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	23.43	80.9	0.21	4.70	11.50
8			63	21.81	85.3	0.33	4.30	13.00
8			80	19.36	89.1	0.48	3.70	14.80
8			100	16.19	92.3	0.76	3.00	16.80
8			125	12.25	94.9	1.15	1.80	18.80
8			160	6.92	97.0	1.72	0.00	21.10
8			200	3.42	98.4	2.48	0.00	22.80
9	3,161	3,167						
9			20	26.74	59.3	0.00	5.60	7.60
9			25	25.88	65.2	0.06	5.40	8.30
9			32	24.85	70.6	0.10	5.20	9.20
9			40	24.08	76.0	0.16	5.00	10.30
9			50	23.02	80.9	0.22	4.70	11.50
9			63	21.39	85.3	0.35	4.30	13.00
9			80	18.93	89.1	0.51	3.70	14.80
9			100	15.75	92.3	0.79	3.00	16.80
9			125	11.78	94.9	1.20	1.80	18.80
9			160	6.43	97.0	1.81	0.00	21.10
9			200	2.89	98.4	2.60	0.00	22.80
Sum								
Sum			20	40.02				
Sum			25	39.16				
Sum			32	38.13				
Sum			40	37.36				
Sum			50	36.30				
Sum			63	34.67				
Sum			80	32.22				
Sum			100	29.04				
Sum			125	25.09				
Sum			160	19.77				
Sum			200	16.29				

Noise sensitive area: HH Hiekkaranta Noise sensitive point: Finnish normal frequency - User defined (300)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,684	2,692						
1			20	28.15	59.3	0.00	5.60	7.60
1			25	27.30	65.2	0.05	5.40	8.30
1			32	26.27	70.6	0.08	5.20	9.20
1			40	25.52	76.0	0.13	5.00	10.30
1			50	24.46	80.9	0.19	4.70	11.50
1			63	22.86	85.3	0.30	4.30	13.00
1			80	20.42	89.1	0.43	3.70	14.80
1			100	17.28	92.3	0.67	3.00	16.80
1			125	13.38	94.9	1.02	1.80	18.80
1			160	8.12	97.0	1.53	0.00	21.10
1			200	4.69	98.4	2.21	0.00	22.80
10	2,966	2,974						
10			20	27.29	59.3	0.00	5.60	7.60
10			25	26.43	65.2	0.06	5.40	8.30
10			32	25.40	70.6	0.09	5.20	9.20
10			40	24.64	76.0	0.15	5.00	10.30
10			50	23.58	80.9	0.21	4.70	11.50
10			63	21.96	85.3	0.33	4.30	13.00
10			80	19.51	89.1	0.48	3.70	14.80
10			100	16.34	92.3	0.74	3.00	16.80
10			125	12.40	94.9	1.13	1.80	18.80
10			160	7.09	97.0	1.70	0.00	21.10
10			200	3.59	98.4	2.44	0.00	22.80
11	3,345	3,352						
11			20	26.25	59.3	0.00	5.60	7.60
11			25	25.38	65.2	0.07	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			32	24.35	70.6	0.10	5.20	9.20
11			40	23.58	76.0	0.17	5.00	10.30
11			50	22.51	80.9	0.23	4.70	11.50
11			63	20.88	85.3	0.37	4.30	13.00
11			80	18.41	89.1	0.54	3.70	14.80
11			100	15.21	92.3	0.84	3.00	16.80
11			125	11.22	94.9	1.27	1.80	18.80
11			160	5.84	97.0	1.91	0.00	21.10
11			200	2.25	98.4	2.75	0.00	22.80
12	3,885	3,890						
12			20	24.95	59.3	0.00	5.60	7.60
12			25	24.08	65.2	0.08	5.40	8.30
12			32	23.04	70.6	0.12	5.20	9.20
12			40	22.26	76.0	0.19	5.00	10.30
12			50	21.18	80.9	0.27	4.70	11.50
12			63	19.52	85.3	0.43	4.30	13.00
12			80	17.03	89.1	0.62	3.70	14.80
12			100	13.78	92.3	0.97	3.00	16.80
12			125	9.72	94.9	1.48	1.80	18.80
12			160	4.23	97.0	2.22	0.00	21.10
12			200	0.51	98.4	3.19	0.00	22.80
13	4,185	4,192						
13			20	24.31	59.3	0.00	5.60	7.60
13			25	23.42	65.2	0.08	5.40	8.30
13			32	22.38	70.6	0.13	5.20	9.20
13			40	21.60	76.0	0.21	5.00	10.30
13			50	20.51	80.9	0.29	4.70	11.50
13			63	18.84	85.3	0.46	4.30	13.00
13			80	16.33	89.1	0.67	3.70	14.80
13			100	13.06	92.3	1.05	3.00	16.80
13			125	8.96	94.9	1.59	1.80	18.80
13			160	3.41	97.0	2.39	0.00	21.10
13			200	-0.38	98.4	3.44	0.00	22.80
14	3,953	3,960						
14			20	24.80	59.3	0.00	5.60	7.60
14			25	23.92	65.2	0.08	5.40	8.30
14			32	22.88	70.6	0.12	5.20	9.20
14			40	22.10	76.0	0.20	5.00	10.30
14			50	21.02	80.9	0.28	4.70	11.50
14			63	19.36	85.3	0.44	4.30	13.00
14			80	16.86	89.1	0.63	3.70	14.80
14			100	13.61	92.3	0.99	3.00	16.80
14			125	9.54	94.9	1.50	1.80	18.80
14			160	4.04	97.0	2.26	0.00	21.10
14			200	0.30	98.4	3.25	0.00	22.80
15	4,692	4,699						
15			20	23.32	59.3	0.00	5.60	7.60
15			25	22.42	65.2	0.09	5.40	8.30
15			32	21.37	70.6	0.14	5.20	9.20
15			40	20.58	76.0	0.23	5.00	10.30
15			50	19.48	80.9	0.33	4.70	11.50
15			63	17.80	85.3	0.52	4.30	13.00
15			80	15.26	89.1	0.75	3.70	14.80
15			100	11.94	92.3	1.17	3.00	16.80
15			125	7.77	94.9	1.79	1.80	18.80
15			160	2.13	97.0	2.68	0.00	21.10
15			200	-1.79	98.4	3.85	0.00	22.80
16	5,164	5,169						
16			20	22.49	59.3	0.00	5.60	7.60
16			25	21.58	65.2	0.10	5.40	8.30
16			32	20.53	70.6	0.16	5.20	9.20
16			40	19.73	76.0	0.26	5.00	10.30
16			50	18.62	80.9	0.36	4.70	11.50
16			63	16.92	85.3	0.57	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			80	14.36	89.1	0.83	3.70	14.80
16			100	10.99	92.3	1.29	3.00	16.80
16			125	6.77	94.9	1.96	1.80	18.80
16			160	1.04	97.0	2.95	0.00	21.10
16			200	-3.01	98.4	4.24	0.00	22.80
17	5,307	5,311						
17			20	22.25	59.3	0.00	5.60	7.60
17			25	21.35	65.2	0.11	5.40	8.30
17			32	20.29	70.6	0.16	5.20	9.20
17			40	19.49	76.0	0.27	5.00	10.30
17			50	18.38	80.9	0.37	4.70	11.50
17			63	16.66	85.3	0.58	4.30	13.00
17			80	14.10	89.1	0.85	3.70	14.80
17			100	10.72	92.3	1.33	3.00	16.80
17			125	6.48	94.9	2.02	1.80	18.80
17			160	0.72	97.0	3.03	0.00	21.10
17			200	-3.36	98.4	4.35	0.00	22.80
18	4,693	4,698						
18			20	23.32	59.3	0.00	5.60	7.60
18			25	22.42	65.2	0.09	5.40	8.30
18			32	21.38	70.6	0.14	5.20	9.20
18			40	20.58	76.0	0.23	5.00	10.30
18			50	19.48	80.9	0.33	4.70	11.50
18			63	17.80	85.3	0.52	4.30	13.00
18			80	15.26	89.1	0.75	3.70	14.80
18			100	11.94	92.3	1.17	3.00	16.80
18			125	7.78	94.9	1.79	1.80	18.80
18			160	2.14	97.0	2.68	0.00	21.10
18			200	-1.79	98.4	3.85	0.00	22.80
19	5,142	5,148						
19			20	22.52	59.3	0.00	5.60	7.60
19			25	21.62	65.2	0.10	5.40	8.30
19			32	20.57	70.6	0.15	5.20	9.20
19			40	19.76	76.0	0.26	5.00	10.30
19			50	18.66	80.9	0.36	4.70	11.50
19			63	16.95	85.3	0.57	4.30	13.00
19			80	14.39	89.1	0.82	3.70	14.80
19			100	11.03	92.3	1.29	3.00	16.80
19			125	6.81	94.9	1.96	1.80	18.80
19			160	1.08	97.0	2.93	0.00	21.10
19			200	-2.95	98.4	4.22	0.00	22.80
2	2,365	2,374						
2			20	29.24	59.3	0.00	5.60	7.60
2			25	28.40	65.2	0.05	5.40	8.30
2			32	27.37	70.6	0.07	5.20	9.20
2			40	26.62	76.0	0.12	5.00	10.30
2			50	25.57	80.9	0.17	4.70	11.50
2			63	23.98	85.3	0.26	4.30	13.00
2			80	21.56	89.1	0.38	3.70	14.80
2			100	18.45	92.3	0.59	3.00	16.80
2			125	14.59	94.9	0.90	1.80	18.80
2			160	9.39	97.0	1.35	0.00	21.10
2			200	6.04	98.4	1.95	0.00	22.80
20	5,469	5,474						
20			20	21.99	59.3	0.00	5.60	7.60
20			25	21.08	65.2	0.11	5.40	8.30
20			32	20.02	70.6	0.16	5.20	9.20
20			40	19.22	76.0	0.27	5.00	10.30
20			50	18.10	80.9	0.38	4.70	11.50
20			63	16.38	85.3	0.60	4.30	13.00
20			80	13.81	89.1	0.88	3.70	14.80
20			100	10.42	92.3	1.37	3.00	16.80
20			125	6.15	94.9	2.08	1.80	18.80
20			160	0.37	97.0	3.12	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			200	-3.75	98.4	4.49	0.00	22.80
21	5,733	5,738						
21			20	21.58	59.3	0.00	5.60	7.60
21			25	20.67	65.2	0.11	5.40	8.30
21			32	19.61	70.6	0.17	5.20	9.20
21			40	18.79	76.0	0.29	5.00	10.30
21			50	17.68	80.9	0.40	4.70	11.50
21			63	15.95	85.3	0.63	4.30	13.00
21			80	13.36	89.1	0.92	3.70	14.80
21			100	9.94	92.3	1.43	3.00	16.80
21			125	5.65	94.9	2.18	1.80	18.80
21			160	-0.19	97.0	3.27	0.00	21.10
21			200	-4.38	98.4	4.70	0.00	22.80
22	6,064	6,068						
22			20	21.09	59.3	0.00	5.60	7.60
22			25	20.17	65.2	0.12	5.40	8.30
22			32	19.11	70.6	0.18	5.20	9.20
22			40	18.29	76.0	0.30	5.00	10.30
22			50	17.17	80.9	0.42	4.70	11.50
22			63	15.42	85.3	0.67	4.30	13.00
22			80	12.82	89.1	0.97	3.70	14.80
22			100	9.37	92.3	1.52	3.00	16.80
22			125	5.03	94.9	2.31	1.80	18.80
22			160	-0.87	97.0	3.46	0.00	21.10
22			200	-5.14	98.4	4.98	0.00	22.80
23	5,927	5,930						
23			20	21.29	59.3	0.00	5.60	7.60
23			25	20.37	65.2	0.12	5.40	8.30
23			32	19.32	70.6	0.18	5.20	9.20
23			40	18.50	76.0	0.30	5.00	10.30
23			50	17.38	80.9	0.42	4.70	11.50
23			63	15.64	85.3	0.65	4.30	13.00
23			80	13.04	89.1	0.95	3.70	14.80
23			100	9.61	92.3	1.48	3.00	16.80
23			125	5.29	94.9	2.25	1.80	18.80
23			160	-0.59	97.0	3.38	0.00	21.10
23			200	-4.82	98.4	4.86	0.00	22.80
24	6,486	6,489						
24			20	20.51	59.3	0.00	5.60	7.60
24			25	19.58	65.2	0.13	5.40	8.30
24			32	18.52	70.6	0.19	5.20	9.20
24			40	17.69	76.0	0.32	5.00	10.30
24			50	16.55	80.9	0.45	4.70	11.50
24			63	14.79	85.3	0.71	4.30	13.00
24			80	12.17	89.1	1.04	3.70	14.80
24			100	8.69	92.3	1.62	3.00	16.80
24			125	4.29	94.9	2.47	1.80	18.80
24			160	-1.69	97.0	3.70	0.00	21.10
24			200	-6.06	98.4	5.32	0.00	22.80
3	2,759	2,767						
3			20	27.91	59.3	0.00	5.60	7.60
3			25	27.06	65.2	0.06	5.40	8.30
3			32	26.03	70.6	0.08	5.20	9.20
3			40	25.27	76.0	0.14	5.00	10.30
3			50	24.22	80.9	0.19	4.70	11.50
3			63	22.61	85.3	0.30	4.30	13.00
3			80	20.17	89.1	0.44	3.70	14.80
3			100	17.02	92.3	0.69	3.00	16.80
3			125	13.11	94.9	1.05	1.80	18.80
3			160	7.83	97.0	1.58	0.00	21.10
3			200	4.39	98.4	2.27	0.00	22.80
4	2,948	2,955						
4			20	27.34	59.3	0.00	5.60	7.60
4			25	26.48	65.2	0.06	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	25.45	70.6	0.09	5.20	9.20
4			40	24.70	76.0	0.15	5.00	10.30
4			50	23.63	80.9	0.21	4.70	11.50
4			63	22.01	85.3	0.33	4.30	13.00
4			80	19.57	89.1	0.47	3.70	14.80
4			100	16.40	92.3	0.74	3.00	16.80
4			125	12.47	94.9	1.12	1.80	18.80
4			160	7.16	97.0	1.68	0.00	21.10
4			200	3.66	98.4	2.42	0.00	22.80
5	3,472	3,478						
5			20	25.93	59.3	0.00	5.60	7.60
5			25	25.06	65.2	0.07	5.40	8.30
5			32	24.02	70.6	0.10	5.20	9.20
5			40	23.25	76.0	0.17	5.00	10.30
5			50	22.18	80.9	0.24	4.70	11.50
5			63	20.54	85.3	0.38	4.30	13.00
5			80	18.07	89.1	0.56	3.70	14.80
5			100	14.85	92.3	0.87	3.00	16.80
5			125	10.85	94.9	1.32	1.80	18.80
5			160	5.44	97.0	1.98	0.00	21.10
5			200	1.82	98.4	2.85	0.00	22.80
6	2,345	2,354						
6			20	29.32	59.3	0.00	5.60	7.60
6			25	28.47	65.2	0.05	5.40	8.30
6			32	27.45	70.6	0.07	5.20	9.20
6			40	26.70	76.0	0.12	5.00	10.30
6			50	25.65	80.9	0.16	4.70	11.50
6			63	24.06	85.3	0.26	4.30	13.00
6			80	21.64	89.1	0.38	3.70	14.80
6			100	18.53	92.3	0.59	3.00	16.80
6			125	14.67	94.9	0.89	1.80	18.80
6			160	9.47	97.0	1.34	0.00	21.10
6			200	6.13	98.4	1.93	0.00	22.80
7	2,898	2,906						
7			20	27.49	59.3	0.00	5.60	7.60
7			25	26.63	65.2	0.06	5.40	8.30
7			32	25.60	70.6	0.09	5.20	9.20
7			40	24.84	76.0	0.15	5.00	10.30
7			50	23.78	80.9	0.20	4.70	11.50
7			63	22.17	85.3	0.32	4.30	13.00
7			80	19.72	89.1	0.46	3.70	14.80
7			100	16.56	92.3	0.73	3.00	16.80
7			125	12.63	94.9	1.10	1.80	18.80
7			160	7.33	97.0	1.66	0.00	21.10
7			200	3.85	98.4	2.38	0.00	22.80
8	3,170	3,177						
8			20	26.71	59.3	0.00	5.60	7.60
8			25	25.85	65.2	0.06	5.40	8.30
8			32	24.82	70.6	0.10	5.20	9.20
8			40	24.06	76.0	0.16	5.00	10.30
8			50	22.99	80.9	0.22	4.70	11.50
8			63	21.36	85.3	0.35	4.30	13.00
8			80	18.90	89.1	0.51	3.70	14.80
8			100	15.72	92.3	0.79	3.00	16.80
8			125	11.75	94.9	1.21	1.80	18.80
8			160	6.40	97.0	1.81	0.00	21.10
8			200	2.85	98.4	2.61	0.00	22.80
9	2,656	2,664						
9			20	28.24	59.3	0.00	5.60	7.60
9			25	27.39	65.2	0.05	5.40	8.30
9			32	26.36	70.6	0.08	5.20	9.20
9			40	25.61	76.0	0.13	5.00	10.30
9			50	24.55	80.9	0.19	4.70	11.50
9			63	22.95	85.3	0.29	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	20.51	89.1	0.43	3.70	14.80
9			100	17.37	92.3	0.67	3.00	16.80
9			125	13.48	94.9	1.01	1.80	18.80
9			160	8.22	97.0	1.52	0.00	21.10
9			200	4.80	98.4	2.18	0.00	22.80
Sum								
Sum			20	39.58				
Sum			25	38.71				
Sum			32	37.68				
Sum			40	36.91				
Sum			50	35.84				
Sum			63	34.20				
Sum			80	31.74				
Sum			100	28.54				
Sum			125	24.56				
Sum			160	19.19				
Sum			200	15.63				

Noise sensitive area: HH Iso Mäkijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (292)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,679	2,687						
1			20	28.17	59.3	0.00	5.60	7.60
1			25	27.32	65.2	0.05	5.40	8.30
1			32	26.29	70.6	0.08	5.20	9.20
1			40	25.53	76.0	0.13	5.00	10.30
1			50	24.48	80.9	0.19	4.70	11.50
1			63	22.87	85.3	0.30	4.30	13.00
1			80	20.44	89.1	0.43	3.70	14.80
1			100	17.29	92.3	0.67	3.00	16.80
1			125	13.39	94.9	1.02	1.80	18.80
1			160	8.13	97.0	1.53	0.00	21.10
1			200	4.71	98.4	2.20	0.00	22.80
10	4,083	4,089						
10			20	24.52	59.3	0.00	5.60	7.60
10			25	23.64	65.2	0.08	5.40	8.30
10			32	22.60	70.6	0.12	5.20	9.20
10			40	21.82	76.0	0.20	5.00	10.30
10			50	20.73	80.9	0.29	4.70	11.50
10			63	19.07	85.3	0.45	4.30	13.00
10			80	16.56	89.1	0.65	3.70	14.80
10			100	13.30	92.3	1.02	3.00	16.80
10			125	9.21	94.9	1.55	1.80	18.80
10			160	3.69	97.0	2.33	0.00	21.10
10			200	-0.09	98.4	3.35	0.00	22.80
11	4,552	4,557						
11			20	23.58	59.3	0.00	5.60	7.60
11			25	22.69	65.2	0.09	5.40	8.30
11			32	21.65	70.6	0.14	5.20	9.20
11			40	20.85	76.0	0.23	5.00	10.30
11			50	19.76	80.9	0.32	4.70	11.50
11			63	18.08	85.3	0.50	4.30	13.00
11			80	15.55	89.1	0.73	3.70	14.80
11			100	12.24	92.3	1.14	3.00	16.80
11			125	8.10	94.9	1.73	1.80	18.80
11			160	2.48	97.0	2.60	0.00	21.10
11			200	-1.41	98.4	3.74	0.00	22.80
12	4,507	4,512						
12			20	23.67	59.3	0.00	5.60	7.60
12			25	22.78	65.2	0.09	5.40	8.30
12			32	21.73	70.6	0.14	5.20	9.20
12			40	20.94	76.0	0.23	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	19.85	80.9	0.32	4.70	11.50
12			63	18.17	85.3	0.50	4.30	13.00
12			80	15.64	89.1	0.72	3.70	14.80
12			100	12.34	92.3	1.13	3.00	16.80
12			125	8.20	94.9	1.71	1.80	18.80
12			160	2.59	97.0	2.57	0.00	21.10
12			200	-1.29	98.4	3.70	0.00	22.80
13	3,962	3,969						
13			20	24.78	59.3	0.00	5.60	7.60
13			25	23.90	65.2	0.08	5.40	8.30
13			32	22.86	70.6	0.12	5.20	9.20
13			40	22.08	76.0	0.20	5.00	10.30
13			50	21.00	80.9	0.28	4.70	11.50
13			63	19.34	85.3	0.44	4.30	13.00
13			80	16.84	89.1	0.64	3.70	14.80
13			100	13.58	92.3	0.99	3.00	16.80
13			125	9.52	94.9	1.51	1.80	18.80
13			160	4.01	97.0	2.26	0.00	21.10
13			200	0.27	98.4	3.25	0.00	22.80
14	3,496	3,504						
14			20	25.86	59.3	0.00	5.60	7.60
14			25	24.99	65.2	0.07	5.40	8.30
14			32	23.96	70.6	0.11	5.20	9.20
14			40	23.19	76.0	0.18	5.00	10.30
14			50	22.12	80.9	0.25	4.70	11.50
14			63	20.48	85.3	0.39	4.30	13.00
14			80	18.00	89.1	0.56	3.70	14.80
14			100	14.79	92.3	0.88	3.00	16.80
14			125	10.78	94.9	1.33	1.80	18.80
14			160	5.36	97.0	2.00	0.00	21.10
14			200	1.74	98.4	2.87	0.00	22.80
15	3,705	3,714						
15			20	25.36	59.3	0.00	5.60	7.60
15			25	24.48	65.2	0.07	5.40	8.30
15			32	23.45	70.6	0.11	5.20	9.20
15			40	22.67	76.0	0.19	5.00	10.30
15			50	21.59	80.9	0.26	4.70	11.50
15			63	19.95	85.3	0.41	4.30	13.00
15			80	17.46	89.1	0.59	3.70	14.80
15			100	14.23	92.3	0.93	3.00	16.80
15			125	10.19	94.9	1.41	1.80	18.80
15			160	4.74	97.0	2.12	0.00	21.10
15			200	1.06	98.4	3.05	0.00	22.80
16	3,494	3,501						
16			20	25.87	59.3	0.00	5.60	7.60
16			25	25.00	65.2	0.07	5.40	8.30
16			32	23.96	70.6	0.11	5.20	9.20
16			40	23.19	76.0	0.18	5.00	10.30
16			50	22.12	80.9	0.25	4.70	11.50
16			63	20.48	85.3	0.39	4.30	13.00
16			80	18.01	89.1	0.56	3.70	14.80
16			100	14.79	92.3	0.88	3.00	16.80
16			125	10.78	94.9	1.33	1.80	18.80
16			160	5.37	97.0	2.00	0.00	21.10
16			200	1.74	98.4	2.87	0.00	22.80
17	2,933	2,941						
17			20	27.39	59.3	0.00	5.60	7.60
17			25	26.53	65.2	0.06	5.40	8.30
17			32	25.50	70.6	0.09	5.20	9.20
17			40	24.74	76.0	0.15	5.00	10.30
17			50	23.68	80.9	0.21	4.70	11.50
17			63	22.06	85.3	0.32	4.30	13.00
17			80	19.61	89.1	0.47	3.70	14.80
17			100	16.45	92.3	0.74	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	12.51	94.9	1.12	1.80	18.80
17			160	7.21	97.0	1.68	0.00	21.10
17			200	3.72	98.4	2.41	0.00	22.80
18	4,387	4,393						
18			20	23.90	59.3	0.00	5.60	7.60
18			25	23.01	65.2	0.09	5.40	8.30
18			32	21.97	70.6	0.13	5.20	9.20
18			40	21.18	76.0	0.22	5.00	10.30
18			50	20.09	80.9	0.31	4.70	11.50
18			63	18.41	85.3	0.48	4.30	13.00
18			80	15.89	89.1	0.70	3.70	14.80
18			100	12.60	92.3	1.10	3.00	16.80
18			125	8.48	94.9	1.67	1.80	18.80
18			160	2.89	97.0	2.50	0.00	21.10
18			200	-0.96	98.4	3.60	0.00	22.80
19	4,244	4,251						
19			20	24.18	59.3	0.00	5.60	7.60
19			25	23.30	65.2	0.09	5.40	8.30
19			32	22.26	70.6	0.13	5.20	9.20
19			40	21.47	76.0	0.21	5.00	10.30
19			50	20.38	80.9	0.30	4.70	11.50
19			63	18.71	85.3	0.47	4.30	13.00
19			80	16.20	89.1	0.68	3.70	14.80
19			100	12.92	92.3	1.06	3.00	16.80
19			125	8.81	94.9	1.62	1.80	18.80
19			160	3.26	97.0	2.42	0.00	21.10
19			200	-0.56	98.4	3.49	0.00	22.80
2	3,136	3,144						
2			20	26.81	59.3	0.00	5.60	7.60
2			25	25.94	65.2	0.06	5.40	8.30
2			32	24.91	70.6	0.09	5.20	9.20
2			40	24.15	76.0	0.16	5.00	10.30
2			50	23.08	80.9	0.22	4.70	11.50
2			63	21.46	85.3	0.35	4.30	13.00
2			80	19.00	89.1	0.50	3.70	14.80
2			100	15.82	92.3	0.79	3.00	16.80
2			125	11.86	94.9	1.19	1.80	18.80
2			160	6.51	97.0	1.79	0.00	21.10
2			200	2.97	98.4	2.58	0.00	22.80
20	4,019	4,027						
20			20	24.66	59.3	0.00	5.60	7.60
20			25	23.78	65.2	0.08	5.40	8.30
20			32	22.74	70.6	0.12	5.20	9.20
20			40	21.95	76.0	0.20	5.00	10.30
20			50	20.87	80.9	0.28	4.70	11.50
20			63	19.21	85.3	0.44	4.30	13.00
20			80	16.71	89.1	0.64	3.70	14.80
20			100	13.45	92.3	1.01	3.00	16.80
20			125	9.37	94.9	1.53	1.80	18.80
20			160	3.86	97.0	2.30	0.00	21.10
20			200	0.10	98.4	3.30	0.00	22.80
21	3,600	3,607						
21			20	25.61	59.3	0.00	5.60	7.60
21			25	24.74	65.2	0.07	5.40	8.30
21			32	23.70	70.6	0.11	5.20	9.20
21			40	22.93	76.0	0.18	5.00	10.30
21			50	21.86	80.9	0.25	4.70	11.50
21			63	20.21	85.3	0.40	4.30	13.00
21			80	17.73	89.1	0.58	3.70	14.80
21			100	14.51	92.3	0.90	3.00	16.80
21			125	10.49	94.9	1.37	1.80	18.80
21			160	5.05	97.0	2.06	0.00	21.10
21			200	1.40	98.4	2.96	0.00	22.80
22	3,238	3,247						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	26.53	59.3	0.00	5.60	7.60
22			25	25.66	65.2	0.06	5.40	8.30
22			32	24.63	70.6	0.10	5.20	9.20
22			40	23.86	76.0	0.16	5.00	10.30
22			50	22.80	80.9	0.23	4.70	11.50
22			63	21.17	85.3	0.36	4.30	13.00
22			80	18.70	89.1	0.52	3.70	14.80
22			100	15.51	92.3	0.81	3.00	16.80
22			125	11.54	94.9	1.23	1.80	18.80
22			160	6.17	97.0	1.85	0.00	21.10
22			200	2.61	98.4	2.66	0.00	22.80
23	2,603	2,611						
23			20	28.42	59.3	0.00	5.60	7.60
23			25	27.57	65.2	0.05	5.40	8.30
23			32	26.54	70.6	0.08	5.20	9.20
23			40	25.79	76.0	0.13	5.00	10.30
23			50	24.73	80.9	0.18	4.70	11.50
23			63	23.13	85.3	0.29	4.30	13.00
23			80	20.70	89.1	0.42	3.70	14.80
23			100	17.56	92.3	0.65	3.00	16.80
23			125	13.67	94.9	0.99	1.80	18.80
23			160	8.43	97.0	1.49	0.00	21.10
23			200	5.02	98.4	2.14	0.00	22.80
24	3,196	3,202						
24			20	26.65	59.3	0.00	5.60	7.60
24			25	25.78	65.2	0.06	5.40	8.30
24			32	24.75	70.6	0.10	5.20	9.20
24			40	23.99	76.0	0.16	5.00	10.30
24			50	22.92	80.9	0.22	4.70	11.50
24			63	21.29	85.3	0.35	4.30	13.00
24			80	18.83	89.1	0.51	3.70	14.80
24			100	15.64	92.3	0.80	3.00	16.80
24			125	11.67	94.9	1.22	1.80	18.80
24			160	6.32	97.0	1.83	0.00	21.10
24			200	2.76	98.4	2.63	0.00	22.80
3	2,596	2,606						
3			20	28.44	59.3	0.00	5.60	7.60
3			25	27.58	65.2	0.05	5.40	8.30
3			32	26.56	70.6	0.08	5.20	9.20
3			40	25.81	76.0	0.13	5.00	10.30
3			50	24.75	80.9	0.18	4.70	11.50
3			63	23.15	85.3	0.29	4.30	13.00
3			80	20.72	89.1	0.42	3.70	14.80
3			100	17.58	92.3	0.65	3.00	16.80
3			125	13.69	94.9	0.99	1.80	18.80
3			160	8.45	97.0	1.49	0.00	21.10
3			200	5.05	98.4	2.14	0.00	22.80
4	2,630	2,639						
4			20	28.33	59.3	0.00	5.60	7.60
4			25	27.47	65.2	0.05	5.40	8.30
4			32	26.45	70.6	0.08	5.20	9.20
4			40	25.69	76.0	0.13	5.00	10.30
4			50	24.64	80.9	0.18	4.70	11.50
4			63	23.03	85.3	0.29	4.30	13.00
4			80	20.60	89.1	0.42	3.70	14.80
4			100	17.46	92.3	0.66	3.00	16.80
4			125	13.57	94.9	1.00	1.80	18.80
4			160	8.32	97.0	1.50	0.00	21.10
4			200	4.91	98.4	2.16	0.00	22.80
5	2,366	2,375						
5			20	29.24	59.3	0.00	5.60	7.60
5			25	28.39	65.2	0.05	5.40	8.30
5			32	27.37	70.6	0.07	5.20	9.20
5			40	26.62	76.0	0.12	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			50	25.57	80.9	0.17	4.70	11.50
5			63	23.98	85.3	0.26	4.30	13.00
5			80	21.56	89.1	0.38	3.70	14.80
5			100	18.44	92.3	0.59	3.00	16.80
5			125	14.58	94.9	0.90	1.80	18.80
5			160	9.38	97.0	1.35	0.00	21.10
5			200	6.04	98.4	1.95	0.00	22.80
6	4,026	4,032						
6			20	24.64	59.3	0.00	5.60	7.60
6			25	23.76	65.2	0.08	5.40	8.30
6			32	22.72	70.6	0.12	5.20	9.20
6			40	21.94	76.0	0.20	5.00	10.30
6			50	20.86	80.9	0.28	4.70	11.50
6			63	19.20	85.3	0.44	4.30	13.00
6			80	16.70	89.1	0.65	3.70	14.80
6			100	13.43	92.3	1.01	3.00	16.80
6			125	9.36	94.9	1.53	1.80	18.80
6			160	3.84	97.0	2.30	0.00	21.10
6			200	0.08	98.4	3.31	0.00	22.80
7	3,495	3,501						
7			20	25.87	59.3	0.00	5.60	7.60
7			25	25.00	65.2	0.07	5.40	8.30
7			32	23.97	70.6	0.11	5.20	9.20
7			40	23.20	76.0	0.18	5.00	10.30
7			50	22.12	80.9	0.25	4.70	11.50
7			63	20.48	85.3	0.39	4.30	13.00
7			80	18.01	89.1	0.56	3.70	14.80
7			100	14.79	92.3	0.88	3.00	16.80
7			125	10.79	94.9	1.33	1.80	18.80
7			160	5.37	97.0	2.00	0.00	21.10
7			200	1.75	98.4	2.87	0.00	22.80
8	2,932	2,940						
8			20	27.39	59.3	0.00	5.60	7.60
8			25	26.53	65.2	0.06	5.40	8.30
8			32	25.50	70.6	0.09	5.20	9.20
8			40	24.74	76.0	0.15	5.00	10.30
8			50	23.68	80.9	0.21	4.70	11.50
8			63	22.06	85.3	0.32	4.30	13.00
8			80	19.61	89.1	0.47	3.70	14.80
8			100	16.45	92.3	0.74	3.00	16.80
8			125	12.52	94.9	1.12	1.80	18.80
8			160	7.21	97.0	1.68	0.00	21.10
8			200	3.72	98.4	2.41	0.00	22.80
9	4,637	4,642						
9			20	23.42	59.3	0.00	5.60	7.60
9			25	22.53	65.2	0.09	5.40	8.30
9			32	21.48	70.6	0.14	5.20	9.20
9			40	20.69	76.0	0.23	5.00	10.30
9			50	19.59	80.9	0.32	4.70	11.50
9			63	17.91	85.3	0.51	4.30	13.00
9			80	15.38	89.1	0.74	3.70	14.80
9			100	12.06	92.3	1.16	3.00	16.80
9			125	7.90	94.9	1.76	1.80	18.80
9			160	2.27	97.0	2.65	0.00	21.10
9			200	-1.64	98.4	3.81	0.00	22.80
Sum								
Sum			20	40.12				
Sum			25	39.25				
Sum			32	38.22				
Sum			40	37.46				
Sum			50	36.39				
Sum			63	34.76				
Sum			80	32.29				
Sum			100	29.10				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			125	25.13				
Sum			160	19.77				
Sum			200	16.22				

Noise sensitive area: HH Kallioniemi 2 Noise sensitive point: Finnish normal frequency - User defined (290)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,291	2,302						
1			20	29.51	59.3	0.00	5.60	7.60
1			25	28.67	65.2	0.05	5.40	8.30
1			32	27.65	70.6	0.07	5.20	9.20
1			40	26.90	76.0	0.12	5.00	10.30
1			50	25.85	80.9	0.16	4.70	11.50
1			63	24.26	85.3	0.25	4.30	13.00
1			80	21.84	89.1	0.37	3.70	14.80
1			100	18.74	92.3	0.58	3.00	16.80
1			125	14.89	94.9	0.87	1.80	18.80
1			160	9.70	97.0	1.31	0.00	21.10
1			200	6.37	98.4	1.89	0.00	22.80
10	4,103	4,109						
10			20	24.48	59.3	0.00	5.60	7.60
10			25	23.60	65.2	0.08	5.40	8.30
10			32	22.56	70.6	0.12	5.20	9.20
10			40	21.77	76.0	0.21	5.00	10.30
10			50	20.69	80.9	0.29	4.70	11.50
10			63	19.02	85.3	0.45	4.30	13.00
10			80	16.52	89.1	0.66	3.70	14.80
10			100	13.25	92.3	1.03	3.00	16.80
10			125	9.16	94.9	1.56	1.80	18.80
10			160	3.63	97.0	2.34	0.00	21.10
10			200	-0.15	98.4	3.37	0.00	22.80
11	4,622	4,628						
11			20	23.45	59.3	0.00	5.60	7.60
11			25	22.55	65.2	0.09	5.40	8.30
11			32	21.51	70.6	0.14	5.20	9.20
11			40	20.72	76.0	0.23	5.00	10.30
11			50	19.62	80.9	0.32	4.70	11.50
11			63	17.94	85.3	0.51	4.30	13.00
11			80	15.40	89.1	0.74	3.70	14.80
11			100	12.09	92.3	1.16	3.00	16.80
11			125	7.93	94.9	1.76	1.80	18.80
11			160	2.31	97.0	2.64	0.00	21.10
11			200	-1.60	98.4	3.79	0.00	22.80
12	4,654	4,659						
12			20	23.39	59.3	0.00	5.60	7.60
12			25	22.49	65.2	0.09	5.40	8.30
12			32	21.45	70.6	0.14	5.20	9.20
12			40	20.66	76.0	0.23	5.00	10.30
12			50	19.56	80.9	0.33	4.70	11.50
12			63	17.87	85.3	0.51	4.30	13.00
12			80	15.34	89.1	0.75	3.70	14.80
12			100	12.02	92.3	1.16	3.00	16.80
12			125	7.86	94.9	1.77	1.80	18.80
12			160	2.23	97.0	2.66	0.00	21.10
12			200	-1.69	98.4	3.82	0.00	22.80
13	4,172	4,180						
13			20	24.33	59.3	0.00	5.60	7.60
13			25	23.45	65.2	0.08	5.40	8.30
13			32	22.41	70.6	0.13	5.20	9.20
13			40	21.62	76.0	0.21	5.00	10.30
13			50	20.54	80.9	0.29	4.70	11.50
13			63	18.87	85.3	0.46	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			80	16.36	89.1	0.67	3.70	14.80
13			100	13.08	92.3	1.04	3.00	16.80
13			125	8.99	94.9	1.59	1.80	18.80
13			160	3.45	97.0	2.38	0.00	21.10
13			200	-0.35	98.4	3.43	0.00	22.80
14	3,679	3,688						
14			20	25.42	59.3	0.00	5.60	7.60
14			25	24.55	65.2	0.07	5.40	8.30
14			32	23.51	70.6	0.11	5.20	9.20
14			40	22.73	76.0	0.18	5.00	10.30
14			50	21.66	80.9	0.26	4.70	11.50
14			63	20.01	85.3	0.41	4.30	13.00
14			80	17.53	89.1	0.59	3.70	14.80
14			100	14.29	92.3	0.92	3.00	16.80
14			125	10.26	94.9	1.40	1.80	18.80
14			160	4.81	97.0	2.10	0.00	21.10
14			200	1.14	98.4	3.02	0.00	22.80
15	4,001	4,011						
15			20	24.69	59.3	0.00	5.60	7.60
15			25	23.81	65.2	0.08	5.40	8.30
15			32	22.77	70.6	0.12	5.20	9.20
15			40	21.99	76.0	0.20	5.00	10.30
15			50	20.91	80.9	0.28	4.70	11.50
15			63	19.25	85.3	0.44	4.30	13.00
15			80	16.75	89.1	0.64	3.70	14.80
15			100	13.48	92.3	1.00	3.00	16.80
15			125	9.41	94.9	1.52	1.80	18.80
15			160	3.90	97.0	2.29	0.00	21.10
15			200	0.15	98.4	3.29	0.00	22.80
16	3,871	3,879						
16			20	24.98	59.3	0.00	5.60	7.60
16			25	24.10	65.2	0.08	5.40	8.30
16			32	23.06	70.6	0.12	5.20	9.20
16			40	22.29	76.0	0.19	5.00	10.30
16			50	21.21	80.9	0.27	4.70	11.50
16			63	19.55	85.3	0.43	4.30	13.00
16			80	17.06	89.1	0.62	3.70	14.80
16			100	13.81	92.3	0.97	3.00	16.80
16			125	9.75	94.9	1.47	1.80	18.80
16			160	4.27	97.0	2.21	0.00	21.10
16			200	0.54	98.4	3.18	0.00	22.80
17	3,362	3,370						
17			20	26.20	59.3	0.00	5.60	7.60
17			25	25.33	65.2	0.07	5.40	8.30
17			32	24.30	70.6	0.10	5.20	9.20
17			40	23.53	76.0	0.17	5.00	10.30
17			50	22.46	80.9	0.24	4.70	11.50
17			63	20.83	85.3	0.37	4.30	13.00
17			80	18.36	89.1	0.54	3.70	14.80
17			100	15.16	92.3	0.84	3.00	16.80
17			125	11.17	94.9	1.28	1.80	18.80
17			160	5.78	97.0	1.92	0.00	21.10
17			200	2.18	98.4	2.76	0.00	22.80
18	4,652	4,658						
18			20	23.39	59.3	0.00	5.60	7.60
18			25	22.50	65.2	0.09	5.40	8.30
18			32	21.45	70.6	0.14	5.20	9.20
18			40	20.66	76.0	0.23	5.00	10.30
18			50	19.56	80.9	0.33	4.70	11.50
18			63	17.88	85.3	0.51	4.30	13.00
18			80	15.34	89.1	0.75	3.70	14.80
18			100	12.02	92.3	1.16	3.00	16.80
18			125	7.87	94.9	1.77	1.80	18.80
18			160	2.23	97.0	2.66	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			200	-1.68	98.4	3.82	0.00	22.80
19	4,577	4,585						
19			20	23.53	59.3	0.00	5.60	7.60
19			25	22.64	65.2	0.09	5.40	8.30
19			32	21.59	70.6	0.14	5.20	9.20
19			40	20.80	76.0	0.23	5.00	10.30
19			50	19.70	80.9	0.32	4.70	11.50
19			63	18.02	85.3	0.50	4.30	13.00
19			80	15.49	89.1	0.73	3.70	14.80
19			100	12.18	92.3	1.15	3.00	16.80
19			125	8.03	94.9	1.74	1.80	18.80
19			160	2.41	97.0	2.61	0.00	21.10
19			200	-1.49	98.4	3.76	0.00	22.80
2	2,935	2,944						
2			20	27.38	59.3	0.00	5.60	7.60
2			25	26.52	65.2	0.06	5.40	8.30
2			32	25.49	70.6	0.09	5.20	9.20
2			40	24.73	76.0	0.15	5.00	10.30
2			50	23.67	80.9	0.21	4.70	11.50
2			63	22.05	85.3	0.32	4.30	13.00
2			80	19.60	89.1	0.47	3.70	14.80
2			100	16.44	92.3	0.74	3.00	16.80
2			125	12.50	94.9	1.12	1.80	18.80
2			160	7.19	97.0	1.68	0.00	21.10
2			200	3.71	98.4	2.41	0.00	22.80
20	4,409	4,417						
20			20	23.85	59.3	0.00	5.60	7.60
20			25	22.96	65.2	0.09	5.40	8.30
20			32	21.92	70.6	0.13	5.20	9.20
20			40	21.13	76.0	0.22	5.00	10.30
20			50	20.04	80.9	0.31	4.70	11.50
20			63	18.36	85.3	0.49	4.30	13.00
20			80	15.84	89.1	0.71	3.70	14.80
20			100	12.55	92.3	1.10	3.00	16.80
20			125	8.42	94.9	1.68	1.80	18.80
20			160	2.83	97.0	2.52	0.00	21.10
20			200	-1.02	98.4	3.62	0.00	22.80
21	4,051	4,058						
21			20	24.59	59.3	0.00	5.60	7.60
21			25	23.71	65.2	0.08	5.40	8.30
21			32	22.67	70.6	0.12	5.20	9.20
21			40	21.88	76.0	0.20	5.00	10.30
21			50	20.80	80.9	0.28	4.70	11.50
21			63	19.14	85.3	0.45	4.30	13.00
21			80	16.64	89.1	0.65	3.70	14.80
21			100	13.37	92.3	1.01	3.00	16.80
21			125	9.29	94.9	1.54	1.80	18.80
21			160	3.77	97.0	2.31	0.00	21.10
21			200	0.01	98.4	3.33	0.00	22.80
22	3,756	3,764						
22			20	25.24	59.3	0.00	5.60	7.60
22			25	24.37	65.2	0.08	5.40	8.30
22			32	23.33	70.6	0.11	5.20	9.20
22			40	22.55	76.0	0.19	5.00	10.30
22			50	21.48	80.9	0.26	4.70	11.50
22			63	19.82	85.3	0.41	4.30	13.00
22			80	17.34	89.1	0.60	3.70	14.80
22			100	14.10	92.3	0.94	3.00	16.80
22			125	10.06	94.9	1.43	1.80	18.80
22			160	4.59	97.0	2.15	0.00	21.10
22			200	0.90	98.4	3.09	0.00	22.80
23	3,145	3,153						
23			20	26.78	59.3	0.00	5.60	7.60
23			25	25.92	65.2	0.06	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			32	24.89	70.6	0.09	5.20	9.20
23			40	24.12	76.0	0.16	5.00	10.30
23			50	23.06	80.9	0.22	4.70	11.50
23			63	21.43	85.3	0.35	4.30	13.00
23			80	18.97	89.1	0.50	3.70	14.80
23			100	15.79	92.3	0.79	3.00	16.80
23			125	11.83	94.9	1.20	1.80	18.80
23			160	6.48	97.0	1.80	0.00	21.10
23			200	2.94	98.4	2.59	0.00	22.80
24	3,765	3,771						
24			20	25.22	59.3	0.00	5.60	7.60
24			25	24.35	65.2	0.08	5.40	8.30
24			32	23.31	70.6	0.11	5.20	9.20
24			40	22.54	76.0	0.19	5.00	10.30
24			50	21.46	80.9	0.26	4.70	11.50
24			63	19.81	85.3	0.41	4.30	13.00
24			80	17.32	89.1	0.60	3.70	14.80
24			100	14.08	92.3	0.94	3.00	16.80
24			125	10.04	94.9	1.43	1.80	18.80
24			160	4.57	97.0	2.15	0.00	21.10
24			200	0.88	98.4	3.09	0.00	22.80
3	2,337	2,349						
3			20	29.34	59.3	0.00	5.60	7.60
3			25	28.49	65.2	0.05	5.40	8.30
3			32	27.47	70.6	0.07	5.20	9.20
3			40	26.72	76.0	0.12	5.00	10.30
3			50	25.67	80.9	0.16	4.70	11.50
3			63	24.08	85.3	0.26	4.30	13.00
3			80	21.66	89.1	0.38	3.70	14.80
3			100	18.55	92.3	0.59	3.00	16.80
3			125	14.69	94.9	0.89	1.80	18.80
3			160	9.50	97.0	1.34	0.00	21.10
3			200	6.16	98.4	1.93	0.00	22.80
4	2,506	2,517						
4			20	28.74	59.3	0.00	5.60	7.60
4			25	27.89	65.2	0.05	5.40	8.30
4			32	26.86	70.6	0.08	5.20	9.20
4			40	26.11	76.0	0.13	5.00	10.30
4			50	25.06	80.9	0.18	4.70	11.50
4			63	23.46	85.3	0.28	4.30	13.00
4			80	21.03	89.1	0.40	3.70	14.80
4			100	17.91	92.3	0.63	3.00	16.80
4			125	14.03	94.9	0.96	1.80	18.80
4			160	8.80	97.0	1.43	0.00	21.10
4			200	5.42	98.4	2.06	0.00	22.80
5	2,377	2,388						
5			20	29.19	59.3	0.00	5.60	7.60
5			25	28.35	65.2	0.05	5.40	8.30
5			32	27.32	70.6	0.07	5.20	9.20
5			40	26.57	76.0	0.12	5.00	10.30
5			50	25.52	80.9	0.17	4.70	11.50
5			63	23.93	85.3	0.26	4.30	13.00
5			80	21.51	89.1	0.38	3.70	14.80
5			100	18.39	92.3	0.60	3.00	16.80
5			125	14.53	94.9	0.91	1.80	18.80
5			160	9.33	97.0	1.36	0.00	21.10
5			200	5.98	98.4	1.96	0.00	22.80
6	3,943	3,950						
6			20	24.82	59.3	0.00	5.60	7.60
6			25	23.94	65.2	0.08	5.40	8.30
6			32	22.90	70.6	0.12	5.20	9.20
6			40	22.13	76.0	0.20	5.00	10.30
6			50	21.04	80.9	0.28	4.70	11.50
6			63	19.39	85.3	0.43	4.30	13.00

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			80	16.89	89.1	0.63	3.70	14.80
6			100	13.63	92.3	0.99	3.00	16.80
6			125	9.57	94.9	1.50	1.80	18.80
6			160	4.07	97.0	2.25	0.00	21.10
6			200	0.33	98.4	3.24	0.00	22.80
7	3,485	3,492						
7			20	25.89	59.3	0.00	5.60	7.60
7			25	25.02	65.2	0.07	5.40	8.30
7			32	23.99	70.6	0.10	5.20	9.20
7			40	23.22	76.0	0.17	5.00	10.30
7			50	22.15	80.9	0.24	4.70	11.50
7			63	20.51	85.3	0.38	4.30	13.00
7			80	18.03	89.1	0.56	3.70	14.80
7			100	14.82	92.3	0.87	3.00	16.80
7			125	10.81	94.9	1.33	1.80	18.80
7			160	5.40	97.0	1.99	0.00	21.10
7			200	1.78	98.4	2.86	0.00	22.80
8	2,937	2,946						
8			20	27.37	59.3	0.00	5.60	7.60
8			25	26.51	65.2	0.06	5.40	8.30
8			32	25.48	70.6	0.09	5.20	9.20
8			40	24.72	76.0	0.15	5.00	10.30
8			50	23.66	80.9	0.21	4.70	11.50
8			63	22.04	85.3	0.32	4.30	13.00
8			80	19.60	89.1	0.47	3.70	14.80
8			100	16.43	92.3	0.74	3.00	16.80
8			125	12.50	94.9	1.12	1.80	18.80
8			160	7.19	97.0	1.68	0.00	21.10
8			200	3.70	98.4	2.42	0.00	22.80
9	4,609	4,615						
9			20	23.47	59.3	0.00	5.60	7.60
9			25	22.58	65.2	0.09	5.40	8.30
9			32	21.53	70.6	0.14	5.20	9.20
9			40	20.74	76.0	0.23	5.00	10.30
9			50	19.65	80.9	0.32	4.70	11.50
9			63	17.96	85.3	0.51	4.30	13.00
9			80	15.43	89.1	0.74	3.70	14.80
9			100	12.11	92.3	1.15	3.00	16.80
9			125	7.96	94.9	1.75	1.80	18.80
9			160	2.34	97.0	2.63	0.00	21.10
9			200	-1.57	98.4	3.78	0.00	22.80
Sum								
Sum			20	39.92				
Sum			25	39.06				
Sum			32	38.02				
Sum			40	37.26				
Sum			50	36.19				
Sum			63	34.56				
Sum			80	32.09				
Sum			100	28.90				
Sum			125	24.92				
Sum			160	19.56				
Sum			200	16.01				

Noise sensitive area: HH Kauvanjärvi 5 Noise sensitive point: Finnish normal frequency - User defined (301)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,168	6,173						
1			20	20.95	59.3	0.00	5.60	7.60
1			25	20.02	65.2	0.12	5.40	8.30
1			32	18.96	70.6	0.19	5.20	9.20
1			40	18.14	76.0	0.31	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			50	17.01	80.9	0.43	4.70	11.50
1			63	15.26	85.3	0.68	4.30	13.00
1			80	12.65	89.1	0.99	3.70	14.80
1			100	9.20	92.3	1.54	3.00	16.80
1			125	4.85	94.9	2.35	1.80	18.80
1			160	-1.08	97.0	3.52	0.00	21.10
1			200	-5.37	98.4	5.06	0.00	22.80
10	5,856	5,861						
10			20	21.39	59.3	0.00	5.60	7.60
10			25	20.48	65.2	0.12	5.40	8.30
10			32	19.42	70.6	0.18	5.20	9.20
10			40	18.60	76.0	0.29	5.00	10.30
10			50	17.48	80.9	0.41	4.70	11.50
10			63	15.75	85.3	0.64	4.30	13.00
10			80	13.15	89.1	0.94	3.70	14.80
10			100	9.73	92.3	1.47	3.00	16.80
10			125	5.41	94.9	2.23	1.80	18.80
10			160	-0.45	97.0	3.34	0.00	21.10
10			200	-4.67	98.4	4.81	0.00	22.80
11	5,938	5,943						
11			20	21.27	59.3	0.00	5.60	7.60
11			25	20.36	65.2	0.12	5.40	8.30
11			32	19.30	70.6	0.18	5.20	9.20
11			40	18.48	76.0	0.30	5.00	10.30
11			50	17.36	80.9	0.42	4.70	11.50
11			63	15.62	85.3	0.65	4.30	13.00
11			80	13.02	89.1	0.95	3.70	14.80
11			100	9.59	92.3	1.49	3.00	16.80
11			125	5.26	94.9	2.26	1.80	18.80
11			160	-0.62	97.0	3.39	0.00	21.10
11			200	-4.85	98.4	4.87	0.00	22.80
12	5,518	5,523						
12			20	21.91	59.3	0.00	5.60	7.60
12			25	21.00	65.2	0.11	5.40	8.30
12			32	19.95	70.6	0.17	5.20	9.20
12			40	19.13	76.0	0.28	5.00	10.30
12			50	18.02	80.9	0.39	4.70	11.50
12			63	16.30	85.3	0.61	4.30	13.00
12			80	13.72	89.1	0.88	3.70	14.80
12			100	10.33	92.3	1.38	3.00	16.80
12			125	6.06	94.9	2.10	1.80	18.80
12			160	0.26	97.0	3.15	0.00	21.10
12			200	-3.87	98.4	4.53	0.00	22.80
13	4,862	4,869						
13			20	23.01	59.3	0.00	5.60	7.60
13			25	22.11	65.2	0.10	5.40	8.30
13			32	21.06	70.6	0.15	5.20	9.20
13			40	20.26	76.0	0.24	5.00	10.30
13			50	19.16	80.9	0.34	4.70	11.50
13			63	17.47	85.3	0.54	4.30	13.00
13			80	14.92	89.1	0.78	3.70	14.80
13			100	11.59	92.3	1.22	3.00	16.80
13			125	7.40	94.9	1.85	1.80	18.80
13			160	1.73	97.0	2.78	0.00	21.10
13			200	-2.24	98.4	3.99	0.00	22.80
14	4,757	4,765						
14			20	23.19	59.3	0.00	5.60	7.60
14			25	22.30	65.2	0.10	5.40	8.30
14			32	21.25	70.6	0.14	5.20	9.20
14			40	20.46	76.0	0.24	5.00	10.30
14			50	19.36	80.9	0.33	4.70	11.50
14			63	17.67	85.3	0.52	4.30	13.00
14			80	15.13	89.1	0.76	3.70	14.80
14			100	11.80	92.3	1.19	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			125	7.63	94.9	1.81	1.80	18.80
14			160	1.98	97.0	2.72	0.00	21.10
14			200	-1.97	98.4	3.91	0.00	22.80
15	4,252	4,261						
15			20	24.16	59.3	0.00	5.60	7.60
15			25	23.28	65.2	0.09	5.40	8.30
15			32	22.24	70.6	0.13	5.20	9.20
15			40	21.45	76.0	0.21	5.00	10.30
15			50	20.36	80.9	0.30	4.70	11.50
15			63	18.69	85.3	0.47	4.30	13.00
15			80	16.18	89.1	0.68	3.70	14.80
15			100	12.90	92.3	1.07	3.00	16.80
15			125	8.79	94.9	1.62	1.80	18.80
15			160	3.23	97.0	2.43	0.00	21.10
15			200	-0.58	98.4	3.49	0.00	22.80
16	3,672	3,680						
16			20	25.44	59.3	0.00	5.60	7.60
16			25	24.56	65.2	0.07	5.40	8.30
16			32	23.53	70.6	0.11	5.20	9.20
16			40	22.75	76.0	0.18	5.00	10.30
16			50	21.68	80.9	0.26	4.70	11.50
16			63	20.03	85.3	0.40	4.30	13.00
16			80	17.54	89.1	0.59	3.70	14.80
16			100	14.31	92.3	0.92	3.00	16.80
16			125	10.28	94.9	1.40	1.80	18.80
16			160	4.84	97.0	2.10	0.00	21.10
16			200	1.16	98.4	3.02	0.00	22.80
17	3,226	3,235						
17			20	26.56	59.3	0.00	5.60	7.60
17			25	25.69	65.2	0.06	5.40	8.30
17			32	24.66	70.6	0.10	5.20	9.20
17			40	23.90	76.0	0.16	5.00	10.30
17			50	22.83	80.9	0.23	4.70	11.50
17			63	21.20	85.3	0.36	4.30	13.00
17			80	18.74	89.1	0.52	3.70	14.80
17			100	15.55	92.3	0.81	3.00	16.80
17			125	11.57	94.9	1.23	1.80	18.80
17			160	6.21	97.0	1.84	0.00	21.10
17			200	2.65	98.4	2.65	0.00	22.80
18	4,784	4,791						
18			20	23.15	59.3	0.00	5.60	7.60
18			25	22.25	65.2	0.10	5.40	8.30
18			32	21.20	70.6	0.14	5.20	9.20
18			40	20.41	76.0	0.24	5.00	10.30
18			50	19.31	80.9	0.34	4.70	11.50
18			63	17.62	85.3	0.53	4.30	13.00
18			80	15.08	89.1	0.77	3.70	14.80
18			100	11.75	92.3	1.20	3.00	16.80
18			125	7.57	94.9	1.82	1.80	18.80
18			160	1.91	97.0	2.73	0.00	21.10
18			200	-2.04	98.4	3.93	0.00	22.80
19	4,271	4,280						
19			20	24.13	59.3	0.00	5.60	7.60
19			25	23.24	65.2	0.09	5.40	8.30
19			32	22.20	70.6	0.13	5.20	9.20
19			40	21.41	76.0	0.21	5.00	10.30
19			50	20.32	80.9	0.30	4.70	11.50
19			63	18.65	85.3	0.47	4.30	13.00
19			80	16.14	89.1	0.68	3.70	14.80
19			100	12.85	92.3	1.07	3.00	16.80
19			125	8.75	94.9	1.63	1.80	18.80
19			160	3.18	97.0	2.44	0.00	21.10
19			200	-0.64	98.4	3.51	0.00	22.80
2	6,016	6,020						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			20	21.16	59.3	0.00	5.60	7.60
2			25	20.24	65.2	0.12	5.40	8.30
2			32	19.18	70.6	0.18	5.20	9.20
2			40	18.36	76.0	0.30	5.00	10.30
2			50	17.24	80.9	0.42	4.70	11.50
2			63	15.50	85.3	0.66	4.30	13.00
2			80	12.90	89.1	0.96	3.70	14.80
2			100	9.45	92.3	1.51	3.00	16.80
2			125	5.12	94.9	2.29	1.80	18.80
2			160	-0.77	97.0	3.43	0.00	21.10
2			200	-5.03	98.4	4.94	0.00	22.80
20	3,772	3,781						
20			20	25.20	59.3	0.00	5.60	7.60
20			25	24.33	65.2	0.08	5.40	8.30
20			32	23.29	70.6	0.11	5.20	9.20
20			40	22.51	76.0	0.19	5.00	10.30
20			50	21.43	80.9	0.26	4.70	11.50
20			63	19.78	85.3	0.42	4.30	13.00
20			80	17.29	89.1	0.60	3.70	14.80
20			100	14.05	92.3	0.95	3.00	16.80
20			125	10.01	94.9	1.44	1.80	18.80
20			160	4.54	97.0	2.16	0.00	21.10
20			200	0.85	98.4	3.10	0.00	22.80
21	3,169	3,179						
21			20	26.71	59.3	0.00	5.60	7.60
21			25	25.85	65.2	0.06	5.40	8.30
21			32	24.81	70.6	0.10	5.20	9.20
21			40	24.05	76.0	0.16	5.00	10.30
21			50	22.98	80.9	0.22	4.70	11.50
21			63	21.36	85.3	0.35	4.30	13.00
21			80	18.90	89.1	0.51	3.70	14.80
21			100	15.71	92.3	0.79	3.00	16.80
21			125	11.75	94.9	1.21	1.80	18.80
21			160	6.39	97.0	1.81	0.00	21.10
21			200	2.85	98.4	2.61	0.00	22.80
22	2,562	2,575						
22			20	28.54	59.3	0.00	5.60	7.60
22			25	27.69	65.2	0.05	5.40	8.30
22			32	26.66	70.6	0.08	5.20	9.20
22			40	25.91	76.0	0.13	5.00	10.30
22			50	24.85	80.9	0.18	4.70	11.50
22			63	23.25	85.3	0.28	4.30	13.00
22			80	20.82	89.1	0.41	3.70	14.80
22			100	17.69	92.3	0.64	3.00	16.80
22			125	13.80	94.9	0.98	1.80	18.80
22			160	8.57	97.0	1.47	0.00	21.10
22			200	5.17	98.4	2.11	0.00	22.80
23	2,462	2,473						
23			20	28.89	59.3	0.00	5.60	7.60
23			25	28.04	65.2	0.05	5.40	8.30
23			32	27.02	70.6	0.07	5.20	9.20
23			40	26.27	76.0	0.12	5.00	10.30
23			50	25.22	80.9	0.17	4.70	11.50
23			63	23.62	85.3	0.27	4.30	13.00
23			80	21.19	89.1	0.40	3.70	14.80
23			100	18.07	92.3	0.62	3.00	16.80
23			125	14.20	94.9	0.94	1.80	18.80
23			160	8.98	97.0	1.41	0.00	21.10
23			200	5.61	98.4	2.03	0.00	22.80
24	2,042	2,055						
24			20	30.50	59.3	0.00	5.60	7.60
24			25	29.66	65.2	0.04	5.40	8.30
24			32	28.64	70.6	0.06	5.20	9.20
24			40	27.90	76.0	0.10	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			50	26.85	80.9	0.14	4.70	11.50
24			63	25.27	85.3	0.23	4.30	13.00
24			80	22.87	89.1	0.33	3.70	14.80
24			100	19.78	92.3	0.51	3.00	16.80
24			125	15.96	94.9	0.78	1.80	18.80
24			160	10.82	97.0	1.17	0.00	21.10
24			200	7.56	98.4	1.68	0.00	22.80
3	5,788	5,793						
3			20	21.50	59.3	0.00	5.60	7.60
3			25	20.58	65.2	0.12	5.40	8.30
3			32	19.52	70.6	0.17	5.20	9.20
3			40	18.71	76.0	0.29	5.00	10.30
3			50	17.59	80.9	0.41	4.70	11.50
3			63	15.86	85.3	0.64	4.30	13.00
3			80	13.27	89.1	0.93	3.70	14.80
3			100	9.84	92.3	1.45	3.00	16.80
3			125	5.54	94.9	2.20	1.80	18.80
3			160	-0.31	97.0	3.30	0.00	21.10
3			200	-4.51	98.4	4.75	0.00	22.80
4	5,445	5,451						
4			20	22.03	59.3	0.00	5.60	7.60
4			25	21.12	65.2	0.11	5.40	8.30
4			32	20.06	70.6	0.16	5.20	9.20
4			40	19.25	76.0	0.27	5.00	10.30
4			50	18.14	80.9	0.38	4.70	11.50
4			63	16.42	85.3	0.60	4.30	13.00
4			80	13.85	89.1	0.87	3.70	14.80
4			100	10.46	92.3	1.36	3.00	16.80
4			125	6.20	94.9	2.07	1.80	18.80
4			160	0.42	97.0	3.11	0.00	21.10
4			200	-3.70	98.4	4.47	0.00	22.80
5	4,899	4,905						
5			20	22.94	59.3	0.00	5.60	7.60
5			25	22.04	65.2	0.10	5.40	8.30
5			32	20.99	70.6	0.15	5.20	9.20
5			40	20.20	76.0	0.25	5.00	10.30
5			50	19.10	80.9	0.34	4.70	11.50
5			63	17.40	85.3	0.54	4.30	13.00
5			80	14.85	89.1	0.78	3.70	14.80
5			100	11.51	92.3	1.23	3.00	16.80
5			125	7.32	94.9	1.86	1.80	18.80
5			160	1.64	97.0	2.80	0.00	21.10
5			200	-2.34	98.4	4.02	0.00	22.80
6	6,247	6,251						
6			20	20.84	59.3	0.00	5.60	7.60
6			25	19.91	65.2	0.13	5.40	8.30
6			32	18.85	70.6	0.19	5.20	9.20
6			40	18.02	76.0	0.31	5.00	10.30
6			50	16.89	80.9	0.44	4.70	11.50
6			63	15.14	85.3	0.69	4.30	13.00
6			80	12.53	89.1	1.00	3.70	14.80
6			100	9.07	92.3	1.56	3.00	16.80
6			125	4.70	94.9	2.38	1.80	18.80
6			160	-1.23	97.0	3.56	0.00	21.10
6			200	-5.55	98.4	5.13	0.00	22.80
7	5,596	5,601						
7			20	21.79	59.3	0.00	5.60	7.60
7			25	20.88	65.2	0.11	5.40	8.30
7			32	19.82	70.6	0.17	5.20	9.20
7			40	19.01	76.0	0.28	5.00	10.30
7			50	17.89	80.9	0.39	4.70	11.50
7			63	16.17	85.3	0.62	4.30	13.00
7			80	13.59	89.1	0.90	3.70	14.80
7			100	10.19	92.3	1.40	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	5.91	94.9	2.13	1.80	18.80
7			160	0.09	97.0	3.19	0.00	21.10
7			200	-4.06	98.4	4.59	0.00	22.80
8	5,209	5,214						
8			20	22.41	59.3	0.00	5.60	7.60
8			25	21.51	65.2	0.10	5.40	8.30
8			32	20.45	70.6	0.16	5.20	9.20
8			40	19.65	76.0	0.26	5.00	10.30
8			50	18.54	80.9	0.37	4.70	11.50
8			63	16.83	85.3	0.57	4.30	13.00
8			80	14.27	89.1	0.83	3.70	14.80
8			100	10.90	92.3	1.30	3.00	16.80
8			125	6.67	94.9	1.98	1.80	18.80
8			160	0.94	97.0	2.97	0.00	21.10
8			200	-3.12	98.4	4.28	0.00	22.80
9	6,456	6,460						
9			20	20.55	59.3	0.00	5.60	7.60
9			25	19.62	65.2	0.13	5.40	8.30
9			32	18.56	70.6	0.19	5.20	9.20
9			40	17.73	76.0	0.32	5.00	10.30
9			50	16.59	80.9	0.45	4.70	11.50
9			63	14.84	85.3	0.71	4.30	13.00
9			80	12.21	89.1	1.03	3.70	14.80
9			100	8.73	92.3	1.62	3.00	16.80
9			125	4.34	94.9	2.45	1.80	18.80
9			160	-1.64	97.0	3.68	0.00	21.10
9			200	-6.00	98.4	5.30	0.00	22.80
Sum								
Sum			20	38.50				
Sum			25	37.63				
Sum			32	36.59				
Sum			40	35.82				
Sum			50	34.74				
Sum			63	33.09				
Sum			80	30.61				
Sum			100	27.38				
Sum			125	23.35				
Sum			160	17.93				
Sum			200	14.31				

Noise sensitive area: HH Kellarimäentie Noise sensitive point: Finnish normal frequency - User defined (331)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,257	4,262						
1			20	24.16	59.3	0.00	5.60	7.60
1			25	23.28	65.2	0.09	5.40	8.30
1			32	22.23	70.6	0.13	5.20	9.20
1			40	21.45	76.0	0.21	5.00	10.30
1			50	20.36	80.9	0.30	4.70	11.50
1			63	18.69	85.3	0.47	4.30	13.00
1			80	16.18	89.1	0.68	3.70	14.80
1			100	12.89	92.3	1.07	3.00	16.80
1			125	8.79	94.9	1.62	1.80	18.80
1			160	3.23	97.0	2.43	0.00	21.10
1			200	-0.59	98.4	3.49	0.00	22.80
10	4,723	4,727						
10			20	23.26	59.3	0.00	5.60	7.60
10			25	22.37	65.2	0.09	5.40	8.30
10			32	21.32	70.6	0.14	5.20	9.20
10			40	20.53	76.0	0.24	5.00	10.30
10			50	19.43	80.9	0.33	4.70	11.50
10			63	17.74	85.3	0.52	4.30	13.00

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Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	15.20	89.1	0.76	3.70	14.80
10			100	11.88	92.3	1.18	3.00	16.80
10			125	7.71	94.9	1.80	1.80	18.80
10			160	2.06	97.0	2.69	0.00	21.10
10			200	-1.87	98.4	3.88	0.00	22.80
11	5,011	5,015						
11			20	22.75	59.3	0.00	5.60	7.60
11			25	21.85	65.2	0.10	5.40	8.30
11			32	20.80	70.6	0.15	5.20	9.20
11			40	20.00	76.0	0.25	5.00	10.30
11			50	18.90	80.9	0.35	4.70	11.50
11			63	17.19	85.3	0.55	4.30	13.00
11			80	14.64	89.1	0.80	3.70	14.80
11			100	11.29	92.3	1.25	3.00	16.80
11			125	7.09	94.9	1.91	1.80	18.80
11			160	1.39	97.0	2.86	0.00	21.10
11			200	-2.62	98.4	4.11	0.00	22.80
12	4,757	4,761						
12			20	23.20	59.3	0.00	5.60	7.60
12			25	22.30	65.2	0.10	5.40	8.30
12			32	21.26	70.6	0.14	5.20	9.20
12			40	20.46	76.0	0.24	5.00	10.30
12			50	19.36	80.9	0.33	4.70	11.50
12			63	17.67	85.3	0.52	4.30	13.00
12			80	15.13	89.1	0.76	3.70	14.80
12			100	11.81	92.3	1.19	3.00	16.80
12			125	7.64	94.9	1.81	1.80	18.80
12			160	1.98	97.0	2.71	0.00	21.10
12			200	-1.96	98.4	3.90	0.00	22.80
13	4,096	4,102						
13			20	24.49	59.3	0.00	5.60	7.60
13			25	23.61	65.2	0.08	5.40	8.30
13			32	22.57	70.6	0.12	5.20	9.20
13			40	21.79	76.0	0.21	5.00	10.30
13			50	20.70	80.9	0.29	4.70	11.50
13			63	19.04	85.3	0.45	4.30	13.00
13			80	16.53	89.1	0.66	3.70	14.80
13			100	13.27	92.3	1.03	3.00	16.80
13			125	9.18	94.9	1.56	1.80	18.80
13			160	3.65	97.0	2.34	0.00	21.10
13			200	-0.12	98.4	3.36	0.00	22.80
14	3,779	3,786						
14			20	25.19	59.3	0.00	5.60	7.60
14			25	24.31	65.2	0.08	5.40	8.30
14			32	23.28	70.6	0.11	5.20	9.20
14			40	22.50	76.0	0.19	5.00	10.30
14			50	21.42	80.9	0.27	4.70	11.50
14			63	19.77	85.3	0.42	4.30	13.00
14			80	17.28	89.1	0.61	3.70	14.80
14			100	14.04	92.3	0.95	3.00	16.80
14			125	10.00	94.9	1.44	1.80	18.80
14			160	4.53	97.0	2.16	0.00	21.10
14			200	0.83	98.4	3.10	0.00	22.80
15	3,604	3,613						
15			20	25.60	59.3	0.00	5.60	7.60
15			25	24.73	65.2	0.07	5.40	8.30
15			32	23.69	70.6	0.11	5.20	9.20
15			40	22.92	76.0	0.18	5.00	10.30
15			50	21.84	80.9	0.25	4.70	11.50
15			63	20.20	85.3	0.40	4.30	13.00
15			80	17.72	89.1	0.58	3.70	14.80
15			100	14.49	92.3	0.90	3.00	16.80
15			125	10.47	94.9	1.37	1.80	18.80
15			160	5.04	97.0	2.06	0.00	21.10

To be continued on next page...

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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	1.38	98.4	2.96	0.00	22.80
16	3,144	3,152						
16			20	26.78	59.3	0.00	5.60	7.60
16			25	25.92	65.2	0.06	5.40	8.30
16			32	24.89	70.6	0.09	5.20	9.20
16			40	24.12	76.0	0.16	5.00	10.30
16			50	23.06	80.9	0.22	4.70	11.50
16			63	21.43	85.3	0.35	4.30	13.00
16			80	18.98	89.1	0.50	3.70	14.80
16			100	15.79	92.3	0.79	3.00	16.80
16			125	11.83	94.9	1.20	1.80	18.80
16			160	6.48	97.0	1.80	0.00	21.10
16			200	2.94	98.4	2.58	0.00	22.80
17	2,507	2,516						
17			20	28.74	59.3	0.00	5.60	7.60
17			25	27.89	65.2	0.05	5.40	8.30
17			32	26.86	70.6	0.08	5.20	9.20
17			40	26.11	76.0	0.13	5.00	10.30
17			50	25.06	80.9	0.18	4.70	11.50
17			63	23.46	85.3	0.28	4.30	13.00
17			80	21.03	89.1	0.40	3.70	14.80
17			100	17.91	92.3	0.63	3.00	16.80
17			125	14.03	94.9	0.96	1.80	18.80
17			160	8.80	97.0	1.43	0.00	21.10
17			200	5.42	98.4	2.06	0.00	22.80
18	4,295	4,301						
18			20	24.08	59.3	0.00	5.60	7.60
18			25	23.20	65.2	0.09	5.40	8.30
18			32	22.16	70.6	0.13	5.20	9.20
18			40	21.37	76.0	0.22	5.00	10.30
18			50	20.28	80.9	0.30	4.70	11.50
18			63	18.61	85.3	0.47	4.30	13.00
18			80	16.09	89.1	0.69	3.70	14.80
18			100	12.81	92.3	1.08	3.00	16.80
18			125	8.70	94.9	1.63	1.80	18.80
18			160	3.13	97.0	2.45	0.00	21.10
18			200	-0.70	98.4	3.53	0.00	22.80
19	3,938	3,945						
19			20	24.83	59.3	0.00	5.60	7.60
19			25	23.95	65.2	0.08	5.40	8.30
19			32	22.92	70.6	0.12	5.20	9.20
19			40	22.14	76.0	0.20	5.00	10.30
19			50	21.05	80.9	0.28	4.70	11.50
19			63	19.40	85.3	0.43	4.30	13.00
19			80	16.90	89.1	0.63	3.70	14.80
19			100	13.64	92.3	0.99	3.00	16.80
19			125	9.58	94.9	1.50	1.80	18.80
19			160	4.08	97.0	2.25	0.00	21.10
19			200	0.34	98.4	3.24	0.00	22.80
2	4,363	4,368						
2			20	23.95	59.3	0.00	5.60	7.60
2			25	23.06	65.2	0.09	5.40	8.30
2			32	22.02	70.6	0.13	5.20	9.20
2			40	21.23	76.0	0.22	5.00	10.30
2			50	20.14	80.9	0.31	4.70	11.50
2			63	18.46	85.3	0.48	4.30	13.00
2			80	15.95	89.1	0.70	3.70	14.80
2			100	12.65	92.3	1.09	3.00	16.80
2			125	8.53	94.9	1.66	1.80	18.80
2			160	2.96	97.0	2.49	0.00	21.10
2			200	-0.89	98.4	3.58	0.00	22.80
20	3,535	3,543						
20			20	25.77	59.3	0.00	5.60	7.60
20			25	24.90	65.2	0.07	5.40	8.30

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Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	23.86	70.6	0.11	5.20	9.20
20			40	23.09	76.0	0.18	5.00	10.30
20			50	22.02	80.9	0.25	4.70	11.50
20			63	20.37	85.3	0.39	4.30	13.00
20			80	17.90	89.1	0.57	3.70	14.80
20			100	14.68	92.3	0.89	3.00	16.80
20			125	10.67	94.9	1.35	1.80	18.80
20			160	5.25	97.0	2.02	0.00	21.10
20			200	1.61	98.4	2.91	0.00	22.80
21	2,935	2,943						
21			20	27.38	59.3	0.00	5.60	7.60
21			25	26.52	65.2	0.06	5.40	8.30
21			32	25.49	70.6	0.09	5.20	9.20
21			40	24.73	76.0	0.15	5.00	10.30
21			50	23.67	80.9	0.21	4.70	11.50
21			63	22.05	85.3	0.32	4.30	13.00
21			80	19.61	89.1	0.47	3.70	14.80
21			100	16.44	92.3	0.74	3.00	16.80
21			125	12.51	94.9	1.12	1.80	18.80
21			160	7.20	97.0	1.68	0.00	21.10
21			200	3.71	98.4	2.41	0.00	22.80
22	2,331	2,342						
22			20	29.36	59.3	0.00	5.60	7.60
22			25	28.52	65.2	0.05	5.40	8.30
22			32	27.49	70.6	0.07	5.20	9.20
22			40	26.75	76.0	0.12	5.00	10.30
22			50	25.70	80.9	0.16	4.70	11.50
22			63	24.10	85.3	0.26	4.30	13.00
22			80	21.69	89.1	0.37	3.70	14.80
22			100	18.57	92.3	0.59	3.00	16.80
22			125	14.72	94.9	0.89	1.80	18.80
22			160	9.52	97.0	1.33	0.00	21.10
22			200	6.19	98.4	1.92	0.00	22.80
23	1,732	1,744						
23			20	31.92	59.3	0.00	5.60	7.60
23			25	31.09	65.2	0.03	5.40	8.30
23			32	30.07	70.6	0.05	5.20	9.20
23			40	29.33	76.0	0.09	5.00	10.30
23			50	28.30	80.9	0.12	4.70	11.50
23			63	26.73	85.3	0.19	4.30	13.00
23			80	24.34	89.1	0.28	3.70	14.80
23			100	21.28	92.3	0.44	3.00	16.80
23			125	17.50	94.9	0.66	1.80	18.80
23			160	12.42	97.0	0.99	0.00	21.10
23			200	9.24	98.4	1.43	0.00	22.80
24	2,003	2,013						
24			20	30.68	59.3	0.00	5.60	7.60
24			25	29.84	65.2	0.04	5.40	8.30
24			32	28.82	70.6	0.06	5.20	9.20
24			40	28.08	76.0	0.10	5.00	10.30
24			50	27.04	80.9	0.14	4.70	11.50
24			63	25.45	85.3	0.22	4.30	13.00
24			80	23.05	89.1	0.32	3.70	14.80
24			100	19.97	92.3	0.50	3.00	16.80
24			125	16.16	94.9	0.76	1.80	18.80
24			160	11.03	97.0	1.15	0.00	21.10
24			200	7.77	98.4	1.65	0.00	22.80
3	3,987	3,993						
3			20	24.73	59.3	0.00	5.60	7.60
3			25	23.85	65.2	0.08	5.40	8.30
3			32	22.81	70.6	0.12	5.20	9.20
3			40	22.03	76.0	0.20	5.00	10.30
3			50	20.95	80.9	0.28	4.70	11.50
3			63	19.29	85.3	0.44	4.30	13.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	16.79	89.1	0.64	3.70	14.80
3			100	13.53	92.3	1.00	3.00	16.80
3			125	9.46	94.9	1.52	1.80	18.80
3			160	3.95	97.0	2.28	0.00	21.10
3			200	0.20	98.4	3.27	0.00	22.80
4	3,783	3,789						
4			20	25.18	59.3	0.00	5.60	7.60
4			25	24.31	65.2	0.08	5.40	8.30
4			32	23.27	70.6	0.11	5.20	9.20
4			40	22.49	76.0	0.19	5.00	10.30
4			50	21.42	80.9	0.27	4.70	11.50
4			63	19.76	85.3	0.42	4.30	13.00
4			80	17.27	89.1	0.61	3.70	14.80
4			100	14.03	92.3	0.95	3.00	16.80
4			125	9.99	94.9	1.44	1.80	18.80
4			160	4.52	97.0	2.16	0.00	21.10
4			200	0.82	98.4	3.11	0.00	22.80
5	3,308	3,314						
5			20	26.35	59.3	0.00	5.60	7.60
5			25	25.48	65.2	0.07	5.40	8.30
5			32	24.45	70.6	0.10	5.20	9.20
5			40	23.68	76.0	0.17	5.00	10.30
5			50	22.61	80.9	0.23	4.70	11.50
5			63	20.98	85.3	0.36	4.30	13.00
5			80	18.51	89.1	0.53	3.70	14.80
5			100	15.32	92.3	0.83	3.00	16.80
5			125	11.33	94.9	1.26	1.80	18.80
5			160	5.95	97.0	1.89	0.00	21.10
5			200	2.37	98.4	2.72	0.00	22.80
6	4,918	4,922						
6			20	22.91	59.3	0.00	5.60	7.60
6			25	22.01	65.2	0.10	5.40	8.30
6			32	20.96	70.6	0.15	5.20	9.20
6			40	20.17	76.0	0.25	5.00	10.30
6			50	19.06	80.9	0.34	4.70	11.50
6			63	17.37	85.3	0.54	4.30	13.00
6			80	14.82	89.1	0.79	3.70	14.80
6			100	11.48	92.3	1.23	3.00	16.80
6			125	7.29	94.9	1.87	1.80	18.80
6			160	1.60	97.0	2.81	0.00	21.10
6			200	-2.38	98.4	4.04	0.00	22.80
7	4,278	4,283						
7			20	24.12	59.3	0.00	5.60	7.60
7			25	23.23	65.2	0.09	5.40	8.30
7			32	22.19	70.6	0.13	5.20	9.20
7			40	21.41	76.0	0.21	5.00	10.30
7			50	20.32	80.9	0.30	4.70	11.50
7			63	18.65	85.3	0.47	4.30	13.00
7			80	16.13	89.1	0.69	3.70	14.80
7			100	12.85	92.3	1.07	3.00	16.80
7			125	8.74	94.9	1.63	1.80	18.80
7			160	3.18	97.0	2.44	0.00	21.10
7			200	-0.65	98.4	3.51	0.00	22.80
8	3,770	3,776						
8			20	25.21	59.3	0.00	5.60	7.60
8			25	24.34	65.2	0.08	5.40	8.30
8			32	23.30	70.6	0.11	5.20	9.20
8			40	22.53	76.0	0.19	5.00	10.30
8			50	21.45	80.9	0.26	4.70	11.50
8			63	19.80	85.3	0.42	4.30	13.00
8			80	17.31	89.1	0.60	3.70	14.80
8			100	14.07	92.3	0.94	3.00	16.80
8			125	10.02	94.9	1.43	1.80	18.80
8			160	4.56	97.0	2.15	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	0.86	98.4	3.10	0.00	22.80
9	5,339	5,343						
9			20	22.20	59.3	0.00	5.60	7.60
9			25	21.29	65.2	0.11	5.40	8.30
9			32	20.24	70.6	0.16	5.20	9.20
9			40	19.43	76.0	0.27	5.00	10.30
9			50	18.32	80.9	0.37	4.70	11.50
9			63	16.61	85.3	0.59	4.30	13.00
9			80	14.04	89.1	0.85	3.70	14.80
9			100	10.66	92.3	1.34	3.00	16.80
9			125	6.41	94.9	2.03	1.80	18.80
9			160	0.65	97.0	3.05	0.00	21.10
9			200	-3.44	98.4	4.38	0.00	22.80
Sum								
Sum			20	40.17				
Sum			25	39.31				
Sum			32	38.28				
Sum			40	37.51				
Sum			50	36.45				
Sum			63	34.82				
Sum			80	32.37				
Sum			100	29.19				
Sum			125	25.24				
Sum			160	19.92				
Sum			200	16.42				

Noise sensitive area: HH Koivuharju Noise sensitive point: Finnish normal frequency - User defined (281)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,416	6,420						
1			20	20.60	59.3	0.00	5.60	7.60
1			25	19.68	65.2	0.13	5.40	8.30
1			32	18.61	70.6	0.19	5.20	9.20
1			40	17.78	76.0	0.32	5.00	10.30
1			50	16.65	80.9	0.45	4.70	11.50
1			63	14.90	85.3	0.71	4.30	13.00
1			80	12.27	89.1	1.03	3.70	14.80
1			100	8.80	92.3	1.60	3.00	16.80
1			125	4.41	94.9	2.44	1.80	18.80
1			160	-1.56	97.0	3.66	0.00	21.10
1			200	-5.91	98.4	5.26	0.00	22.80
10	3,754	3,760						
10			20	25.25	59.3	0.00	5.60	7.60
10			25	24.38	65.2	0.08	5.40	8.30
10			32	23.34	70.6	0.11	5.20	9.20
10			40	22.56	76.0	0.19	5.00	10.30
10			50	21.48	80.9	0.26	4.70	11.50
10			63	19.83	85.3	0.41	4.30	13.00
10			80	17.35	89.1	0.60	3.70	14.80
10			100	14.11	92.3	0.94	3.00	16.80
10			125	10.07	94.9	1.43	1.80	18.80
10			160	4.60	97.0	2.14	0.00	21.10
10			200	0.91	98.4	3.08	0.00	22.80
11	3,152	3,159						
11			20	26.76	59.3	0.00	5.60	7.60
11			25	25.90	65.2	0.06	5.40	8.30
11			32	24.87	70.6	0.09	5.20	9.20
11			40	24.11	76.0	0.16	5.00	10.30
11			50	23.04	80.9	0.22	4.70	11.50
11			63	21.41	85.3	0.35	4.30	13.00
11			80	18.96	89.1	0.51	3.70	14.80
11			100	15.77	92.3	0.79	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	11.81	94.9	1.20	1.80	18.80
11			160	6.46	97.0	1.80	0.00	21.10
11			200	2.92	98.4	2.59	0.00	22.80
12	2,924	2,932						
12			20	27.41	59.3	0.00	5.60	7.60
12			25	26.55	65.2	0.06	5.40	8.30
12			32	25.52	70.6	0.09	5.20	9.20
12			40	24.77	76.0	0.15	5.00	10.30
12			50	23.70	80.9	0.21	4.70	11.50
12			63	22.09	85.3	0.32	4.30	13.00
12			80	19.64	89.1	0.47	3.70	14.80
12			100	16.48	92.3	0.73	3.00	16.80
12			125	12.54	94.9	1.11	1.80	18.80
12			160	7.24	97.0	1.67	0.00	21.10
12			200	3.75	98.4	2.40	0.00	22.80
13	3,366	3,374						
13			20	26.19	59.3	0.00	5.60	7.60
13			25	25.33	65.2	0.07	5.40	8.30
13			32	24.29	70.6	0.10	5.20	9.20
13			40	23.52	76.0	0.17	5.00	10.30
13			50	22.45	80.9	0.24	4.70	11.50
13			63	20.82	85.3	0.37	4.30	13.00
13			80	18.35	89.1	0.54	3.70	14.80
13			100	15.15	92.3	0.84	3.00	16.80
13			125	11.16	94.9	1.28	1.80	18.80
13			160	5.77	97.0	1.92	0.00	21.10
13			200	2.17	98.4	2.77	0.00	22.80
14	3,856	3,863						
14			20	25.02	59.3	0.00	5.60	7.60
14			25	24.14	65.2	0.08	5.40	8.30
14			32	23.10	70.6	0.12	5.20	9.20
14			40	22.32	76.0	0.19	5.00	10.30
14			50	21.24	80.9	0.27	4.70	11.50
14			63	19.59	85.3	0.42	4.30	13.00
14			80	17.09	89.1	0.62	3.70	14.80
14			100	13.85	92.3	0.97	3.00	16.80
14			125	9.79	94.9	1.47	1.80	18.80
14			160	4.31	97.0	2.20	0.00	21.10
14			200	0.59	98.4	3.17	0.00	22.80
15	3,652	3,661						
15			20	25.48	59.3	0.00	5.60	7.60
15			25	24.61	65.2	0.07	5.40	8.30
15			32	23.57	70.6	0.11	5.20	9.20
15			40	22.80	76.0	0.18	5.00	10.30
15			50	21.72	80.9	0.26	4.70	11.50
15			63	20.08	85.3	0.40	4.30	13.00
15			80	17.59	89.1	0.59	3.70	14.80
15			100	14.37	92.3	0.92	3.00	16.80
15			125	10.34	94.9	1.39	1.80	18.80
15			160	4.89	97.0	2.09	0.00	21.10
15			200	1.23	98.4	3.00	0.00	22.80
16	4,030	4,036						
16			20	24.64	59.3	0.00	5.60	7.60
16			25	23.75	65.2	0.08	5.40	8.30
16			32	22.71	70.6	0.12	5.20	9.20
16			40	21.93	76.0	0.20	5.00	10.30
16			50	20.85	80.9	0.28	4.70	11.50
16			63	19.19	85.3	0.44	4.30	13.00
16			80	16.69	89.1	0.65	3.70	14.80
16			100	13.42	92.3	1.01	3.00	16.80
16			125	9.35	94.9	1.53	1.80	18.80
16			160	3.83	97.0	2.30	0.00	21.10
16			200	0.07	98.4	3.31	0.00	22.80
17	4,671	4,676						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	23.36	59.3	0.00	5.60	7.60
17			25	22.46	65.2	0.09	5.40	8.30
17			32	21.42	70.6	0.14	5.20	9.20
17			40	20.62	76.0	0.23	5.00	10.30
17			50	19.53	80.9	0.33	4.70	11.50
17			63	17.84	85.3	0.51	4.30	13.00
17			80	15.31	89.1	0.75	3.70	14.80
17			100	11.99	92.3	1.17	3.00	16.80
17			125	7.83	94.9	1.78	1.80	18.80
17			160	2.19	97.0	2.67	0.00	21.10
17			200	-1.73	98.4	3.83	0.00	22.80
18	2,948	2,956						
18			20	27.34	59.3	0.00	5.60	7.60
18			25	26.48	65.2	0.06	5.40	8.30
18			32	25.45	70.6	0.09	5.20	9.20
18			40	24.69	76.0	0.15	5.00	10.30
18			50	23.63	80.9	0.21	4.70	11.50
18			63	22.01	85.3	0.33	4.30	13.00
18			80	19.56	89.1	0.47	3.70	14.80
18			100	16.40	92.3	0.74	3.00	16.80
18			125	12.46	94.9	1.12	1.80	18.80
18			160	7.15	97.0	1.69	0.00	21.10
18			200	3.66	98.4	2.42	0.00	22.80
19	3,231	3,240						
19			20	26.54	59.3	0.00	5.60	7.60
19			25	25.68	65.2	0.06	5.40	8.30
19			32	24.65	70.6	0.10	5.20	9.20
19			40	23.88	76.0	0.16	5.00	10.30
19			50	22.81	80.9	0.23	4.70	11.50
19			63	21.18	85.3	0.36	4.30	13.00
19			80	18.72	89.1	0.52	3.70	14.80
19			100	15.53	92.3	0.81	3.00	16.80
19			125	11.56	94.9	1.23	1.80	18.80
19			160	6.19	97.0	1.85	0.00	21.10
19			200	2.63	98.4	2.66	0.00	22.80
2	5,369	5,372						
2			20	22.15	59.3	0.00	5.60	7.60
2			25	21.24	65.2	0.11	5.40	8.30
2			32	20.19	70.6	0.16	5.20	9.20
2			40	19.38	76.0	0.27	5.00	10.30
2			50	18.27	80.9	0.38	4.70	11.50
2			63	16.56	85.3	0.59	4.30	13.00
2			80	13.99	89.1	0.86	3.70	14.80
2			100	10.60	92.3	1.34	3.00	16.80
2			125	6.36	94.9	2.04	1.80	18.80
2			160	0.59	97.0	3.06	0.00	21.10
2			200	-3.51	98.4	4.41	0.00	22.80
20	3,645	3,652						
20			20	25.50	59.3	0.00	5.60	7.60
20			25	24.63	65.2	0.07	5.40	8.30
20			32	23.59	70.6	0.11	5.20	9.20
20			40	22.82	76.0	0.18	5.00	10.30
20			50	21.74	80.9	0.26	4.70	11.50
20			63	20.10	85.3	0.40	4.30	13.00
20			80	17.62	89.1	0.58	3.70	14.80
20			100	14.39	92.3	0.91	3.00	16.80
20			125	10.36	94.9	1.39	1.80	18.80
20			160	4.92	97.0	2.08	0.00	21.10
20			200	1.25	98.4	2.99	0.00	22.80
21	4,272	4,277						
21			20	24.13	59.3	0.00	5.60	7.60
21			25	23.25	65.2	0.09	5.40	8.30
21			32	22.20	70.6	0.13	5.20	9.20
21			40	21.42	76.0	0.21	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	20.33	80.9	0.30	4.70	11.50
21			63	18.66	85.3	0.47	4.30	13.00
21			80	16.14	89.1	0.68	3.70	14.80
21			100	12.86	92.3	1.07	3.00	16.80
21			125	8.75	94.9	1.63	1.80	18.80
21			160	3.19	97.0	2.44	0.00	21.10
21			200	-0.63	98.4	3.51	0.00	22.80
22	4,925	4,930						
22			20	22.90	59.3	0.00	5.60	7.60
22			25	22.00	65.2	0.10	5.40	8.30
22			32	20.95	70.6	0.15	5.20	9.20
22			40	20.15	76.0	0.25	5.00	10.30
22			50	19.05	80.9	0.35	4.70	11.50
22			63	17.35	85.3	0.54	4.30	13.00
22			80	14.81	89.1	0.79	3.70	14.80
22			100	11.46	92.3	1.23	3.00	16.80
22			125	7.27	94.9	1.87	1.80	18.80
22			160	1.58	97.0	2.81	0.00	21.10
22			200	-2.40	98.4	4.04	0.00	22.80
23	5,444	5,448						
23			20	22.03	59.3	0.00	5.60	7.60
23			25	21.12	65.2	0.11	5.40	8.30
23			32	20.07	70.6	0.16	5.20	9.20
23			40	19.26	76.0	0.27	5.00	10.30
23			50	18.15	80.9	0.38	4.70	11.50
23			63	16.43	85.3	0.60	4.30	13.00
23			80	13.86	89.1	0.87	3.70	14.80
23			100	10.47	92.3	1.36	3.00	16.80
23			125	6.21	94.9	2.07	1.80	18.80
23			160	0.42	97.0	3.11	0.00	21.10
23			200	-3.69	98.4	4.47	0.00	22.80
24	5,399	5,402						
24			20	22.10	59.3	0.00	5.60	7.60
24			25	21.20	65.2	0.11	5.40	8.30
24			32	20.14	70.6	0.16	5.20	9.20
24			40	19.33	76.0	0.27	5.00	10.30
24			50	18.22	80.9	0.38	4.70	11.50
24			63	16.51	85.3	0.59	4.30	13.00
24			80	13.94	89.1	0.86	3.70	14.80
24			100	10.55	92.3	1.35	3.00	16.80
24			125	6.30	94.9	2.05	1.80	18.80
24			160	0.52	97.0	3.08	0.00	21.10
24			200	-3.58	98.4	4.43	0.00	22.80
3	5,892	5,895						
3			20	21.34	59.3	0.00	5.60	7.60
3			25	20.43	65.2	0.12	5.40	8.30
3			32	19.37	70.6	0.18	5.20	9.20
3			40	18.55	76.0	0.29	5.00	10.30
3			50	17.43	80.9	0.41	4.70	11.50
3			63	15.69	85.3	0.65	4.30	13.00
3			80	13.10	89.1	0.94	3.70	14.80
3			100	9.67	92.3	1.47	3.00	16.80
3			125	5.35	94.9	2.24	1.80	18.80
3			160	-0.52	97.0	3.36	0.00	21.10
3			200	-4.74	98.4	4.83	0.00	22.80
4	5,393	5,397						
4			20	22.11	59.3	0.00	5.60	7.60
4			25	21.20	65.2	0.11	5.40	8.30
4			32	20.15	70.6	0.16	5.20	9.20
4			40	19.34	76.0	0.27	5.00	10.30
4			50	18.23	80.9	0.38	4.70	11.50
4			63	16.51	85.3	0.59	4.30	13.00
4			80	13.94	89.1	0.86	3.70	14.80
4			100	10.56	92.3	1.35	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			125	6.31	94.9	2.05	1.80	18.80
4			160	0.53	97.0	3.08	0.00	21.10
4			200	-3.57	98.4	4.43	0.00	22.80
5	5,248	5,253						
5			20	22.35	59.3	0.00	5.60	7.60
5			25	21.44	65.2	0.11	5.40	8.30
5			32	20.39	70.6	0.16	5.20	9.20
5			40	19.58	76.0	0.26	5.00	10.30
5			50	18.48	80.9	0.37	4.70	11.50
5			63	16.77	85.3	0.58	4.30	13.00
5			80	14.20	89.1	0.84	3.70	14.80
5			100	10.83	92.3	1.31	3.00	16.80
5			125	6.60	94.9	2.00	1.80	18.80
5			160	0.85	97.0	2.99	0.00	21.10
5			200	-3.21	98.4	4.31	0.00	22.80
6	4,287	4,292						
6			20	24.10	59.3	0.00	5.60	7.60
6			25	23.22	65.2	0.09	5.40	8.30
6			32	22.17	70.6	0.13	5.20	9.20
6			40	21.39	76.0	0.21	5.00	10.30
6			50	20.30	80.9	0.30	4.70	11.50
6			63	18.63	85.3	0.47	4.30	13.00
6			80	16.11	89.1	0.69	3.70	14.80
6			100	12.83	92.3	1.07	3.00	16.80
6			125	8.72	94.9	1.63	1.80	18.80
6			160	3.15	97.0	2.45	0.00	21.10
6			200	-0.67	98.4	3.52	0.00	22.80
7	4,342	4,347						
7			20	23.99	59.3	0.00	5.60	7.60
7			25	23.10	65.2	0.09	5.40	8.30
7			32	22.06	70.6	0.13	5.20	9.20
7			40	21.27	76.0	0.22	5.00	10.30
7			50	20.18	80.9	0.30	4.70	11.50
7			63	18.51	85.3	0.48	4.30	13.00
7			80	15.99	89.1	0.70	3.70	14.80
7			100	12.70	92.3	1.09	3.00	16.80
7			125	8.59	94.9	1.65	1.80	18.80
7			160	3.01	97.0	2.48	0.00	21.10
7			200	-0.83	98.4	3.56	0.00	22.80
8	4,765	4,769						
8			20	23.19	59.3	0.00	5.60	7.60
8			25	22.29	65.2	0.10	5.40	8.30
8			32	21.24	70.6	0.14	5.20	9.20
8			40	20.45	76.0	0.24	5.00	10.30
8			50	19.35	80.9	0.33	4.70	11.50
8			63	17.66	85.3	0.52	4.30	13.00
8			80	15.12	89.1	0.76	3.70	14.80
8			100	11.79	92.3	1.19	3.00	16.80
8			125	7.62	94.9	1.81	1.80	18.80
8			160	1.96	97.0	2.72	0.00	21.10
8			200	-1.98	98.4	3.91	0.00	22.80
9	3,594	3,600						
9			20	25.63	59.3	0.00	5.60	7.60
9			25	24.76	65.2	0.07	5.40	8.30
9			32	23.72	70.6	0.11	5.20	9.20
9			40	22.95	76.0	0.18	5.00	10.30
9			50	21.87	80.9	0.25	4.70	11.50
9			63	20.23	85.3	0.40	4.30	13.00
9			80	17.75	89.1	0.58	3.70	14.80
9			100	14.53	92.3	0.90	3.00	16.80
9			125	10.51	94.9	1.37	1.80	18.80
9			160	5.07	97.0	2.05	0.00	21.10
9			200	1.42	98.4	2.95	0.00	22.80
Sum								

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			20	38.40				
Sum			25	37.52				
Sum			32	36.48				
Sum			40	35.70				
Sum			50	34.62				
Sum			63	32.96				
Sum			80	30.46				
Sum			100	27.21				
Sum			125	23.15				
Sum			160	17.66				
Sum			200	13.95				

Noise sensitive area: HH Koivula 3 Noise sensitive point: Finnish normal frequency - User defined (291)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,754	1,768						
1			20	31.81	59.3	0.00	5.60	7.60
1			25	30.97	65.2	0.04	5.40	8.30
1			32	29.95	70.6	0.05	5.20	9.20
1			40	29.22	76.0	0.09	5.00	10.30
1			50	28.18	80.9	0.12	4.70	11.50
1			63	26.61	85.3	0.19	4.30	13.00
1			80	24.22	89.1	0.28	3.70	14.80
1			100	21.16	92.3	0.44	3.00	16.80
1			125	17.38	94.9	0.67	1.80	18.80
1			160	12.30	97.0	1.01	0.00	21.10
1			200	9.10	98.4	1.45	0.00	22.80
10	3,556	3,563						
10			20	25.72	59.3	0.00	5.60	7.60
10			25	24.85	65.2	0.07	5.40	8.30
10			32	23.81	70.6	0.11	5.20	9.20
10			40	23.04	76.0	0.18	5.00	10.30
10			50	21.97	80.9	0.25	4.70	11.50
10			63	20.32	85.3	0.39	4.30	13.00
10			80	17.85	89.1	0.57	3.70	14.80
10			100	14.62	92.3	0.89	3.00	16.80
10			125	10.61	94.9	1.35	1.80	18.80
10			160	5.18	97.0	2.03	0.00	21.10
10			200	1.54	98.4	2.92	0.00	22.80
11	4,090	4,096						
11			20	24.51	59.3	0.00	5.60	7.60
11			25	23.63	65.2	0.08	5.40	8.30
11			32	22.58	70.6	0.12	5.20	9.20
11			40	21.80	76.0	0.20	5.00	10.30
11			50	20.72	80.9	0.29	4.70	11.50
11			63	19.05	85.3	0.45	4.30	13.00
11			80	16.55	89.1	0.66	3.70	14.80
11			100	13.28	92.3	1.02	3.00	16.80
11			125	9.20	94.9	1.56	1.80	18.80
11			160	3.67	97.0	2.33	0.00	21.10
11			200	-0.11	98.4	3.36	0.00	22.80
12	4,155	4,161						
12			20	24.37	59.3	0.00	5.60	7.60
12			25	23.49	65.2	0.08	5.40	8.30
12			32	22.45	70.6	0.12	5.20	9.20
12			40	21.66	76.0	0.21	5.00	10.30
12			50	20.58	80.9	0.29	4.70	11.50
12			63	18.91	85.3	0.46	4.30	13.00
12			80	16.40	89.1	0.67	3.70	14.80
12			100	13.13	92.3	1.04	3.00	16.80
12			125	9.03	94.9	1.58	1.80	18.80
12			160	3.50	97.0	2.37	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			200	-0.30	98.4	3.41	0.00	22.80
13	3,712	3,720						
13			20	25.34	59.3	0.00	5.60	7.60
13			25	24.47	65.2	0.07	5.40	8.30
13			32	23.43	70.6	0.11	5.20	9.20
13			40	22.66	76.0	0.19	5.00	10.30
13			50	21.58	80.9	0.26	4.70	11.50
13			63	19.93	85.3	0.41	4.30	13.00
13			80	17.45	89.1	0.60	3.70	14.80
13			100	14.21	92.3	0.93	3.00	16.80
13			125	10.18	94.9	1.41	1.80	18.80
13			160	4.72	97.0	2.12	0.00	21.10
13			200	1.04	98.4	3.05	0.00	22.80
14	3,209	3,219						
14			20	26.60	59.3	0.00	5.60	7.60
14			25	25.74	65.2	0.06	5.40	8.30
14			32	24.70	70.6	0.10	5.20	9.20
14			40	23.94	76.0	0.16	5.00	10.30
14			50	22.87	80.9	0.23	4.70	11.50
14			63	21.24	85.3	0.35	4.30	13.00
14			80	18.78	89.1	0.52	3.70	14.80
14			100	15.59	92.3	0.80	3.00	16.80
14			125	11.62	94.9	1.22	1.80	18.80
14			160	6.26	97.0	1.83	0.00	21.10
14			200	2.71	98.4	2.64	0.00	22.80
15	3,601	3,611						
15			20	25.60	59.3	0.00	5.60	7.60
15			25	24.73	65.2	0.07	5.40	8.30
15			32	23.69	70.6	0.11	5.20	9.20
15			40	22.92	76.0	0.18	5.00	10.30
15			50	21.85	80.9	0.25	4.70	11.50
15			63	20.20	85.3	0.40	4.30	13.00
15			80	17.72	89.1	0.58	3.70	14.80
15			100	14.50	92.3	0.90	3.00	16.80
15			125	10.47	94.9	1.37	1.80	18.80
15			160	5.04	97.0	2.06	0.00	21.10
15			200	1.39	98.4	2.96	0.00	22.80
16	3,540	3,548						
16			20	25.76	59.3	0.00	5.60	7.60
16			25	24.88	65.2	0.07	5.40	8.30
16			32	23.85	70.6	0.11	5.20	9.20
16			40	23.08	76.0	0.18	5.00	10.30
16			50	22.00	80.9	0.25	4.70	11.50
16			63	20.36	85.3	0.39	4.30	13.00
16			80	17.88	89.1	0.57	3.70	14.80
16			100	14.67	92.3	0.89	3.00	16.80
16			125	10.65	94.9	1.35	1.80	18.80
16			160	5.23	97.0	2.02	0.00	21.10
16			200	1.59	98.4	2.91	0.00	22.80
17	3,091	3,100						
17			20	26.93	59.3	0.00	5.60	7.60
17			25	26.07	65.2	0.06	5.40	8.30
17			32	25.04	70.6	0.09	5.20	9.20
17			40	24.27	76.0	0.15	5.00	10.30
17			50	23.21	80.9	0.22	4.70	11.50
17			63	21.58	85.3	0.34	4.30	13.00
17			80	19.13	89.1	0.50	3.70	14.80
17			100	15.95	92.3	0.77	3.00	16.80
17			125	12.00	94.9	1.18	1.80	18.80
17			160	6.66	97.0	1.77	0.00	21.10
17			200	3.13	98.4	2.54	0.00	22.80
18	4,221	4,228						
18			20	24.23	59.3	0.00	5.60	7.60
18			25	23.35	65.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			32	22.31	70.6	0.13	5.20	9.20
18			40	21.52	76.0	0.21	5.00	10.30
18			50	20.43	80.9	0.30	4.70	11.50
18			63	18.76	85.3	0.47	4.30	13.00
18			80	16.25	89.1	0.68	3.70	14.80
18			100	12.97	92.3	1.06	3.00	16.80
18			125	8.87	94.9	1.61	1.80	18.80
18			160	3.32	97.0	2.41	0.00	21.10
18			200	-0.49	98.4	3.47	0.00	22.80
19	4,198	4,206						
19			20	24.28	59.3	0.00	5.60	7.60
19			25	23.39	65.2	0.08	5.40	8.30
19			32	22.35	70.6	0.13	5.20	9.20
19			40	21.57	76.0	0.21	5.00	10.30
19			50	20.48	80.9	0.29	4.70	11.50
19			63	18.81	85.3	0.46	4.30	13.00
19			80	16.30	89.1	0.67	3.70	14.80
19			100	13.02	92.3	1.05	3.00	16.80
19			125	8.92	94.9	1.60	1.80	18.80
19			160	3.38	97.0	2.40	0.00	21.10
19			200	-0.43	98.4	3.45	0.00	22.80
2	2,356	2,367						
2			20	29.27	59.3	0.00	5.60	7.60
2			25	28.43	65.2	0.05	5.40	8.30
2			32	27.40	70.6	0.07	5.20	9.20
2			40	26.65	76.0	0.12	5.00	10.30
2			50	25.60	80.9	0.17	4.70	11.50
2			63	24.01	85.3	0.26	4.30	13.00
2			80	21.59	89.1	0.38	3.70	14.80
2			100	18.48	92.3	0.59	3.00	16.80
2			125	14.62	94.9	0.90	1.80	18.80
2			160	9.42	97.0	1.35	0.00	21.10
2			200	6.08	98.4	1.94	0.00	22.80
20	4,081	4,089						
20			20	24.52	59.3	0.00	5.60	7.60
20			25	23.64	65.2	0.08	5.40	8.30
20			32	22.60	70.6	0.12	5.20	9.20
20			40	21.82	76.0	0.20	5.00	10.30
20			50	20.73	80.9	0.29	4.70	11.50
20			63	19.07	85.3	0.45	4.30	13.00
20			80	16.57	89.1	0.65	3.70	14.80
20			100	13.30	92.3	1.02	3.00	16.80
20			125	9.21	94.9	1.55	1.80	18.80
20			160	3.69	97.0	2.33	0.00	21.10
20			200	-0.08	98.4	3.35	0.00	22.80
21	3,790	3,797						
21			20	25.17	59.3	0.00	5.60	7.60
21			25	24.29	65.2	0.08	5.40	8.30
21			32	23.25	70.6	0.11	5.20	9.20
21			40	22.48	76.0	0.19	5.00	10.30
21			50	21.40	80.9	0.27	4.70	11.50
21			63	19.74	85.3	0.42	4.30	13.00
21			80	17.26	89.1	0.61	3.70	14.80
21			100	14.01	92.3	0.95	3.00	16.80
21			125	9.97	94.9	1.44	1.80	18.80
21			160	4.50	97.0	2.16	0.00	21.10
21			200	0.80	98.4	3.11	0.00	22.80
22	3,580	3,589						
22			20	25.66	59.3	0.00	5.60	7.60
22			25	24.78	65.2	0.07	5.40	8.30
22			32	23.75	70.6	0.11	5.20	9.20
22			40	22.98	76.0	0.18	5.00	10.30
22			50	21.90	80.9	0.25	4.70	11.50
22			63	20.26	85.3	0.39	4.30	13.00

To be continued on next page...

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			80	17.78	89.1	0.57	3.70	14.80
22			100	14.56	92.3	0.90	3.00	16.80
22			125	10.54	94.9	1.36	1.80	18.80
22			160	5.11	97.0	2.05	0.00	21.10
22			200	1.46	98.4	2.94	0.00	22.80
23	3,019	3,027						
23			20	27.14	59.3	0.00	5.60	7.60
23			25	26.27	65.2	0.06	5.40	8.30
23			32	25.24	70.6	0.09	5.20	9.20
23			40	24.48	76.0	0.15	5.00	10.30
23			50	23.42	80.9	0.21	4.70	11.50
23			63	21.80	85.3	0.33	4.30	13.00
23			80	19.35	89.1	0.48	3.70	14.80
23			100	16.18	92.3	0.76	3.00	16.80
23			125	12.23	94.9	1.15	1.80	18.80
23			160	6.91	97.0	1.73	0.00	21.10
23			200	3.40	98.4	2.48	0.00	22.80
24	3,669	3,676						
24			20	25.45	59.3	0.00	5.60	7.60
24			25	24.57	65.2	0.07	5.40	8.30
24			32	23.54	70.6	0.11	5.20	9.20
24			40	22.76	76.0	0.18	5.00	10.30
24			50	21.69	80.9	0.26	4.70	11.50
24			63	20.04	85.3	0.40	4.30	13.00
24			80	17.56	89.1	0.59	3.70	14.80
24			100	14.33	92.3	0.92	3.00	16.80
24			125	10.30	94.9	1.40	1.80	18.80
24			160	4.85	97.0	2.10	0.00	21.10
24			200	1.18	98.4	3.01	0.00	22.80
3	1,761	1,776						
3			20	31.77	59.3	0.00	5.60	7.60
3			25	30.93	65.2	0.04	5.40	8.30
3			32	29.91	70.6	0.05	5.20	9.20
3			40	29.18	76.0	0.09	5.00	10.30
3			50	28.14	80.9	0.12	4.70	11.50
3			63	26.57	85.3	0.20	4.30	13.00
3			80	24.18	89.1	0.28	3.70	14.80
3			100	21.12	92.3	0.44	3.00	16.80
3			125	17.34	94.9	0.67	1.80	18.80
3			160	12.25	97.0	1.01	0.00	21.10
3			200	9.06	98.4	1.46	0.00	22.80
4	1,933	1,947						
4			20	30.97	59.3	0.00	5.60	7.60
4			25	30.13	65.2	0.04	5.40	8.30
4			32	29.11	70.6	0.06	5.20	9.20
4			40	28.37	76.0	0.10	5.00	10.30
4			50	27.33	80.9	0.14	4.70	11.50
4			63	25.75	85.3	0.21	4.30	13.00
4			80	23.35	89.1	0.31	3.70	14.80
4			100	20.28	92.3	0.49	3.00	16.80
4			125	16.47	94.9	0.74	1.80	18.80
4			160	11.36	97.0	1.11	0.00	21.10
4			200	8.12	98.4	1.60	0.00	22.80
5	1,845	1,859						
5			20	31.37	59.3	0.00	5.60	7.60
5			25	30.53	65.2	0.04	5.40	8.30
5			32	29.51	70.6	0.06	5.20	9.20
5			40	28.78	76.0	0.09	5.00	10.30
5			50	27.74	80.9	0.13	4.70	11.50
5			63	26.16	85.3	0.20	4.30	13.00
5			80	23.77	89.1	0.30	3.70	14.80
5			100	20.70	92.3	0.46	3.00	16.80
5			125	16.91	94.9	0.71	1.80	18.80
5			160	11.81	97.0	1.06	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			200	8.59	98.4	1.52	0.00	22.80
6	3,371	3,379						
6			20	26.18	59.3	0.00	5.60	7.60
6			25	25.31	65.2	0.07	5.40	8.30
6			32	24.28	70.6	0.10	5.20	9.20
6			40	23.51	76.0	0.17	5.00	10.30
6			50	22.44	80.9	0.24	4.70	11.50
6			63	20.80	85.3	0.37	4.30	13.00
6			80	18.33	89.1	0.54	3.70	14.80
6			100	15.13	92.3	0.84	3.00	16.80
6			125	11.14	94.9	1.28	1.80	18.80
6			160	5.75	97.0	1.93	0.00	21.10
6			200	2.15	98.4	2.77	0.00	22.80
7	2,932	2,941						
7			20	27.39	59.3	0.00	5.60	7.60
7			25	26.53	65.2	0.06	5.40	8.30
7			32	25.50	70.6	0.09	5.20	9.20
7			40	24.74	76.0	0.15	5.00	10.30
7			50	23.68	80.9	0.21	4.70	11.50
7			63	22.06	85.3	0.32	4.30	13.00
7			80	19.61	89.1	0.47	3.70	14.80
7			100	16.45	92.3	0.74	3.00	16.80
7			125	12.51	94.9	1.12	1.80	18.80
7			160	7.21	97.0	1.68	0.00	21.10
7			200	3.72	98.4	2.41	0.00	22.80
8	2,394	2,404						
8			20	29.13	59.3	0.00	5.60	7.60
8			25	28.29	65.2	0.05	5.40	8.30
8			32	27.26	70.6	0.07	5.20	9.20
8			40	26.51	76.0	0.12	5.00	10.30
8			50	25.46	80.9	0.17	4.70	11.50
8			63	23.87	85.3	0.26	4.30	13.00
8			80	21.45	89.1	0.38	3.70	14.80
8			100	18.33	92.3	0.60	3.00	16.80
8			125	14.47	94.9	0.91	1.80	18.80
8			160	9.26	97.0	1.37	0.00	21.10
8			200	5.91	98.4	1.97	0.00	22.80
9	4,047	4,053						
9			20	24.60	59.3	0.00	5.60	7.60
9			25	23.72	65.2	0.08	5.40	8.30
9			32	22.68	70.6	0.12	5.20	9.20
9			40	21.90	76.0	0.20	5.00	10.30
9			50	20.81	80.9	0.28	4.70	11.50
9			63	19.15	85.3	0.45	4.30	13.00
9			80	16.65	89.1	0.65	3.70	14.80
9			100	13.38	92.3	1.01	3.00	16.80
9			125	9.30	94.9	1.54	1.80	18.80
9			160	3.78	97.0	2.31	0.00	21.10
9			200	0.02	98.4	3.32	0.00	22.80
Sum								
Sum			20	41.43				
Sum			25	40.57				
Sum			32	39.55				
Sum			40	38.79				
Sum			50	37.74				
Sum			63	36.13				
Sum			80	33.69				
Sum			100	30.55				
Sum			125	26.65				
Sum			160	21.40				
Sum			200	18.00				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: HH Korsu 1 Noise sensitive point: Finnish normal frequency - User defined (299)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,565	5,570						
1			20	21.84	59.3	0.00	5.60	7.60
1			25	20.93	65.2	0.11	5.40	8.30
1			32	19.87	70.6	0.17	5.20	9.20
1			40	19.06	76.0	0.28	5.00	10.30
1			50	17.95	80.9	0.39	4.70	11.50
1			63	16.22	85.3	0.61	4.30	13.00
1			80	13.64	89.1	0.89	3.70	14.80
1			100	10.24	92.3	1.39	3.00	16.80
1			125	5.97	94.9	2.12	1.80	18.80
1			160	0.16	97.0	3.17	0.00	21.10
1			200	-3.98	98.4	4.57	0.00	22.80
10	6,058	6,063						
10			20	21.10	59.3	0.00	5.60	7.60
10			25	20.18	65.2	0.12	5.40	8.30
10			32	19.12	70.6	0.18	5.20	9.20
10			40	18.30	76.0	0.30	5.00	10.30
10			50	17.17	80.9	0.42	4.70	11.50
10			63	15.43	85.3	0.67	4.30	13.00
10			80	12.83	89.1	0.97	3.70	14.80
10			100	9.38	92.3	1.52	3.00	16.80
10			125	5.04	94.9	2.30	1.80	18.80
10			160	-0.86	97.0	3.46	0.00	21.10
10			200	-5.12	98.4	4.97	0.00	22.80
11	6,310	6,315						
11			20	20.75	59.3	0.00	5.60	7.60
11			25	19.82	65.2	0.13	5.40	8.30
11			32	18.76	70.6	0.19	5.20	9.20
11			40	17.93	76.0	0.32	5.00	10.30
11			50	16.80	80.9	0.44	4.70	11.50
11			63	15.05	85.3	0.69	4.30	13.00
11			80	12.43	89.1	1.01	3.70	14.80
11			100	8.97	92.3	1.58	3.00	16.80
11			125	4.59	94.9	2.40	1.80	18.80
11			160	-1.35	97.0	3.60	0.00	21.10
11			200	-5.68	98.4	5.18	0.00	22.80
12	6,014	6,018						
12			20	21.17	59.3	0.00	5.60	7.60
12			25	20.24	65.2	0.12	5.40	8.30
12			32	19.18	70.6	0.18	5.20	9.20
12			40	18.36	76.0	0.30	5.00	10.30
12			50	17.24	80.9	0.42	4.70	11.50
12			63	15.50	85.3	0.66	4.30	13.00
12			80	12.90	89.1	0.96	3.70	14.80
12			100	9.46	92.3	1.50	3.00	16.80
12			125	5.12	94.9	2.29	1.80	18.80
12			160	-0.77	97.0	3.43	0.00	21.10
12			200	-5.02	98.4	4.94	0.00	22.80
13	5,342	5,348						
13			20	22.19	59.3	0.00	5.60	7.60
13			25	21.28	65.2	0.11	5.40	8.30
13			32	20.23	70.6	0.16	5.20	9.20
13			40	19.42	76.0	0.27	5.00	10.30
13			50	18.31	80.9	0.37	4.70	11.50
13			63	16.60	85.3	0.59	4.30	13.00
13			80	14.03	89.1	0.86	3.70	14.80
13			100	10.65	92.3	1.34	3.00	16.80
13			125	6.40	94.9	2.03	1.80	18.80
13			160	0.64	97.0	3.05	0.00	21.10
13			200	-3.45	98.4	4.39	0.00	22.80
14	5,072	5,078						
14			20	22.64	59.3	0.00	5.60	7.60
14			25	21.74	65.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	20.69	70.6	0.15	5.20	9.20
14			40	19.89	76.0	0.25	5.00	10.30
14			50	18.78	80.9	0.36	4.70	11.50
14			63	17.08	85.3	0.56	4.30	13.00
14			80	14.52	89.1	0.81	3.70	14.80
14			100	11.17	92.3	1.27	3.00	16.80
14			125	6.96	94.9	1.93	1.80	18.80
14			160	1.24	97.0	2.89	0.00	21.10
14			200	-2.78	98.4	4.16	0.00	22.80
15	4,803	4,811						
15			20	23.11	59.3	0.00	5.60	7.60
15			25	22.21	65.2	0.10	5.40	8.30
15			32	21.17	70.6	0.14	5.20	9.20
15			40	20.37	76.0	0.24	5.00	10.30
15			50	19.27	80.9	0.34	4.70	11.50
15			63	17.58	85.3	0.53	4.30	13.00
15			80	15.04	89.1	0.77	3.70	14.80
15			100	11.70	92.3	1.20	3.00	16.80
15			125	7.53	94.9	1.83	1.80	18.80
15			160	1.86	97.0	2.74	0.00	21.10
15			200	-2.09	98.4	3.95	0.00	22.80
16	4,287	4,294						
16			20	24.10	59.3	0.00	5.60	7.60
16			25	23.21	65.2	0.09	5.40	8.30
16			32	22.17	70.6	0.13	5.20	9.20
16			40	21.38	76.0	0.21	5.00	10.30
16			50	20.29	80.9	0.30	4.70	11.50
16			63	18.62	85.3	0.47	4.30	13.00
16			80	16.11	89.1	0.69	3.70	14.80
16			100	12.82	92.3	1.07	3.00	16.80
16			125	8.71	94.9	1.63	1.80	18.80
16			160	3.15	97.0	2.45	0.00	21.10
16			200	-0.68	98.4	3.52	0.00	22.80
17	3,682	3,688						
17			20	25.42	59.3	0.00	5.60	7.60
17			25	24.54	65.2	0.07	5.40	8.30
17			32	23.51	70.6	0.11	5.20	9.20
17			40	22.73	76.0	0.18	5.00	10.30
17			50	21.66	80.9	0.26	4.70	11.50
17			63	20.01	85.3	0.41	4.30	13.00
17			80	17.52	89.1	0.59	3.70	14.80
17			100	14.29	92.3	0.92	3.00	16.80
17			125	10.26	94.9	1.40	1.80	18.80
17			160	4.81	97.0	2.10	0.00	21.10
17			200	1.14	98.4	3.02	0.00	22.80
18	5,464	5,469						
18			20	22.00	59.3	0.00	5.60	7.60
18			25	21.09	65.2	0.11	5.40	8.30
18			32	20.03	70.6	0.16	5.20	9.20
18			40	19.22	76.0	0.27	5.00	10.30
18			50	18.11	80.9	0.38	4.70	11.50
18			63	16.39	85.3	0.60	4.30	13.00
18			80	13.82	89.1	0.88	3.70	14.80
18			100	10.43	92.3	1.37	3.00	16.80
18			125	6.16	94.9	2.08	1.80	18.80
18			160	0.38	97.0	3.12	0.00	21.10
18			200	-3.74	98.4	4.48	0.00	22.80
19	5,044	5,050						
19			20	22.69	59.3	0.00	5.60	7.60
19			25	21.79	65.2	0.10	5.40	8.30
19			32	20.74	70.6	0.15	5.20	9.20
19			40	19.94	76.0	0.25	5.00	10.30
19			50	18.83	80.9	0.35	4.70	11.50
19			63	17.13	85.3	0.56	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	14.58	89.1	0.81	3.70	14.80
19			100	11.22	92.3	1.26	3.00	16.80
19			125	7.01	94.9	1.92	1.80	18.80
19			160	1.31	97.0	2.88	0.00	21.10
19			200	-2.71	98.4	4.14	0.00	22.80
2	5,727	5,732						
2			20	21.59	59.3	0.00	5.60	7.60
2			25	20.67	65.2	0.11	5.40	8.30
2			32	19.62	70.6	0.17	5.20	9.20
2			40	18.80	76.0	0.29	5.00	10.30
2			50	17.68	80.9	0.40	4.70	11.50
2			63	15.96	85.3	0.63	4.30	13.00
2			80	13.37	89.1	0.92	3.70	14.80
2			100	9.95	92.3	1.43	3.00	16.80
2			125	5.66	94.9	2.18	1.80	18.80
2			160	-0.18	97.0	3.27	0.00	21.10
2			200	-4.37	98.4	4.70	0.00	22.80
20	4,591	4,597						
20			20	23.50	59.3	0.00	5.60	7.60
20			25	22.61	65.2	0.09	5.40	8.30
20			32	21.57	70.6	0.14	5.20	9.20
20			40	20.77	76.0	0.23	5.00	10.30
20			50	19.68	80.9	0.32	4.70	11.50
20			63	18.00	85.3	0.51	4.30	13.00
20			80	15.47	89.1	0.74	3.70	14.80
20			100	12.15	92.3	1.15	3.00	16.80
20			125	8.00	94.9	1.75	1.80	18.80
20			160	2.38	97.0	2.62	0.00	21.10
20			200	-1.52	98.4	3.77	0.00	22.80
21	3,957	3,964						
21			20	24.79	59.3	0.00	5.60	7.60
21			25	23.91	65.2	0.08	5.40	8.30
21			32	22.87	70.6	0.12	5.20	9.20
21			40	22.09	76.0	0.20	5.00	10.30
21			50	21.01	80.9	0.28	4.70	11.50
21			63	19.35	85.3	0.44	4.30	13.00
21			80	16.85	89.1	0.63	3.70	14.80
21			100	13.60	92.3	0.99	3.00	16.80
21			125	9.53	94.9	1.51	1.80	18.80
21			160	4.03	97.0	2.26	0.00	21.10
21			200	0.29	98.4	3.25	0.00	22.80
22	3,301	3,310						
22			20	26.36	59.3	0.00	5.60	7.60
22			25	25.49	65.2	0.07	5.40	8.30
22			32	24.46	70.6	0.10	5.20	9.20
22			40	23.69	76.0	0.17	5.00	10.30
22			50	22.62	80.9	0.23	4.70	11.50
22			63	20.99	85.3	0.36	4.30	13.00
22			80	18.52	89.1	0.53	3.70	14.80
22			100	15.33	92.3	0.83	3.00	16.80
22			125	11.34	94.9	1.26	1.80	18.80
22			160	5.97	97.0	1.89	0.00	21.10
22			200	2.39	98.4	2.71	0.00	22.80
23	2,838	2,847						
23			20	27.67	59.3	0.00	5.60	7.60
23			25	26.81	65.2	0.06	5.40	8.30
23			32	25.78	70.6	0.09	5.20	9.20
23			40	25.03	76.0	0.14	5.00	10.30
23			50	23.97	80.9	0.20	4.70	11.50
23			63	22.35	85.3	0.31	4.30	13.00
23			80	19.91	89.1	0.46	3.70	14.80
23			100	16.75	92.3	0.71	3.00	16.80
23			125	12.83	94.9	1.08	1.80	18.80
23			160	7.54	97.0	1.62	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	4.08	98.4	2.33	0.00	22.80
24	2,839	2,847						
24			20	27.67	59.3	0.00	5.60	7.60
24			25	26.81	65.2	0.06	5.40	8.30
24			32	25.78	70.6	0.09	5.20	9.20
24			40	25.02	76.0	0.14	5.00	10.30
24			50	23.96	80.9	0.20	4.70	11.50
24			63	22.35	85.3	0.31	4.30	13.00
24			80	19.91	89.1	0.46	3.70	14.80
24			100	16.75	92.3	0.71	3.00	16.80
24			125	12.83	94.9	1.08	1.80	18.80
24			160	7.54	97.0	1.62	0.00	21.10
24			200	4.08	98.4	2.33	0.00	22.80
3	5,331	5,336						
3			20	22.21	59.3	0.00	5.60	7.60
3			25	21.30	65.2	0.11	5.40	8.30
3			32	20.25	70.6	0.16	5.20	9.20
3			40	19.44	76.0	0.27	5.00	10.30
3			50	18.33	80.9	0.37	4.70	11.50
3			63	16.62	85.3	0.59	4.30	13.00
3			80	14.05	89.1	0.85	3.70	14.80
3			100	10.67	92.3	1.33	3.00	16.80
3			125	6.43	94.9	2.03	1.80	18.80
3			160	0.67	97.0	3.04	0.00	21.10
3			200	-3.42	98.4	4.38	0.00	22.80
4	5,148	5,154						
4			20	22.51	59.3	0.00	5.60	7.60
4			25	21.61	65.2	0.10	5.40	8.30
4			32	20.56	70.6	0.15	5.20	9.20
4			40	19.75	76.0	0.26	5.00	10.30
4			50	18.65	80.9	0.36	4.70	11.50
4			63	16.94	85.3	0.57	4.30	13.00
4			80	14.38	89.1	0.82	3.70	14.80
4			100	11.02	92.3	1.29	3.00	16.80
4			125	6.80	94.9	1.96	1.80	18.80
4			160	1.07	97.0	2.94	0.00	21.10
4			200	-2.97	98.4	4.23	0.00	22.80
5	4,676	4,682						
5			20	23.35	59.3	0.00	5.60	7.60
5			25	22.45	65.2	0.09	5.40	8.30
5			32	21.41	70.6	0.14	5.20	9.20
5			40	20.61	76.0	0.23	5.00	10.30
5			50	19.52	80.9	0.33	4.70	11.50
5			63	17.83	85.3	0.52	4.30	13.00
5			80	15.29	89.1	0.75	3.70	14.80
5			100	11.97	92.3	1.17	3.00	16.80
5			125	7.81	94.9	1.78	1.80	18.80
5			160	2.17	97.0	2.67	0.00	21.10
5			200	-1.75	98.4	3.84	0.00	22.80
6	6,279	6,283						
6			20	20.79	59.3	0.00	5.60	7.60
6			25	19.87	65.2	0.13	5.40	8.30
6			32	18.80	70.6	0.19	5.20	9.20
6			40	17.98	76.0	0.31	5.00	10.30
6			50	16.85	80.9	0.44	4.70	11.50
6			63	15.10	85.3	0.69	4.30	13.00
6			80	12.48	89.1	1.01	3.70	14.80
6			100	9.02	92.3	1.57	3.00	16.80
6			125	4.65	94.9	2.39	1.80	18.80
6			160	-1.29	97.0	3.58	0.00	21.10
6			200	-5.62	98.4	5.15	0.00	22.80
7	5,635	5,639						
7			20	21.73	59.3	0.00	5.60	7.60
7			25	20.82	65.2	0.11	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			32	19.76	70.6	0.17	5.20	9.20
7			40	18.95	76.0	0.28	5.00	10.30
7			50	17.83	80.9	0.39	4.70	11.50
7			63	16.11	85.3	0.62	4.30	13.00
7			80	13.52	89.1	0.90	3.70	14.80
7			100	10.12	92.3	1.41	3.00	16.80
7			125	5.83	94.9	2.14	1.80	18.80
7			160	0.01	97.0	3.21	0.00	21.10
7			200	-4.15	98.4	4.62	0.00	22.80
8	5,135	5,140						
8			20	22.54	59.3	0.00	5.60	7.60
8			25	21.63	65.2	0.10	5.40	8.30
8			32	20.58	70.6	0.15	5.20	9.20
8			40	19.78	76.0	0.26	5.00	10.30
8			50	18.67	80.9	0.36	4.70	11.50
8			63	16.97	85.3	0.57	4.30	13.00
8			80	14.41	89.1	0.82	3.70	14.80
8			100	11.05	92.3	1.28	3.00	16.80
8			125	6.83	94.9	1.95	1.80	18.80
8			160	1.10	97.0	2.93	0.00	21.10
8			200	-2.93	98.4	4.21	0.00	22.80
9	6,677	6,681						
9			20	20.26	59.3	0.00	5.60	7.60
9			25	19.32	65.2	0.13	5.40	8.30
9			32	18.26	70.6	0.20	5.20	9.20
9			40	17.42	76.0	0.33	5.00	10.30
9			50	16.29	80.9	0.47	4.70	11.50
9			63	14.52	85.3	0.73	4.30	13.00
9			80	11.89	89.1	1.07	3.70	14.80
9			100	8.38	92.3	1.67	3.00	16.80
9			125	3.96	94.9	2.54	1.80	18.80
9			160	-2.05	97.0	3.81	0.00	21.10
9			200	-6.47	98.4	5.48	0.00	22.80
Sum								
Sum			20	37.34				
Sum			25	36.45				
Sum			32	35.41				
Sum			40	34.62				
Sum			50	33.53				
Sum			63	31.85				
Sum			80	29.33				
Sum			100	26.04				
Sum			125	21.92				
Sum			160	16.36				
Sum			200	12.56				

Noise sensitive area: HH Kuusela Noise sensitive point: Finnish normal frequency - User defined (298)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,609	4,614						
1			20	23.47	59.3	0.00	5.60	7.60
1			25	22.58	65.2	0.09	5.40	8.30
1			32	21.54	70.6	0.14	5.20	9.20
1			40	20.74	76.0	0.23	5.00	10.30
1			50	19.65	80.9	0.32	4.70	11.50
1			63	17.96	85.3	0.51	4.30	13.00
1			80	15.43	89.1	0.74	3.70	14.80
1			100	12.12	92.3	1.15	3.00	16.80
1			125	7.97	94.9	1.75	1.80	18.80
1			160	2.34	97.0	2.63	0.00	21.10
1			200	-1.56	98.4	3.78	0.00	22.80
10	2,692	2,701						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			20	28.12	59.3	0.00	5.60	7.60
10			25	27.27	65.2	0.05	5.40	8.30
10			32	26.24	70.6	0.08	5.20	9.20
10			40	25.49	76.0	0.14	5.00	10.30
10			50	24.43	80.9	0.19	4.70	11.50
10			63	22.82	85.3	0.30	4.30	13.00
10			80	20.39	89.1	0.43	3.70	14.80
10			100	17.25	92.3	0.68	3.00	16.80
10			125	13.34	94.9	1.03	1.80	18.80
10			160	8.08	97.0	1.54	0.00	21.10
10			200	4.65	98.4	2.21	0.00	22.80
11	2,471	2,481						
11			20	28.86	59.3	0.00	5.60	7.60
11			25	28.01	65.2	0.05	5.40	8.30
11			32	26.99	70.6	0.07	5.20	9.20
11			40	26.24	76.0	0.12	5.00	10.30
11			50	25.19	80.9	0.17	4.70	11.50
11			63	23.59	85.3	0.27	4.30	13.00
11			80	21.16	89.1	0.40	3.70	14.80
11			100	18.04	92.3	0.62	3.00	16.80
11			125	14.16	94.9	0.94	1.80	18.80
11			160	8.94	97.0	1.41	0.00	21.10
11			200	5.57	98.4	2.03	0.00	22.80
12	2,900	2,908						
12			20	27.48	59.3	0.00	5.60	7.60
12			25	26.62	65.2	0.06	5.40	8.30
12			32	25.60	70.6	0.09	5.20	9.20
12			40	24.84	76.0	0.15	5.00	10.30
12			50	23.78	80.9	0.20	4.70	11.50
12			63	22.16	85.3	0.32	4.30	13.00
12			80	19.71	89.1	0.47	3.70	14.80
12			100	16.55	92.3	0.73	3.00	16.80
12			125	12.62	94.9	1.11	1.80	18.80
12			160	7.32	97.0	1.66	0.00	21.10
12			200	3.84	98.4	2.38	0.00	22.80
13	3,543	3,552						
13			20	25.75	59.3	0.00	5.60	7.60
13			25	24.88	65.2	0.07	5.40	8.30
13			32	23.84	70.6	0.11	5.20	9.20
13			40	23.07	76.0	0.18	5.00	10.30
13			50	21.99	80.9	0.25	4.70	11.50
13			63	20.35	85.3	0.39	4.30	13.00
13			80	17.87	89.1	0.57	3.70	14.80
13			100	14.66	92.3	0.89	3.00	16.80
13			125	10.64	94.9	1.35	1.80	18.80
13			160	5.22	97.0	2.02	0.00	21.10
13			200	1.58	98.4	2.91	0.00	22.80
14	3,694	3,702						
14			20	25.39	59.3	0.00	5.60	7.60
14			25	24.51	65.2	0.07	5.40	8.30
14			32	23.48	70.6	0.11	5.20	9.20
14			40	22.70	76.0	0.19	5.00	10.30
14			50	21.62	80.9	0.26	4.70	11.50
14			63	19.98	85.3	0.41	4.30	13.00
14			80	17.49	89.1	0.59	3.70	14.80
14			100	14.26	92.3	0.93	3.00	16.80
14			125	10.23	94.9	1.41	1.80	18.80
14			160	4.77	97.0	2.11	0.00	21.10
14			200	1.10	98.4	3.04	0.00	22.80
15	4,157	4,165						
15			20	24.36	59.3	0.00	5.60	7.60
15			25	23.48	65.2	0.08	5.40	8.30
15			32	22.44	70.6	0.12	5.20	9.20
15			40	21.65	76.0	0.21	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			50	20.57	80.9	0.29	4.70	11.50
15			63	18.90	85.3	0.46	4.30	13.00
15			80	16.39	89.1	0.67	3.70	14.80
15			100	13.12	92.3	1.04	3.00	16.80
15			125	9.02	94.9	1.58	1.80	18.80
15			160	3.48	97.0	2.37	0.00	21.10
15			200	-0.31	98.4	3.42	0.00	22.80
16	4,738	4,744						
16			20	23.23	59.3	0.00	5.60	7.60
16			25	22.34	65.2	0.09	5.40	8.30
16			32	21.29	70.6	0.14	5.20	9.20
16			40	20.49	76.0	0.24	5.00	10.30
16			50	19.40	80.9	0.33	4.70	11.50
16			63	17.71	85.3	0.52	4.30	13.00
16			80	15.17	89.1	0.76	3.70	14.80
16			100	11.84	92.3	1.19	3.00	16.80
16			125	7.67	94.9	1.80	1.80	18.80
16			160	2.02	97.0	2.70	0.00	21.10
16			200	-1.91	98.4	3.89	0.00	22.80
17	5,200	5,205						
17			20	22.43	59.3	0.00	5.60	7.60
17			25	21.52	65.2	0.10	5.40	8.30
17			32	20.47	70.6	0.16	5.20	9.20
17			40	19.67	76.0	0.26	5.00	10.30
17			50	18.56	80.9	0.36	4.70	11.50
17			63	16.85	85.3	0.57	4.30	13.00
17			80	14.29	89.1	0.83	3.70	14.80
17			100	10.92	92.3	1.30	3.00	16.80
17			125	6.69	94.9	1.98	1.80	18.80
17			160	0.96	97.0	2.97	0.00	21.10
17			200	-3.10	98.4	4.27	0.00	22.80
18	3,718	3,725						
18			20	25.33	59.3	0.00	5.60	7.60
18			25	24.46	65.2	0.07	5.40	8.30
18			32	23.42	70.6	0.11	5.20	9.20
18			40	22.65	76.0	0.19	5.00	10.30
18			50	21.57	80.9	0.26	4.70	11.50
18			63	19.92	85.3	0.41	4.30	13.00
18			80	17.43	89.1	0.60	3.70	14.80
18			100	14.20	92.3	0.93	3.00	16.80
18			125	10.16	94.9	1.42	1.80	18.80
18			160	4.70	97.0	2.12	0.00	21.10
18			200	1.02	98.4	3.05	0.00	22.80
19	4,266	4,274						
19			20	24.14	59.3	0.00	5.60	7.60
19			25	23.25	65.2	0.09	5.40	8.30
19			32	22.21	70.6	0.13	5.20	9.20
19			40	21.42	76.0	0.21	5.00	10.30
19			50	20.34	80.9	0.30	4.70	11.50
19			63	18.66	85.3	0.47	4.30	13.00
19			80	16.15	89.1	0.68	3.70	14.80
19			100	12.87	92.3	1.07	3.00	16.80
19			125	8.76	94.9	1.62	1.80	18.80
19			160	3.20	97.0	2.44	0.00	21.10
19			200	-0.62	98.4	3.50	0.00	22.80
2	3,675	3,681						
2			20	25.44	59.3	0.00	5.60	7.60
2			25	24.56	65.2	0.07	5.40	8.30
2			32	23.52	70.6	0.11	5.20	9.20
2			40	22.75	76.0	0.18	5.00	10.30
2			50	21.67	80.9	0.26	4.70	11.50
2			63	20.03	85.3	0.40	4.30	13.00
2			80	17.54	89.1	0.59	3.70	14.80
2			100	14.31	92.3	0.92	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			125	10.28	94.9	1.40	1.80	18.80
2			160	4.83	97.0	2.10	0.00	21.10
2			200	1.16	98.4	3.02	0.00	22.80
20	4,748	4,754						
20			20	23.21	59.3	0.00	5.60	7.60
20			25	22.32	65.2	0.10	5.40	8.30
20			32	21.27	70.6	0.14	5.20	9.20
20			40	20.48	76.0	0.24	5.00	10.30
20			50	19.38	80.9	0.33	4.70	11.50
20			63	17.69	85.3	0.52	4.30	13.00
20			80	15.15	89.1	0.76	3.70	14.80
20			100	11.82	92.3	1.19	3.00	16.80
20			125	7.65	94.9	1.81	1.80	18.80
20			160	2.00	97.0	2.71	0.00	21.10
20			200	-1.94	98.4	3.90	0.00	22.80
21	5,276	5,281						
21			20	22.30	59.3	0.00	5.60	7.60
21			25	21.40	65.2	0.11	5.40	8.30
21			32	20.34	70.6	0.16	5.20	9.20
21			40	19.54	76.0	0.26	5.00	10.30
21			50	18.43	80.9	0.37	4.70	11.50
21			63	16.72	85.3	0.58	4.30	13.00
21			80	14.15	89.1	0.84	3.70	14.80
21			100	10.78	92.3	1.32	3.00	16.80
21			125	6.54	94.9	2.01	1.80	18.80
21			160	0.79	97.0	3.01	0.00	21.10
21			200	-3.28	98.4	4.33	0.00	22.80
22	5,844	5,849						
22			20	21.41	59.3	0.00	5.60	7.60
22			25	20.50	65.2	0.12	5.40	8.30
22			32	19.44	70.6	0.18	5.20	9.20
22			40	18.62	76.0	0.29	5.00	10.30
22			50	17.50	80.9	0.41	4.70	11.50
22			63	15.77	85.3	0.64	4.30	13.00
22			80	13.17	89.1	0.94	3.70	14.80
22			100	9.75	92.3	1.46	3.00	16.80
22			125	5.44	94.9	2.22	1.80	18.80
22			160	-0.42	97.0	3.33	0.00	21.10
22			200	-4.64	98.4	4.80	0.00	22.80
23	6,030	6,034						
23			20	21.14	59.3	0.00	5.60	7.60
23			25	20.22	65.2	0.12	5.40	8.30
23			32	19.16	70.6	0.18	5.20	9.20
23			40	18.34	76.0	0.30	5.00	10.30
23			50	17.22	80.9	0.42	4.70	11.50
23			63	15.48	85.3	0.66	4.30	13.00
23			80	12.87	89.1	0.97	3.70	14.80
23			100	9.43	92.3	1.51	3.00	16.80
23			125	5.10	94.9	2.29	1.80	18.80
23			160	-0.80	97.0	3.44	0.00	21.10
23			200	-5.06	98.4	4.95	0.00	22.80
24	6,363	6,366						
24			20	20.68	59.3	0.00	5.60	7.60
24			25	19.75	65.2	0.13	5.40	8.30
24			32	18.69	70.6	0.19	5.20	9.20
24			40	17.86	76.0	0.32	5.00	10.30
24			50	16.73	80.9	0.45	4.70	11.50
24			63	14.97	85.3	0.70	4.30	13.00
24			80	12.36	89.1	1.02	3.70	14.80
24			100	8.88	92.3	1.59	3.00	16.80
24			125	4.50	94.9	2.42	1.80	18.80
24			160	-1.45	97.0	3.63	0.00	21.10
24			200	-5.80	98.4	5.22	0.00	22.80
3	4,303	4,309						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			20	24.07	59.3	0.00	5.60	7.60
3			25	23.18	65.2	0.09	5.40	8.30
3			32	22.14	70.6	0.13	5.20	9.20
3			40	21.35	76.0	0.22	5.00	10.30
3			50	20.26	80.9	0.30	4.70	11.50
3			63	18.59	85.3	0.47	4.30	13.00
3			80	16.07	89.1	0.69	3.70	14.80
3			100	12.79	92.3	1.08	3.00	16.80
3			125	8.67	94.9	1.64	1.80	18.80
3			160	3.11	97.0	2.46	0.00	21.10
3			200	-0.72	98.4	3.53	0.00	22.80
4	4,069	4,075						
4			20	24.55	59.3	0.00	5.60	7.60
4			25	23.67	65.2	0.08	5.40	8.30
4			32	22.63	70.6	0.12	5.20	9.20
4			40	21.85	76.0	0.20	5.00	10.30
4			50	20.76	80.9	0.29	4.70	11.50
4			63	19.10	85.3	0.45	4.30	13.00
4			80	16.60	89.1	0.65	3.70	14.80
4			100	13.33	92.3	1.02	3.00	16.80
4			125	9.25	94.9	1.55	1.80	18.80
4			160	3.73	97.0	2.32	0.00	21.10
4			200	-0.04	98.4	3.34	0.00	22.80
5	4,311	4,317						
5			20	24.05	59.3	0.00	5.60	7.60
5			25	23.16	65.2	0.09	5.40	8.30
5			32	22.12	70.6	0.13	5.20	9.20
5			40	21.33	76.0	0.22	5.00	10.30
5			50	20.25	80.9	0.30	4.70	11.50
5			63	18.57	85.3	0.47	4.30	13.00
5			80	16.06	89.1	0.69	3.70	14.80
5			100	12.77	92.3	1.08	3.00	16.80
5			125	8.66	94.9	1.64	1.80	18.80
5			160	3.09	97.0	2.46	0.00	21.10
5			200	-0.74	98.4	3.54	0.00	22.80
6	2,642	2,651						
6			20	28.29	59.3	0.00	5.60	7.60
6			25	27.43	65.2	0.05	5.40	8.30
6			32	26.41	70.6	0.08	5.20	9.20
6			40	25.65	76.0	0.13	5.00	10.30
6			50	24.60	80.9	0.19	4.70	11.50
6			63	22.99	85.3	0.29	4.30	13.00
6			80	20.56	89.1	0.42	3.70	14.80
6			100	17.42	92.3	0.66	3.00	16.80
6			125	13.52	94.9	1.01	1.80	18.80
6			160	8.27	97.0	1.51	0.00	21.10
6			200	4.86	98.4	2.17	0.00	22.80
7	3,199	3,206						
7			20	26.63	59.3	0.00	5.60	7.60
7			25	25.77	65.2	0.06	5.40	8.30
7			32	24.74	70.6	0.10	5.20	9.20
7			40	23.97	76.0	0.16	5.00	10.30
7			50	22.91	80.9	0.22	4.70	11.50
7			63	21.28	85.3	0.35	4.30	13.00
7			80	18.82	89.1	0.51	3.70	14.80
7			100	15.63	92.3	0.80	3.00	16.80
7			125	11.66	94.9	1.22	1.80	18.80
7			160	6.30	97.0	1.83	0.00	21.10
7			200	2.75	98.4	2.63	0.00	22.80
8	3,756	3,763						
8			20	25.25	59.3	0.00	5.60	7.60
8			25	24.37	65.2	0.08	5.40	8.30
8			32	23.33	70.6	0.11	5.20	9.20
8			40	22.56	76.0	0.19	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	21.48	80.9	0.26	4.70	11.50
8			63	19.83	85.3	0.41	4.30	13.00
8			80	17.34	89.1	0.60	3.70	14.80
8			100	14.10	92.3	0.94	3.00	16.80
8			125	10.06	94.9	1.43	1.80	18.80
8			160	4.60	97.0	2.14	0.00	21.10
8			200	0.90	98.4	3.09	0.00	22.80
9	2,079	2,091						
9			20	30.35	59.3	0.00	5.60	7.60
9			25	29.51	65.2	0.04	5.40	8.30
9			32	28.48	70.6	0.06	5.20	9.20
9			40	27.74	76.0	0.10	5.00	10.30
9			50	26.70	80.9	0.15	4.70	11.50
9			63	25.11	85.3	0.23	4.30	13.00
9			80	22.71	89.1	0.33	3.70	14.80
9			100	19.62	92.3	0.52	3.00	16.80
9			125	15.80	94.9	0.79	1.80	18.80
9			160	10.65	97.0	1.19	0.00	21.10
9			200	7.38	98.4	1.71	0.00	22.80
Sum								
Sum			20	39.37				
Sum			25	38.50				
Sum			32	37.46				
Sum			40	36.69				
Sum			50	35.62				
Sum			63	33.98				
Sum			80	31.51				
Sum			100	28.30				
Sum			125	24.31				
Sum			160	18.92				
Sum			200	15.34				

Noise sensitive area: HH Lammaslahti 2 Noise sensitive point: Finnish normal frequency - User defined (283)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,982	5,985						
1			20	21.21	59.3	0.00	5.60	7.60
1			25	20.29	65.2	0.12	5.40	8.30
1			32	19.23	70.6	0.18	5.20	9.20
1			40	18.41	76.0	0.30	5.00	10.30
1			50	17.29	80.9	0.42	4.70	11.50
1			63	15.55	85.3	0.66	4.30	13.00
1			80	12.95	89.1	0.96	3.70	14.80
1			100	9.51	92.3	1.50	3.00	16.80
1			125	5.18	94.9	2.27	1.80	18.80
1			160	-0.70	97.0	3.41	0.00	21.10
1			200	-4.95	98.4	4.91	0.00	22.80
10	3,319	3,326						
10			20	26.32	59.3	0.00	5.60	7.60
10			25	25.45	65.2	0.07	5.40	8.30
10			32	24.42	70.6	0.10	5.20	9.20
10			40	23.65	76.0	0.17	5.00	10.30
10			50	22.58	80.9	0.23	4.70	11.50
10			63	20.95	85.3	0.37	4.30	13.00
10			80	18.48	89.1	0.53	3.70	14.80
10			100	15.28	92.3	0.83	3.00	16.80
10			125	11.30	94.9	1.26	1.80	18.80
10			160	5.92	97.0	1.90	0.00	21.10
10			200	2.33	98.4	2.73	0.00	22.80
11	2,718	2,725						
11			20	28.05	59.3	0.00	5.60	7.60
11			25	27.19	65.2	0.05	5.40	8.30

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			32	26.16	70.6	0.08	5.20	9.20
11			40	25.41	76.0	0.14	5.00	10.30
11			50	24.35	80.9	0.19	4.70	11.50
11			63	22.74	85.3	0.30	4.30	13.00
11			80	20.31	89.1	0.44	3.70	14.80
11			100	17.16	92.3	0.68	3.00	16.80
11			125	13.26	94.9	1.04	1.80	18.80
11			160	7.99	97.0	1.55	0.00	21.10
11			200	4.56	98.4	2.23	0.00	22.80
12	2,525	2,533						
12			20	28.68	59.3	0.00	5.60	7.60
12			25	27.83	65.2	0.05	5.40	8.30
12			32	26.81	70.6	0.08	5.20	9.20
12			40	26.05	76.0	0.13	5.00	10.30
12			50	25.00	80.9	0.18	4.70	11.50
12			63	23.40	85.3	0.28	4.30	13.00
12			80	20.97	89.1	0.41	3.70	14.80
12			100	17.84	92.3	0.63	3.00	16.80
12			125	13.96	94.9	0.96	1.80	18.80
12			160	8.73	97.0	1.44	0.00	21.10
12			200	5.35	98.4	2.08	0.00	22.80
13	3,010	3,019						
13			20	27.16	59.3	0.00	5.60	7.60
13			25	26.30	65.2	0.06	5.40	8.30
13			32	25.27	70.6	0.09	5.20	9.20
13			40	24.51	76.0	0.15	5.00	10.30
13			50	23.44	80.9	0.21	4.70	11.50
13			63	21.82	85.3	0.33	4.30	13.00
13			80	19.37	89.1	0.48	3.70	14.80
13			100	16.20	92.3	0.75	3.00	16.80
13			125	12.26	94.9	1.15	1.80	18.80
13			160	6.94	97.0	1.72	0.00	21.10
13			200	3.43	98.4	2.48	0.00	22.80
14	3,488	3,495						
14			20	25.88	59.3	0.00	5.60	7.60
14			25	25.02	65.2	0.07	5.40	8.30
14			32	23.98	70.6	0.10	5.20	9.20
14			40	23.21	76.0	0.17	5.00	10.30
14			50	22.14	80.9	0.24	4.70	11.50
14			63	20.50	85.3	0.38	4.30	13.00
14			80	18.02	89.1	0.56	3.70	14.80
14			100	14.81	92.3	0.87	3.00	16.80
14			125	10.80	94.9	1.33	1.80	18.80
14			160	5.39	97.0	1.99	0.00	21.10
14			200	1.76	98.4	2.87	0.00	22.80
15	3,347	3,356						
15			20	26.24	59.3	0.00	5.60	7.60
15			25	25.37	65.2	0.07	5.40	8.30
15			32	24.34	70.6	0.10	5.20	9.20
15			40	23.57	76.0	0.17	5.00	10.30
15			50	22.50	80.9	0.23	4.70	11.50
15			63	20.86	85.3	0.37	4.30	13.00
15			80	18.40	89.1	0.54	3.70	14.80
15			100	15.19	92.3	0.84	3.00	16.80
15			125	11.21	94.9	1.28	1.80	18.80
15			160	5.82	97.0	1.91	0.00	21.10
15			200	2.23	98.4	2.75	0.00	22.80
16	3,767	3,773						
16			20	25.22	59.3	0.00	5.60	7.60
16			25	24.35	65.2	0.08	5.40	8.30
16			32	23.31	70.6	0.11	5.20	9.20
16			40	22.53	76.0	0.19	5.00	10.30
16			50	21.45	80.9	0.26	4.70	11.50
16			63	19.80	85.3	0.42	4.30	13.00

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Junnunmäen tuulivoimahanke

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			80	17.31	89.1	0.60	3.70	14.80
16			100	14.07	92.3	0.94	3.00	16.80
16			125	10.03	94.9	1.43	1.80	18.80
16			160	4.57	97.0	2.15	0.00	21.10
16			200	0.87	98.4	3.09	0.00	22.80
17	4,405	4,409						
17			20	23.87	59.3	0.00	5.60	7.60
17			25	22.98	65.2	0.09	5.40	8.30
17			32	21.93	70.6	0.13	5.20	9.20
17			40	21.15	76.0	0.22	5.00	10.30
17			50	20.06	80.9	0.31	4.70	11.50
17			63	18.38	85.3	0.49	4.30	13.00
17			80	15.86	89.1	0.71	3.70	14.80
17			100	12.56	92.3	1.10	3.00	16.80
17			125	8.44	94.9	1.68	1.80	18.80
17			160	2.85	97.0	2.51	0.00	21.10
17			200	-1.00	98.4	3.62	0.00	22.80
18	2,641	2,649						
18			20	28.29	59.3	0.00	5.60	7.60
18			25	27.44	65.2	0.05	5.40	8.30
18			32	26.41	70.6	0.08	5.20	9.20
18			40	25.66	76.0	0.13	5.00	10.30
18			50	24.60	80.9	0.19	4.70	11.50
18			63	23.00	85.3	0.29	4.30	13.00
18			80	20.56	89.1	0.42	3.70	14.80
18			100	17.43	92.3	0.66	3.00	16.80
18			125	13.53	94.9	1.01	1.80	18.80
18			160	8.28	97.0	1.51	0.00	21.10
18			200	4.86	98.4	2.17	0.00	22.80
19	2,979	2,989						
19			20	27.24	59.3	0.00	5.60	7.60
19			25	26.38	65.2	0.06	5.40	8.30
19			32	25.35	70.6	0.09	5.20	9.20
19			40	24.59	76.0	0.15	5.00	10.30
19			50	23.53	80.9	0.21	4.70	11.50
19			63	21.91	85.3	0.33	4.30	13.00
19			80	19.46	89.1	0.48	3.70	14.80
19			100	16.29	92.3	0.75	3.00	16.80
19			125	12.35	94.9	1.14	1.80	18.80
19			160	7.04	97.0	1.70	0.00	21.10
19			200	3.54	98.4	2.45	0.00	22.80
2	4,931	4,935						
2			20	22.89	59.3	0.00	5.60	7.60
2			25	21.99	65.2	0.10	5.40	8.30
2			32	20.94	70.6	0.15	5.20	9.20
2			40	20.14	76.0	0.25	5.00	10.30
2			50	19.04	80.9	0.35	4.70	11.50
2			63	17.34	85.3	0.54	4.30	13.00
2			80	14.80	89.1	0.79	3.70	14.80
2			100	11.45	92.3	1.23	3.00	16.80
2			125	7.26	94.9	1.88	1.80	18.80
2			160	1.57	97.0	2.81	0.00	21.10
2			200	-2.41	98.4	4.05	0.00	22.80
20	3,424	3,431						
20			20	26.05	59.3	0.00	5.60	7.60
20			25	25.18	65.2	0.07	5.40	8.30
20			32	24.14	70.6	0.10	5.20	9.20
20			40	23.37	76.0	0.17	5.00	10.30
20			50	22.30	80.9	0.24	4.70	11.50
20			63	20.67	85.3	0.38	4.30	13.00
20			80	18.19	89.1	0.55	3.70	14.80
20			100	14.98	92.3	0.86	3.00	16.80
20			125	10.99	94.9	1.30	1.80	18.80
20			160	5.59	97.0	1.96	0.00	21.10

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			200	1.98	98.4	2.81	0.00	22.80
21	4,058	4,064						
21			20	24.58	59.3	0.00	5.60	7.60
21			25	23.69	65.2	0.08	5.40	8.30
21			32	22.65	70.6	0.12	5.20	9.20
21			40	21.87	76.0	0.20	5.00	10.30
21			50	20.79	80.9	0.28	4.70	11.50
21			63	19.13	85.3	0.45	4.30	13.00
21			80	16.62	89.1	0.65	3.70	14.80
21			100	13.36	92.3	1.02	3.00	16.80
21			125	9.28	94.9	1.54	1.80	18.80
21			160	3.76	97.0	2.32	0.00	21.10
21			200	-0.01	98.4	3.33	0.00	22.80
22	4,718	4,723						
22			20	23.27	59.3	0.00	5.60	7.60
22			25	22.38	65.2	0.09	5.40	8.30
22			32	21.33	70.6	0.14	5.20	9.20
22			40	20.53	76.0	0.24	5.00	10.30
22			50	19.44	80.9	0.33	4.70	11.50
22			63	17.75	85.3	0.52	4.30	13.00
22			80	15.21	89.1	0.76	3.70	14.80
22			100	11.89	92.3	1.18	3.00	16.80
22			125	7.72	94.9	1.79	1.80	18.80
22			160	2.08	97.0	2.69	0.00	21.10
22			200	-1.86	98.4	3.87	0.00	22.80
23	5,203	5,207						
23			20	22.42	59.3	0.00	5.60	7.60
23			25	21.52	65.2	0.10	5.40	8.30
23			32	20.47	70.6	0.16	5.20	9.20
23			40	19.66	76.0	0.26	5.00	10.30
23			50	18.56	80.9	0.36	4.70	11.50
23			63	16.85	85.3	0.57	4.30	13.00
23			80	14.29	89.1	0.83	3.70	14.80
23			100	10.92	92.3	1.30	3.00	16.80
23			125	6.69	94.9	1.98	1.80	18.80
23			160	0.95	97.0	2.97	0.00	21.10
23			200	-3.10	98.4	4.27	0.00	22.80
24	5,208	5,212						
24			20	22.41	59.3	0.00	5.60	7.60
24			25	21.51	65.2	0.10	5.40	8.30
24			32	20.46	70.6	0.16	5.20	9.20
24			40	19.65	76.0	0.26	5.00	10.30
24			50	18.55	80.9	0.36	4.70	11.50
24			63	16.84	85.3	0.57	4.30	13.00
24			80	14.28	89.1	0.83	3.70	14.80
24			100	10.91	92.3	1.30	3.00	16.80
24			125	6.68	94.9	1.98	1.80	18.80
24			160	0.94	97.0	2.97	0.00	21.10
24			200	-3.11	98.4	4.27	0.00	22.80
3	5,464	5,468						
3			20	22.00	59.3	0.00	5.60	7.60
3			25	21.09	65.2	0.11	5.40	8.30
3			32	20.03	70.6	0.16	5.20	9.20
3			40	19.22	76.0	0.27	5.00	10.30
3			50	18.11	80.9	0.38	4.70	11.50
3			63	16.39	85.3	0.60	4.30	13.00
3			80	13.82	89.1	0.87	3.70	14.80
3			100	10.43	92.3	1.37	3.00	16.80
3			125	6.17	94.9	2.08	1.80	18.80
3			160	0.38	97.0	3.12	0.00	21.10
3			200	-3.74	98.4	4.48	0.00	22.80
4	4,975	4,979						
4			20	22.81	59.3	0.00	5.60	7.60
4			25	21.91	65.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	20.86	70.6	0.15	5.20	9.20
4			40	20.06	76.0	0.25	5.00	10.30
4			50	18.96	80.9	0.35	4.70	11.50
4			63	17.26	85.3	0.55	4.30	13.00
4			80	14.71	89.1	0.80	3.70	14.80
4			100	11.36	92.3	1.24	3.00	16.80
4			125	7.17	94.9	1.89	1.80	18.80
4			160	1.47	97.0	2.84	0.00	21.10
4			200	-2.53	98.4	4.08	0.00	22.80
5	4,852	4,857						
5			20	23.03	59.3	0.00	5.60	7.60
5			25	22.13	65.2	0.10	5.40	8.30
5			32	21.08	70.6	0.15	5.20	9.20
5			40	20.29	76.0	0.24	5.00	10.30
5			50	19.19	80.9	0.34	4.70	11.50
5			63	17.49	85.3	0.53	4.30	13.00
5			80	14.95	89.1	0.78	3.70	14.80
5			100	11.61	92.3	1.21	3.00	16.80
5			125	7.43	94.9	1.85	1.80	18.80
5			160	1.76	97.0	2.77	0.00	21.10
5			200	-2.21	98.4	3.98	0.00	22.80
6	3,839	3,844						
6			20	25.06	59.3	0.00	5.60	7.60
6			25	24.18	65.2	0.08	5.40	8.30
6			32	23.14	70.6	0.12	5.20	9.20
6			40	22.37	76.0	0.19	5.00	10.30
6			50	21.29	80.9	0.27	4.70	11.50
6			63	19.63	85.3	0.42	4.30	13.00
6			80	17.14	89.1	0.62	3.70	14.80
6			100	13.89	92.3	0.96	3.00	16.80
6			125	9.84	94.9	1.46	1.80	18.80
6			160	4.36	97.0	2.19	0.00	21.10
6			200	0.65	98.4	3.15	0.00	22.80
7	3,916	3,921						
7			20	24.89	59.3	0.00	5.60	7.60
7			25	24.01	65.2	0.08	5.40	8.30
7			32	22.97	70.6	0.12	5.20	9.20
7			40	22.19	76.0	0.20	5.00	10.30
7			50	21.11	80.9	0.27	4.70	11.50
7			63	19.45	85.3	0.43	4.30	13.00
7			80	16.96	89.1	0.63	3.70	14.80
7			100	13.70	92.3	0.98	3.00	16.80
7			125	9.64	94.9	1.49	1.80	18.80
7			160	4.15	97.0	2.24	0.00	21.10
7			200	0.42	98.4	3.22	0.00	22.80
8	4,355	4,360						
8			20	23.97	59.3	0.00	5.60	7.60
8			25	23.08	65.2	0.09	5.40	8.30
8			32	22.03	70.6	0.13	5.20	9.20
8			40	21.25	76.0	0.22	5.00	10.30
8			50	20.16	80.9	0.31	4.70	11.50
8			63	18.48	85.3	0.48	4.30	13.00
8			80	15.96	89.1	0.70	3.70	14.80
8			100	12.67	92.3	1.09	3.00	16.80
8			125	8.55	94.9	1.66	1.80	18.80
8			160	2.98	97.0	2.49	0.00	21.10
8			200	-0.86	98.4	3.58	0.00	22.80
9	3,140	3,146						
9			20	26.80	59.3	0.00	5.60	7.60
9			25	25.94	65.2	0.06	5.40	8.30
9			32	24.90	70.6	0.09	5.20	9.20
9			40	24.14	76.0	0.16	5.00	10.30
9			50	23.07	80.9	0.22	4.70	11.50
9			63	21.45	85.3	0.35	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	18.99	89.1	0.50	3.70	14.80
9			100	15.81	92.3	0.79	3.00	16.80
9			125	11.85	94.9	1.20	1.80	18.80
9			160	6.50	97.0	1.79	0.00	21.10
9			200	2.96	98.4	2.58	0.00	22.80
Sum								
Sum			20	39.24				
Sum			25	38.37				
Sum			32	37.33				
Sum			40	36.56				
Sum			50	35.49				
Sum			63	33.85				
Sum			80	31.37				
Sum			100	28.15				
Sum			125	24.14				
Sum			160	18.73				
Sum			200	15.11				

Noise sensitive area: HH Lehtoharju 2 Noise sensitive point: Finnish normal frequency - User defined (293)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	7,018	7,019						
1			20	19.83	59.3	0.00	5.60	7.60
1			25	18.89	65.2	0.14	5.40	8.30
1			32	17.82	70.6	0.21	5.20	9.20
1			40	16.98	76.0	0.35	5.00	10.30
1			50	15.83	80.9	0.49	4.70	11.50
1			63	14.05	85.3	0.77	4.30	13.00
1			80	11.40	89.1	1.12	3.70	14.80
1			100	7.87	92.3	1.75	3.00	16.80
1			125	3.41	94.9	2.67	1.80	18.80
1			160	-2.68	97.0	4.00	0.00	21.10
1			200	-7.18	98.4	5.76	0.00	22.80
10	4,510	4,514						
10			20	23.66	59.3	0.00	5.60	7.60
10			25	22.77	65.2	0.09	5.40	8.30
10			32	21.73	70.6	0.14	5.20	9.20
10			40	20.94	76.0	0.23	5.00	10.30
10			50	19.85	80.9	0.32	4.70	11.50
10			63	18.16	85.3	0.50	4.30	13.00
10			80	15.64	89.1	0.72	3.70	14.80
10			100	12.33	92.3	1.13	3.00	16.80
10			125	8.19	94.9	1.72	1.80	18.80
10			160	2.59	97.0	2.57	0.00	21.10
10			200	-1.29	98.4	3.70	0.00	22.80
11	3,966	3,969						
11			20	24.78	59.3	0.00	5.60	7.60
11			25	23.90	65.2	0.08	5.40	8.30
11			32	22.86	70.6	0.12	5.20	9.20
11			40	22.08	76.0	0.20	5.00	10.30
11			50	21.00	80.9	0.28	4.70	11.50
11			63	19.34	85.3	0.44	4.30	13.00
11			80	16.84	89.1	0.64	3.70	14.80
11			100	13.58	92.3	0.99	3.00	16.80
11			125	9.52	94.9	1.51	1.80	18.80
11			160	4.01	97.0	2.26	0.00	21.10
11			200	0.27	98.4	3.25	0.00	22.80
12	3,523	3,526						
12			20	25.81	59.3	0.00	5.60	7.60
12			25	24.94	65.2	0.07	5.40	8.30
12			32	23.90	70.6	0.11	5.20	9.20
12			40	23.13	76.0	0.18	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	22.06	80.9	0.25	4.70	11.50
12			63	20.42	85.3	0.39	4.30	13.00
12			80	17.94	89.1	0.56	3.70	14.80
12			100	14.72	92.3	0.88	3.00	16.80
12			125	10.71	94.9	1.34	1.80	18.80
12			160	5.29	97.0	2.01	0.00	21.10
12			200	1.66	98.4	2.89	0.00	22.80
13	3,644	3,649						
13			20	25.51	59.3	0.00	5.60	7.60
13			25	24.64	65.2	0.07	5.40	8.30
13			32	23.60	70.6	0.11	5.20	9.20
13			40	22.83	76.0	0.18	5.00	10.30
13			50	21.75	80.9	0.26	4.70	11.50
13			63	20.11	85.3	0.40	4.30	13.00
13			80	17.62	89.1	0.58	3.70	14.80
13			100	14.40	92.3	0.91	3.00	16.80
13			125	10.37	94.9	1.39	1.80	18.80
13			160	4.93	97.0	2.08	0.00	21.10
13			200	1.26	98.4	2.99	0.00	22.80
14	4,140	4,145						
14			20	24.40	59.3	0.00	5.60	7.60
14			25	23.52	65.2	0.08	5.40	8.30
14			32	22.48	70.6	0.12	5.20	9.20
14			40	21.70	76.0	0.21	5.00	10.30
14			50	20.61	80.9	0.29	4.70	11.50
14			63	18.95	85.3	0.46	4.30	13.00
14			80	16.44	89.1	0.66	3.70	14.80
14			100	13.17	92.3	1.04	3.00	16.80
14			125	9.08	94.9	1.57	1.80	18.80
14			160	3.54	97.0	2.36	0.00	21.10
14			200	-0.25	98.4	3.40	0.00	22.80
15	3,626	3,632						
15			20	25.55	59.3	0.00	5.60	7.60
15			25	24.68	65.2	0.07	5.40	8.30
15			32	23.64	70.6	0.11	5.20	9.20
15			40	22.87	76.0	0.18	5.00	10.30
15			50	21.80	80.9	0.25	4.70	11.50
15			63	20.15	85.3	0.40	4.30	13.00
15			80	17.67	89.1	0.58	3.70	14.80
15			100	14.44	92.3	0.91	3.00	16.80
15			125	10.42	94.9	1.38	1.80	18.80
15			160	4.98	97.0	2.07	0.00	21.10
15			200	1.32	98.4	2.98	0.00	22.80
16	3,754	3,758						
16			20	25.26	59.3	0.00	5.60	7.60
16			25	24.38	65.2	0.08	5.40	8.30
16			32	23.34	70.6	0.11	5.20	9.20
16			40	22.57	76.0	0.19	5.00	10.30
16			50	21.49	80.9	0.26	4.70	11.50
16			63	19.84	85.3	0.41	4.30	13.00
16			80	17.35	89.1	0.60	3.70	14.80
16			100	14.11	92.3	0.94	3.00	16.80
16			125	10.07	94.9	1.43	1.80	18.80
16			160	4.61	97.0	2.14	0.00	21.10
16			200	0.92	98.4	3.08	0.00	22.80
17	4,339	4,342						
17			20	24.00	59.3	0.00	5.60	7.60
17			25	23.11	65.2	0.09	5.40	8.30
17			32	22.07	70.6	0.13	5.20	9.20
17			40	21.28	76.0	0.22	5.00	10.30
17			50	20.19	80.9	0.30	4.70	11.50
17			63	18.52	85.3	0.48	4.30	13.00
17			80	16.00	89.1	0.69	3.70	14.80
17			100	12.71	92.3	1.09	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	8.60	94.9	1.65	1.80	18.80
17			160	3.02	97.0	2.48	0.00	21.10
17			200	-0.81	98.4	3.56	0.00	22.80
18	3,063	3,068						
18			20	27.02	59.3	0.00	5.60	7.60
18			25	26.16	65.2	0.06	5.40	8.30
18			32	25.13	70.6	0.09	5.20	9.20
18			40	24.37	76.0	0.15	5.00	10.30
18			50	23.30	80.9	0.21	4.70	11.50
18			63	21.68	85.3	0.34	4.30	13.00
18			80	19.22	89.1	0.49	3.70	14.80
18			100	16.05	92.3	0.77	3.00	16.80
18			125	12.10	94.9	1.17	1.80	18.80
18			160	6.77	97.0	1.75	0.00	21.10
18			200	3.25	98.4	2.52	0.00	22.80
19	3,030	3,037						
19			20	27.11	59.3	0.00	5.60	7.60
19			25	26.25	65.2	0.06	5.40	8.30
19			32	25.22	70.6	0.09	5.20	9.20
19			40	24.45	76.0	0.15	5.00	10.30
19			50	23.39	80.9	0.21	4.70	11.50
19			63	21.77	85.3	0.33	4.30	13.00
19			80	19.32	89.1	0.49	3.70	14.80
19			100	16.14	92.3	0.76	3.00	16.80
19			125	12.20	94.9	1.15	1.80	18.80
19			160	6.87	97.0	1.73	0.00	21.10
19			200	3.36	98.4	2.49	0.00	22.80
2	6,048	6,050						
2			20	21.12	59.3	0.00	5.60	7.60
2			25	20.20	65.2	0.12	5.40	8.30
2			32	19.14	70.6	0.18	5.20	9.20
2			40	18.32	76.0	0.30	5.00	10.30
2			50	17.19	80.9	0.42	4.70	11.50
2			63	15.45	85.3	0.67	4.30	13.00
2			80	12.85	89.1	0.97	3.70	14.80
2			100	9.40	92.3	1.51	3.00	16.80
2			125	5.07	94.9	2.30	1.80	18.80
2			160	-0.83	97.0	3.45	0.00	21.10
2			200	-5.10	98.4	4.96	0.00	22.80
20	3,235	3,240						
20			20	26.54	59.3	0.00	5.60	7.60
20			25	25.68	65.2	0.06	5.40	8.30
20			32	24.65	70.6	0.10	5.20	9.20
20			40	23.88	76.0	0.16	5.00	10.30
20			50	22.81	80.9	0.23	4.70	11.50
20			63	21.18	85.3	0.36	4.30	13.00
20			80	18.72	89.1	0.52	3.70	14.80
20			100	15.53	92.3	0.81	3.00	16.80
20			125	11.56	94.9	1.23	1.80	18.80
20			160	6.19	97.0	1.85	0.00	21.10
20			200	2.63	98.4	2.66	0.00	22.80
21	3,741	3,745						
21			20	25.29	59.3	0.00	5.60	7.60
21			25	24.41	65.2	0.07	5.40	8.30
21			32	23.37	70.6	0.11	5.20	9.20
21			40	22.60	76.0	0.19	5.00	10.30
21			50	21.52	80.9	0.26	4.70	11.50
21			63	19.87	85.3	0.41	4.30	13.00
21			80	17.38	89.1	0.60	3.70	14.80
21			100	14.15	92.3	0.94	3.00	16.80
21			125	10.11	94.9	1.42	1.80	18.80
21			160	4.65	97.0	2.13	0.00	21.10
21			200	0.96	98.4	3.07	0.00	22.80
22	4,304	4,308						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	24.07	59.3	0.00	5.60	7.60
22			25	23.18	65.2	0.09	5.40	8.30
22			32	22.14	70.6	0.13	5.20	9.20
22			40	21.35	76.0	0.22	5.00	10.30
22			50	20.26	80.9	0.30	4.70	11.50
22			63	18.59	85.3	0.47	4.30	13.00
22			80	16.08	89.1	0.69	3.70	14.80
22			100	12.79	92.3	1.08	3.00	16.80
22			125	8.68	94.9	1.64	1.80	18.80
22			160	3.11	97.0	2.46	0.00	21.10
22			200	-0.72	98.4	3.53	0.00	22.80
23	4,932	4,934						
23			20	22.89	59.3	0.00	5.60	7.60
23			25	21.99	65.2	0.10	5.40	8.30
23			32	20.94	70.6	0.15	5.20	9.20
23			40	20.14	76.0	0.25	5.00	10.30
23			50	19.04	80.9	0.35	4.70	11.50
23			63	17.34	85.3	0.54	4.30	13.00
23			80	14.80	89.1	0.79	3.70	14.80
23			100	11.45	92.3	1.23	3.00	16.80
23			125	7.26	94.9	1.88	1.80	18.80
23			160	1.57	97.0	2.81	0.00	21.10
23			200	-2.41	98.4	4.05	0.00	22.80
24	4,671	4,673						
24			20	23.36	59.3	0.00	5.60	7.60
24			25	22.47	65.2	0.09	5.40	8.30
24			32	21.42	70.6	0.14	5.20	9.20
24			40	20.63	76.0	0.23	5.00	10.30
24			50	19.53	80.9	0.33	4.70	11.50
24			63	17.85	85.3	0.51	4.30	13.00
24			80	15.31	89.1	0.75	3.70	14.80
24			100	11.99	92.3	1.17	3.00	16.80
24			125	7.83	94.9	1.78	1.80	18.80
24			160	2.20	97.0	2.66	0.00	21.10
24			200	-1.72	98.4	3.83	0.00	22.80
3	6,449	6,451						
3			20	20.56	59.3	0.00	5.60	7.60
3			25	19.63	65.2	0.13	5.40	8.30
3			32	18.57	70.6	0.19	5.20	9.20
3			40	17.74	76.0	0.32	5.00	10.30
3			50	16.61	80.9	0.45	4.70	11.50
3			63	14.85	85.3	0.71	4.30	13.00
3			80	12.23	89.1	1.03	3.70	14.80
3			100	8.75	92.3	1.61	3.00	16.80
3			125	4.36	94.9	2.45	1.80	18.80
3			160	-1.62	97.0	3.68	0.00	21.10
3			200	-5.98	98.4	5.29	0.00	22.80
4	5,897	5,900						
4			20	21.34	59.3	0.00	5.60	7.60
4			25	20.42	65.2	0.12	5.40	8.30
4			32	19.36	70.6	0.18	5.20	9.20
4			40	18.54	76.0	0.29	5.00	10.30
4			50	17.42	80.9	0.41	4.70	11.50
4			63	15.69	85.3	0.65	4.30	13.00
4			80	13.09	89.1	0.94	3.70	14.80
4			100	9.66	92.3	1.47	3.00	16.80
4			125	5.34	94.9	2.24	1.80	18.80
4			160	-0.53	97.0	3.36	0.00	21.10
4			200	-4.75	98.4	4.84	0.00	22.80
5	5,590	5,592						
5			20	21.80	59.3	0.00	5.60	7.60
5			25	20.89	65.2	0.11	5.40	8.30
5			32	19.84	70.6	0.17	5.20	9.20
5			40	19.02	76.0	0.28	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			50	17.91	80.9	0.39	4.70	11.50
5			63	16.18	85.3	0.62	4.30	13.00
5			80	13.60	89.1	0.89	3.70	14.80
5			100	10.20	92.3	1.40	3.00	16.80
5			125	5.92	94.9	2.13	1.80	18.80
5			160	0.11	97.0	3.19	0.00	21.10
5			200	-4.04	98.4	4.59	0.00	22.80
6	5,146	5,149						
6			20	22.52	59.3	0.00	5.60	7.60
6			25	21.62	65.2	0.10	5.40	8.30
6			32	20.57	70.6	0.15	5.20	9.20
6			40	19.76	76.0	0.26	5.00	10.30
6			50	18.66	80.9	0.36	4.70	11.50
6			63	16.95	85.3	0.57	4.30	13.00
6			80	14.39	89.1	0.82	3.70	14.80
6			100	11.03	92.3	1.29	3.00	16.80
6			125	6.81	94.9	1.96	1.80	18.80
6			160	1.08	97.0	2.93	0.00	21.10
6			200	-2.96	98.4	4.22	0.00	22.80
7	4,970	4,972						
7			20	22.82	59.3	0.00	5.60	7.60
7			25	21.92	65.2	0.10	5.40	8.30
7			32	20.87	70.6	0.15	5.20	9.20
7			40	20.07	76.0	0.25	5.00	10.30
7			50	18.97	80.9	0.35	4.70	11.50
7			63	17.27	85.3	0.55	4.30	13.00
7			80	14.72	89.1	0.80	3.70	14.80
7			100	11.38	92.3	1.24	3.00	16.80
7			125	7.18	94.9	1.89	1.80	18.80
7			160	1.49	97.0	2.83	0.00	21.10
7			200	-2.51	98.4	4.08	0.00	22.80
8	5,234	5,237						
8			20	22.37	59.3	0.00	5.60	7.60
8			25	21.47	65.2	0.10	5.40	8.30
8			32	20.42	70.6	0.16	5.20	9.20
8			40	19.61	76.0	0.26	5.00	10.30
8			50	18.50	80.9	0.37	4.70	11.50
8			63	16.79	85.3	0.58	4.30	13.00
8			80	14.23	89.1	0.84	3.70	14.80
8			100	10.86	92.3	1.31	3.00	16.80
8			125	6.63	94.9	1.99	1.80	18.80
8			160	0.89	97.0	2.98	0.00	21.10
8			200	-3.18	98.4	4.29	0.00	22.80
9	4,591	4,593						
9			20	23.51	59.3	0.00	5.60	7.60
9			25	22.62	65.2	0.09	5.40	8.30
9			32	21.57	70.6	0.14	5.20	9.20
9			40	20.78	76.0	0.23	5.00	10.30
9			50	19.69	80.9	0.32	4.70	11.50
9			63	18.00	85.3	0.51	4.30	13.00
9			80	15.47	89.1	0.73	3.70	14.80
9			100	12.16	92.3	1.15	3.00	16.80
9			125	8.01	94.9	1.75	1.80	18.80
9			160	2.39	97.0	2.62	0.00	21.10
9			200	-1.51	98.4	3.77	0.00	22.80
Sum								
Sum			20	38.03				
Sum			25	37.15				
Sum			32	36.11				
Sum			40	35.33				
Sum			50	34.24				
Sum			63	32.58				
Sum			80	30.07				
Sum			100	26.80				

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			125	22.72				
Sum			160	17.21				
Sum			200	13.46				

Noise sensitive area: HH Leinolanlahti Noise sensitive point: Finnish normal frequency - User defined (297)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,883	4,888						
1			20	22.97	59.3	0.00	5.60	7.60
1			25	22.08	65.2	0.10	5.40	8.30
1			32	21.03	70.6	0.15	5.20	9.20
1			40	20.23	76.0	0.24	5.00	10.30
1			50	19.13	80.9	0.34	4.70	11.50
1			63	17.43	85.3	0.54	4.30	13.00
1			80	14.89	89.1	0.78	3.70	14.80
1			100	11.55	92.3	1.22	3.00	16.80
1			125	7.36	94.9	1.86	1.80	18.80
1			160	1.68	97.0	2.79	0.00	21.10
1			200	-2.29	98.4	4.01	0.00	22.80
10	5,674	5,678						
10			20	21.67	59.3	0.00	5.60	7.60
10			25	20.76	65.2	0.11	5.40	8.30
10			32	19.70	70.6	0.17	5.20	9.20
10			40	18.89	76.0	0.28	5.00	10.30
10			50	17.77	80.9	0.40	4.70	11.50
10			63	16.04	85.3	0.62	4.30	13.00
10			80	13.46	89.1	0.91	3.70	14.80
10			100	10.05	92.3	1.42	3.00	16.80
10			125	5.76	94.9	2.16	1.80	18.80
10			160	-0.07	97.0	3.24	0.00	21.10
10			200	-4.24	98.4	4.66	0.00	22.80
11	5,993	5,998						
11			20	21.20	59.3	0.00	5.60	7.60
11			25	20.28	65.2	0.12	5.40	8.30
11			32	19.22	70.6	0.18	5.20	9.20
11			40	18.40	76.0	0.30	5.00	10.30
11			50	17.27	80.9	0.42	4.70	11.50
11			63	15.53	85.3	0.66	4.30	13.00
11			80	12.93	89.1	0.96	3.70	14.80
11			100	9.49	92.3	1.50	3.00	16.80
11			125	5.16	94.9	2.28	1.80	18.80
11			160	-0.73	97.0	3.42	0.00	21.10
11			200	-4.98	98.4	4.92	0.00	22.80
12	5,761	5,766						
12			20	21.54	59.3	0.00	5.60	7.60
12			25	20.62	65.2	0.12	5.40	8.30
12			32	19.56	70.6	0.17	5.20	9.20
12			40	18.75	76.0	0.29	5.00	10.30
12			50	17.63	80.9	0.40	4.70	11.50
12			63	15.90	85.3	0.63	4.30	13.00
12			80	13.31	89.1	0.92	3.70	14.80
12			100	9.89	92.3	1.44	3.00	16.80
12			125	5.59	94.9	2.19	1.80	18.80
12			160	-0.25	97.0	3.29	0.00	21.10
12			200	-4.44	98.4	4.73	0.00	22.80
13	5,105	5,111						
13			20	22.58	59.3	0.00	5.60	7.60
13			25	21.68	65.2	0.10	5.40	8.30
13			32	20.63	70.6	0.15	5.20	9.20
13			40	19.83	76.0	0.26	5.00	10.30
13			50	18.72	80.9	0.36	4.70	11.50
13			63	17.02	85.3	0.56	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			80	14.46	89.1	0.82	3.70	14.80
13			100	11.10	92.3	1.28	3.00	16.80
13			125	6.89	94.9	1.94	1.80	18.80
13			160	1.17	97.0	2.91	0.00	21.10
13			200	-2.86	98.4	4.19	0.00	22.80
14	4,771	4,777						
14			20	23.17	59.3	0.00	5.60	7.60
14			25	22.28	65.2	0.10	5.40	8.30
14			32	21.23	70.6	0.14	5.20	9.20
14			40	20.43	76.0	0.24	5.00	10.30
14			50	19.33	80.9	0.33	4.70	11.50
14			63	17.64	85.3	0.53	4.30	13.00
14			80	15.10	89.1	0.76	3.70	14.80
14			100	11.77	92.3	1.19	3.00	16.80
14			125	7.60	94.9	1.82	1.80	18.80
14			160	1.95	97.0	2.72	0.00	21.10
14			200	-2.00	98.4	3.92	0.00	22.80
15	4,623	4,631						
15			20	23.44	59.3	0.00	5.60	7.60
15			25	22.55	65.2	0.09	5.40	8.30
15			32	21.50	70.6	0.14	5.20	9.20
15			40	20.71	76.0	0.23	5.00	10.30
15			50	19.61	80.9	0.32	4.70	11.50
15			63	17.93	85.3	0.51	4.30	13.00
15			80	15.40	89.1	0.74	3.70	14.80
15			100	12.08	92.3	1.16	3.00	16.80
15			125	7.93	94.9	1.76	1.80	18.80
15			160	2.30	97.0	2.64	0.00	21.10
15			200	-1.61	98.4	3.80	0.00	22.80
16	4,165	4,172						
16			20	24.35	59.3	0.00	5.60	7.60
16			25	23.47	65.2	0.08	5.40	8.30
16			32	22.42	70.6	0.13	5.20	9.20
16			40	21.64	76.0	0.21	5.00	10.30
16			50	20.55	80.9	0.29	4.70	11.50
16			63	18.89	85.3	0.46	4.30	13.00
16			80	16.38	89.1	0.67	3.70	14.80
16			100	13.10	92.3	1.04	3.00	16.80
16			125	9.01	94.9	1.59	1.80	18.80
16			160	3.47	97.0	2.38	0.00	21.10
16			200	-0.33	98.4	3.42	0.00	22.80
17	3,528	3,536						
17			20	25.79	59.3	0.00	5.60	7.60
17			25	24.91	65.2	0.07	5.40	8.30
17			32	23.88	70.6	0.11	5.20	9.20
17			40	23.11	76.0	0.18	5.00	10.30
17			50	22.04	80.9	0.25	4.70	11.50
17			63	20.39	85.3	0.39	4.30	13.00
17			80	17.92	89.1	0.57	3.70	14.80
17			100	14.70	92.3	0.88	3.00	16.80
17			125	10.69	94.9	1.34	1.80	18.80
17			160	5.27	97.0	2.02	0.00	21.10
17			200	1.63	98.4	2.90	0.00	22.80
18	5,315	5,321						
18			20	22.24	59.3	0.00	5.60	7.60
18			25	21.33	65.2	0.11	5.40	8.30
18			32	20.28	70.6	0.16	5.20	9.20
18			40	19.47	76.0	0.27	5.00	10.30
18			50	18.36	80.9	0.37	4.70	11.50
18			63	16.65	85.3	0.59	4.30	13.00
18			80	14.08	89.1	0.85	3.70	14.80
18			100	10.70	92.3	1.33	3.00	16.80
18			125	6.46	94.9	2.02	1.80	18.80
18			160	0.70	97.0	3.03	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			200	-3.38	98.4	4.36	0.00	22.80
19	4,957	4,964						
19			20	22.84	59.3	0.00	5.60	7.60
19			25	21.94	65.2	0.10	5.40	8.30
19			32	20.89	70.6	0.15	5.20	9.20
19			40	20.09	76.0	0.25	5.00	10.30
19			50	18.99	80.9	0.35	4.70	11.50
19			63	17.29	85.3	0.55	4.30	13.00
19			80	14.74	89.1	0.79	3.70	14.80
19			100	11.39	92.3	1.24	3.00	16.80
19			125	7.20	94.9	1.89	1.80	18.80
19			160	1.51	97.0	2.83	0.00	21.10
19			200	-2.49	98.4	4.07	0.00	22.80
2	5,153	5,157						
2			20	22.51	59.3	0.00	5.60	7.60
2			25	21.60	65.2	0.10	5.40	8.30
2			32	20.55	70.6	0.15	5.20	9.20
2			40	19.75	76.0	0.26	5.00	10.30
2			50	18.64	80.9	0.36	4.70	11.50
2			63	16.94	85.3	0.57	4.30	13.00
2			80	14.38	89.1	0.83	3.70	14.80
2			100	11.01	92.3	1.29	3.00	16.80
2			125	6.79	94.9	1.96	1.80	18.80
2			160	1.06	97.0	2.94	0.00	21.10
2			200	-2.98	98.4	4.23	0.00	22.80
20	4,548	4,555						
20			20	23.59	59.3	0.00	5.60	7.60
20			25	22.69	65.2	0.09	5.40	8.30
20			32	21.65	70.6	0.14	5.20	9.20
20			40	20.86	76.0	0.23	5.00	10.30
20			50	19.76	80.9	0.32	4.70	11.50
20			63	18.08	85.3	0.50	4.30	13.00
20			80	15.55	89.1	0.73	3.70	14.80
20			100	12.24	92.3	1.14	3.00	16.80
20			125	8.10	94.9	1.73	1.80	18.80
20			160	2.49	97.0	2.60	0.00	21.10
20			200	-1.40	98.4	3.73	0.00	22.80
21	3,939	3,946						
21			20	24.83	59.3	0.00	5.60	7.60
21			25	23.95	65.2	0.08	5.40	8.30
21			32	22.91	70.6	0.12	5.20	9.20
21			40	22.13	76.0	0.20	5.00	10.30
21			50	21.05	80.9	0.28	4.70	11.50
21			63	19.39	85.3	0.43	4.30	13.00
21			80	16.90	89.1	0.63	3.70	14.80
21			100	13.64	92.3	0.99	3.00	16.80
21			125	9.58	94.9	1.50	1.80	18.80
21			160	4.08	97.0	2.25	0.00	21.10
21			200	0.34	98.4	3.24	0.00	22.80
22	3,317	3,326						
22			20	26.32	59.3	0.00	5.60	7.60
22			25	25.45	65.2	0.07	5.40	8.30
22			32	24.42	70.6	0.10	5.20	9.20
22			40	23.65	76.0	0.17	5.00	10.30
22			50	22.58	80.9	0.23	4.70	11.50
22			63	20.95	85.3	0.37	4.30	13.00
22			80	18.48	89.1	0.53	3.70	14.80
22			100	15.28	92.3	0.83	3.00	16.80
22			125	11.30	94.9	1.26	1.80	18.80
22			160	5.92	97.0	1.90	0.00	21.10
22			200	2.33	98.4	2.73	0.00	22.80
23	2,743	2,752						
23			20	27.96	59.3	0.00	5.60	7.60
23			25	27.11	65.2	0.06	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			32	26.08	70.6	0.08	5.20	9.20
23			40	25.32	76.0	0.14	5.00	10.30
23			50	24.27	80.9	0.19	4.70	11.50
23			63	22.66	85.3	0.30	4.30	13.00
23			80	20.22	89.1	0.44	3.70	14.80
23			100	17.07	92.3	0.69	3.00	16.80
23			125	13.16	94.9	1.05	1.80	18.80
23			160	7.89	97.0	1.57	0.00	21.10
23			200	4.45	98.4	2.26	0.00	22.80
24	2,938	2,947						
24			20	27.37	59.3	0.00	5.60	7.60
24			25	26.51	65.2	0.06	5.40	8.30
24			32	25.48	70.6	0.09	5.20	9.20
24			40	24.72	76.0	0.15	5.00	10.30
24			50	23.66	80.9	0.21	4.70	11.50
24			63	22.04	85.3	0.32	4.30	13.00
24			80	19.59	89.1	0.47	3.70	14.80
24			100	16.43	92.3	0.74	3.00	16.80
24			125	12.49	94.9	1.12	1.80	18.80
24			160	7.19	97.0	1.68	0.00	21.10
24			200	3.70	98.4	2.42	0.00	22.80
3	4,704	4,710						
3			20	23.30	59.3	0.00	5.60	7.60
3			25	22.40	65.2	0.09	5.40	8.30
3			32	21.35	70.6	0.14	5.20	9.20
3			40	20.56	76.0	0.24	5.00	10.30
3			50	19.46	80.9	0.33	4.70	11.50
3			63	17.77	85.3	0.52	4.30	13.00
3			80	15.24	89.1	0.75	3.70	14.80
3			100	11.91	92.3	1.18	3.00	16.80
3			125	7.75	94.9	1.79	1.80	18.80
3			160	2.11	97.0	2.68	0.00	21.10
3			200	-1.82	98.4	3.86	0.00	22.80
4	4,586	4,592						
4			20	23.51	59.3	0.00	5.60	7.60
4			25	22.62	65.2	0.09	5.40	8.30
4			32	21.58	70.6	0.14	5.20	9.20
4			40	20.79	76.0	0.23	5.00	10.30
4			50	19.69	80.9	0.32	4.70	11.50
4			63	18.01	85.3	0.51	4.30	13.00
4			80	15.48	89.1	0.73	3.70	14.80
4			100	12.16	92.3	1.15	3.00	16.80
4			125	8.01	94.9	1.74	1.80	18.80
4			160	2.39	97.0	2.62	0.00	21.10
4			200	-1.51	98.4	3.77	0.00	22.80
5	4,160	4,166						
5			20	24.36	59.3	0.00	5.60	7.60
5			25	23.48	65.2	0.08	5.40	8.30
5			32	22.43	70.6	0.12	5.20	9.20
5			40	21.65	76.0	0.21	5.00	10.30
5			50	20.56	80.9	0.29	4.70	11.50
5			63	18.90	85.3	0.46	4.30	13.00
5			80	16.39	89.1	0.67	3.70	14.80
5			100	13.11	92.3	1.04	3.00	16.80
5			125	9.02	94.9	1.58	1.80	18.80
5			160	3.48	97.0	2.37	0.00	21.10
5			200	-0.31	98.4	3.42	0.00	22.80
6	5,817	5,822						
6			20	21.45	59.3	0.00	5.60	7.60
6			25	20.54	65.2	0.12	5.40	8.30
6			32	19.48	70.6	0.17	5.20	9.20
6			40	18.66	76.0	0.29	5.00	10.30
6			50	17.54	80.9	0.41	4.70	11.50
6			63	15.81	85.3	0.64	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			80	13.22	89.1	0.93	3.70	14.80
6			100	9.80	92.3	1.46	3.00	16.80
6			125	5.49	94.9	2.21	1.80	18.80
6			160	-0.37	97.0	3.32	0.00	21.10
6			200	-4.57	98.4	4.77	0.00	22.80
7	5,193	5,198						
7			20	22.44	59.3	0.00	5.60	7.60
7			25	21.53	65.2	0.10	5.40	8.30
7			32	20.48	70.6	0.16	5.20	9.20
7			40	19.68	76.0	0.26	5.00	10.30
7			50	18.57	80.9	0.36	4.70	11.50
7			63	16.86	85.3	0.57	4.30	13.00
7			80	14.30	89.1	0.83	3.70	14.80
7			100	10.93	92.3	1.30	3.00	16.80
7			125	6.71	94.9	1.98	1.80	18.80
7			160	0.97	97.0	2.96	0.00	21.10
7			200	-3.08	98.4	4.26	0.00	22.80
8	4,663	4,668						
8			20	23.37	59.3	0.00	5.60	7.60
8			25	22.48	65.2	0.09	5.40	8.30
8			32	21.43	70.6	0.14	5.20	9.20
8			40	20.64	76.0	0.23	5.00	10.30
8			50	19.54	80.9	0.33	4.70	11.50
8			63	17.86	85.3	0.51	4.30	13.00
8			80	15.32	89.1	0.75	3.70	14.80
8			100	12.00	92.3	1.17	3.00	16.80
8			125	7.84	94.9	1.77	1.80	18.80
8			160	2.21	97.0	2.66	0.00	21.10
8			200	-1.71	98.4	3.83	0.00	22.80
9	6,285	6,289						
9			20	20.78	59.3	0.00	5.60	7.60
9			25	19.86	65.2	0.13	5.40	8.30
9			32	18.79	70.6	0.19	5.20	9.20
9			40	17.97	76.0	0.31	5.00	10.30
9			50	16.84	80.9	0.44	4.70	11.50
9			63	15.09	85.3	0.69	4.30	13.00
9			80	12.47	89.1	1.01	3.70	14.80
9			100	9.01	92.3	1.57	3.00	16.80
9			125	4.64	94.9	2.39	1.80	18.80
9			160	-1.31	97.0	3.58	0.00	21.10
9			200	-5.63	98.4	5.16	0.00	22.80
Sum								
Sum			20	37.72				
Sum			25	36.83				
Sum			32	35.79				
Sum			40	35.00				
Sum			50	33.92				
Sum			63	32.25				
Sum			80	29.73				
Sum			100	26.45				
Sum			125	22.36				
Sum			160	16.82				
Sum			200	13.04				

Noise sensitive area: HH Mustalahti 1 Noise sensitive point: Finnish normal frequency - User defined (280)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,903	6,906						
1			20	19.97	59.3	0.00	5.60	7.60
1			25	19.03	65.2	0.14	5.40	8.30
1			32	17.96	70.6	0.21	5.20	9.20
1			40	17.12	76.0	0.35	5.00	10.30

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Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			50	15.98	80.9	0.48	4.70	11.50
1			63	14.21	85.3	0.76	4.30	13.00
1			80	11.56	89.1	1.10	3.70	14.80
1			100	8.04	92.3	1.73	3.00	16.80
1			125	3.59	94.9	2.62	1.80	18.80
1			160	-2.47	97.0	3.94	0.00	21.10
1			200	-6.95	98.4	5.66	0.00	22.80
10	4,255	4,260						
10			20	24.17	59.3	0.00	5.60	7.60
10			25	23.28	65.2	0.09	5.40	8.30
10			32	22.24	70.6	0.13	5.20	9.20
10			40	21.45	76.0	0.21	5.00	10.30
10			50	20.37	80.9	0.30	4.70	11.50
10			63	18.69	85.3	0.47	4.30	13.00
10			80	16.18	89.1	0.68	3.70	14.80
10			100	12.90	92.3	1.06	3.00	16.80
10			125	8.79	94.9	1.62	1.80	18.80
10			160	3.24	97.0	2.43	0.00	21.10
10			200	-0.58	98.4	3.49	0.00	22.80
11	3,657	3,663						
11			20	25.48	59.3	0.00	5.60	7.60
11			25	24.60	65.2	0.07	5.40	8.30
11			32	23.57	70.6	0.11	5.20	9.20
11			40	22.80	76.0	0.18	5.00	10.30
11			50	21.72	80.9	0.26	4.70	11.50
11			63	20.07	85.3	0.40	4.30	13.00
11			80	17.59	89.1	0.59	3.70	14.80
11			100	14.36	92.3	0.92	3.00	16.80
11			125	10.33	94.9	1.39	1.80	18.80
11			160	4.89	97.0	2.09	0.00	21.10
11			200	1.22	98.4	3.00	0.00	22.80
12	3,362	3,368						
12			20	26.21	59.3	0.00	5.60	7.60
12			25	25.34	65.2	0.07	5.40	8.30
12			32	24.31	70.6	0.10	5.20	9.20
12			40	23.54	76.0	0.17	5.00	10.30
12			50	22.47	80.9	0.24	4.70	11.50
12			63	20.83	85.3	0.37	4.30	13.00
12			80	18.37	89.1	0.54	3.70	14.80
12			100	15.16	92.3	0.84	3.00	16.80
12			125	11.17	94.9	1.28	1.80	18.80
12			160	5.79	97.0	1.92	0.00	21.10
12			200	2.19	98.4	2.76	0.00	22.80
13	3,718	3,725						
13			20	25.33	59.3	0.00	5.60	7.60
13			25	24.46	65.2	0.07	5.40	8.30
13			32	23.42	70.6	0.11	5.20	9.20
13			40	22.65	76.0	0.19	5.00	10.30
13			50	21.57	80.9	0.26	4.70	11.50
13			63	19.92	85.3	0.41	4.30	13.00
13			80	17.43	89.1	0.60	3.70	14.80
13			100	14.20	92.3	0.93	3.00	16.80
13			125	10.16	94.9	1.42	1.80	18.80
13			160	4.71	97.0	2.12	0.00	21.10
13			200	1.02	98.4	3.05	0.00	22.80
14	4,222	4,229						
14			20	24.23	59.3	0.00	5.60	7.60
14			25	23.35	65.2	0.08	5.40	8.30
14			32	22.30	70.6	0.13	5.20	9.20
14			40	21.52	76.0	0.21	5.00	10.30
14			50	20.43	80.9	0.30	4.70	11.50
14			63	18.76	85.3	0.47	4.30	13.00
14			80	16.25	89.1	0.68	3.70	14.80
14			100	12.97	92.3	1.06	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			125	8.87	94.9	1.61	1.80	18.80
14			160	3.32	97.0	2.41	0.00	21.10
14			200	-0.49	98.4	3.47	0.00	22.80
15	3,914	3,922						
15			20	24.88	59.3	0.00	5.60	7.60
15			25	24.01	65.2	0.08	5.40	8.30
15			32	22.97	70.6	0.12	5.20	9.20
15			40	22.19	76.0	0.20	5.00	10.30
15			50	21.11	80.9	0.27	4.70	11.50
15			63	19.45	85.3	0.43	4.30	13.00
15			80	16.95	89.1	0.63	3.70	14.80
15			100	13.70	92.3	0.98	3.00	16.80
15			125	9.64	94.9	1.49	1.80	18.80
15			160	4.14	97.0	2.24	0.00	21.10
15			200	0.41	98.4	3.22	0.00	22.80
16	4,219	4,225						
16			20	24.24	59.3	0.00	5.60	7.60
16			25	23.35	65.2	0.08	5.40	8.30
16			32	22.31	70.6	0.13	5.20	9.20
16			40	21.53	76.0	0.21	5.00	10.30
16			50	20.44	80.9	0.30	4.70	11.50
16			63	18.77	85.3	0.46	4.30	13.00
16			80	16.26	89.1	0.68	3.70	14.80
16			100	12.98	92.3	1.06	3.00	16.80
16			125	8.88	94.9	1.61	1.80	18.80
16			160	3.33	97.0	2.41	0.00	21.10
16			200	-0.48	98.4	3.46	0.00	22.80
17	4,855	4,859						
17			20	23.02	59.3	0.00	5.60	7.60
17			25	22.13	65.2	0.10	5.40	8.30
17			32	21.08	70.6	0.15	5.20	9.20
17			40	20.28	76.0	0.24	5.00	10.30
17			50	19.18	80.9	0.34	4.70	11.50
17			63	17.49	85.3	0.53	4.30	13.00
17			80	14.94	89.1	0.78	3.70	14.80
17			100	11.61	92.3	1.21	3.00	16.80
17			125	7.42	94.9	1.85	1.80	18.80
17			160	1.75	97.0	2.77	0.00	21.10
17			200	-2.22	98.4	3.98	0.00	22.80
18	3,233	3,240						
18			20	26.54	59.3	0.00	5.60	7.60
18			25	25.68	65.2	0.06	5.40	8.30
18			32	24.65	70.6	0.10	5.20	9.20
18			40	23.88	76.0	0.16	5.00	10.30
18			50	22.81	80.9	0.23	4.70	11.50
18			63	21.18	85.3	0.36	4.30	13.00
18			80	18.72	89.1	0.52	3.70	14.80
18			100	15.53	92.3	0.81	3.00	16.80
18			125	11.56	94.9	1.23	1.80	18.80
18			160	6.19	97.0	1.85	0.00	21.10
18			200	2.63	98.4	2.66	0.00	22.80
19	3,421	3,430						
19			20	26.05	59.3	0.00	5.60	7.60
19			25	25.18	65.2	0.07	5.40	8.30
19			32	24.15	70.6	0.10	5.20	9.20
19			40	23.38	76.0	0.17	5.00	10.30
19			50	22.31	80.9	0.24	4.70	11.50
19			63	20.67	85.3	0.38	4.30	13.00
19			80	18.20	89.1	0.55	3.70	14.80
19			100	14.99	92.3	0.86	3.00	16.80
19			125	10.99	94.9	1.30	1.80	18.80
19			160	5.59	97.0	1.96	0.00	21.10
19			200	1.98	98.4	2.81	0.00	22.80
2	5,868	5,871						

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			20	21.38	59.3	0.00	5.60	7.60
2			25	20.46	65.2	0.12	5.40	8.30
2			32	19.40	70.6	0.18	5.20	9.20
2			40	18.59	76.0	0.29	5.00	10.30
2			50	17.47	80.9	0.41	4.70	11.50
2			63	15.73	85.3	0.65	4.30	13.00
2			80	13.14	89.1	0.94	3.70	14.80
2			100	9.71	92.3	1.47	3.00	16.80
2			125	5.39	94.9	2.23	1.80	18.80
2			160	-0.47	97.0	3.35	0.00	21.10
2			200	-4.69	98.4	4.81	0.00	22.80
20	3,778	3,785						
20			20	25.19	59.3	0.00	5.60	7.60
20			25	24.32	65.2	0.08	5.40	8.30
20			32	23.28	70.6	0.11	5.20	9.20
20			40	22.50	76.0	0.19	5.00	10.30
20			50	21.43	80.9	0.26	4.70	11.50
20			63	19.77	85.3	0.42	4.30	13.00
20			80	17.29	89.1	0.61	3.70	14.80
20			100	14.04	92.3	0.95	3.00	16.80
20			125	10.00	94.9	1.44	1.80	18.80
20			160	4.53	97.0	2.16	0.00	21.10
20			200	0.84	98.4	3.10	0.00	22.80
21	4,379	4,384						
21			20	23.92	59.3	0.00	5.60	7.60
21			25	23.03	65.2	0.09	5.40	8.30
21			32	21.99	70.6	0.13	5.20	9.20
21			40	21.20	76.0	0.22	5.00	10.30
21			50	20.11	80.9	0.31	4.70	11.50
21			63	18.43	85.3	0.48	4.30	13.00
21			80	15.91	89.1	0.70	3.70	14.80
21			100	12.62	92.3	1.10	3.00	16.80
21			125	8.50	94.9	1.67	1.80	18.80
21			160	2.91	97.0	2.50	0.00	21.10
21			200	-0.93	98.4	3.60	0.00	22.80
22	5,013	5,018						
22			20	22.74	59.3	0.00	5.60	7.60
22			25	21.84	65.2	0.10	5.40	8.30
22			32	20.79	70.6	0.15	5.20	9.20
22			40	19.99	76.0	0.25	5.00	10.30
22			50	18.89	80.9	0.35	4.70	11.50
22			63	17.19	85.3	0.55	4.30	13.00
22			80	14.64	89.1	0.80	3.70	14.80
22			100	11.29	92.3	1.25	3.00	16.80
22			125	7.08	94.9	1.91	1.80	18.80
22			160	1.38	97.0	2.86	0.00	21.10
22			200	-2.62	98.4	4.11	0.00	22.80
23	5,578	5,581						
23			20	21.82	59.3	0.00	5.60	7.60
23			25	20.91	65.2	0.11	5.40	8.30
23			32	19.85	70.6	0.17	5.20	9.20
23			40	19.04	76.0	0.28	5.00	10.30
23			50	17.93	80.9	0.39	4.70	11.50
23			63	16.20	85.3	0.61	4.30	13.00
23			80	13.62	89.1	0.89	3.70	14.80
23			100	10.22	92.3	1.40	3.00	16.80
23			125	5.94	94.9	2.12	1.80	18.80
23			160	0.14	97.0	3.18	0.00	21.10
23			200	-4.01	98.4	4.58	0.00	22.80
24	5,454	5,458						
24			20	22.01	59.3	0.00	5.60	7.60
24			25	21.11	65.2	0.11	5.40	8.30
24			32	20.05	70.6	0.16	5.20	9.20
24			40	19.24	76.0	0.27	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			50	18.13	80.9	0.38	4.70	11.50
24			63	16.41	85.3	0.60	4.30	13.00
24			80	13.84	89.1	0.87	3.70	14.80
24			100	10.45	92.3	1.36	3.00	16.80
24			125	6.19	94.9	2.07	1.80	18.80
24			160	0.40	97.0	3.11	0.00	21.10
24			200	-3.72	98.4	4.48	0.00	22.80
3	6,363	6,366						
3			20	20.68	59.3	0.00	5.60	7.60
3			25	19.75	65.2	0.13	5.40	8.30
3			32	18.69	70.6	0.19	5.20	9.20
3			40	17.86	76.0	0.32	5.00	10.30
3			50	16.73	80.9	0.45	4.70	11.50
3			63	14.97	85.3	0.70	4.30	13.00
3			80	12.36	89.1	1.02	3.70	14.80
3			100	8.88	92.3	1.59	3.00	16.80
3			125	4.50	94.9	2.42	1.80	18.80
3			160	-1.46	97.0	3.63	0.00	21.10
3			200	-5.80	98.4	5.22	0.00	22.80
4	5,846	5,850						
4			20	21.41	59.3	0.00	5.60	7.60
4			25	20.50	65.2	0.12	5.40	8.30
4			32	19.44	70.6	0.18	5.20	9.20
4			40	18.62	76.0	0.29	5.00	10.30
4			50	17.50	80.9	0.41	4.70	11.50
4			63	15.77	85.3	0.64	4.30	13.00
4			80	13.17	89.1	0.94	3.70	14.80
4			100	9.75	92.3	1.46	3.00	16.80
4			125	5.43	94.9	2.22	1.80	18.80
4			160	-0.43	97.0	3.33	0.00	21.10
4			200	-4.64	98.4	4.80	0.00	22.80
5	5,654	5,657						
5			20	21.70	59.3	0.00	5.60	7.60
5			25	20.79	65.2	0.11	5.40	8.30
5			32	19.73	70.6	0.17	5.20	9.20
5			40	18.92	76.0	0.28	5.00	10.30
5			50	17.80	80.9	0.40	4.70	11.50
5			63	16.08	85.3	0.62	4.30	13.00
5			80	13.49	89.1	0.91	3.70	14.80
5			100	10.09	92.3	1.41	3.00	16.80
5			125	5.80	94.9	2.15	1.80	18.80
5			160	-0.03	97.0	3.22	0.00	21.10
5			200	-4.19	98.4	4.64	0.00	22.80
6	4,821	4,826						
6			20	23.08	59.3	0.00	5.60	7.60
6			25	22.19	65.2	0.10	5.40	8.30
6			32	21.14	70.6	0.14	5.20	9.20
6			40	20.34	76.0	0.24	5.00	10.30
6			50	19.24	80.9	0.34	4.70	11.50
6			63	17.55	85.3	0.53	4.30	13.00
6			80	15.01	89.1	0.77	3.70	14.80
6			100	11.67	92.3	1.21	3.00	16.80
6			125	7.50	94.9	1.83	1.80	18.80
6			160	1.83	97.0	2.75	0.00	21.10
6			200	-2.13	98.4	3.96	0.00	22.80
7	4,816	4,821						
7			20	23.09	59.3	0.00	5.60	7.60
7			25	22.20	65.2	0.10	5.40	8.30
7			32	21.15	70.6	0.14	5.20	9.20
7			40	20.35	76.0	0.24	5.00	10.30
7			50	19.25	80.9	0.34	4.70	11.50
7			63	17.56	85.3	0.53	4.30	13.00
7			80	15.02	89.1	0.77	3.70	14.80
7			100	11.68	92.3	1.21	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	7.51	94.9	1.83	1.80	18.80
7			160	1.84	97.0	2.75	0.00	21.10
7			200	-2.12	98.4	3.95	0.00	22.80
8	5,201	5,205						
8			20	22.43	59.3	0.00	5.60	7.60
8			25	21.52	65.2	0.10	5.40	8.30
8			32	20.47	70.6	0.16	5.20	9.20
8			40	19.67	76.0	0.26	5.00	10.30
8			50	18.56	80.9	0.36	4.70	11.50
8			63	16.85	85.3	0.57	4.30	13.00
8			80	14.29	89.1	0.83	3.70	14.80
8			100	10.92	92.3	1.30	3.00	16.80
8			125	6.69	94.9	1.98	1.80	18.80
8			160	0.96	97.0	2.97	0.00	21.10
8			200	-3.10	98.4	4.27	0.00	22.80
9	4,154	4,159						
9			20	24.38	59.3	0.00	5.60	7.60
9			25	23.49	65.2	0.08	5.40	8.30
9			32	22.45	70.6	0.12	5.20	9.20
9			40	21.67	76.0	0.21	5.00	10.30
9			50	20.58	80.9	0.29	4.70	11.50
9			63	18.91	85.3	0.46	4.30	13.00
9			80	16.41	89.1	0.67	3.70	14.80
9			100	13.13	92.3	1.04	3.00	16.80
9			125	9.04	94.9	1.58	1.80	18.80
9			160	3.50	97.0	2.37	0.00	21.10
9			200	-0.29	98.4	3.41	0.00	22.80
Sum								
Sum			20	37.66				
Sum			25	36.78				
Sum			32	35.73				
Sum			40	34.95				
Sum			50	33.86				
Sum			63	32.18				
Sum			80	29.67				
Sum			100	26.38				
Sum			125	22.28				
Sum			160	16.72				
Sum			200	12.92				

Noise sensitive area: HH Mustalahti 6 Noise sensitive point: Finnish normal frequency - User defined (282)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,377	6,380						
1			20	20.66	59.3	0.00	5.60	7.60
1			25	19.73	65.2	0.13	5.40	8.30
1			32	18.67	70.6	0.19	5.20	9.20
1			40	17.84	76.0	0.32	5.00	10.30
1			50	16.71	80.9	0.45	4.70	11.50
1			63	14.95	85.3	0.70	4.30	13.00
1			80	12.33	89.1	1.02	3.70	14.80
1			100	8.86	92.3	1.59	3.00	16.80
1			125	4.48	94.9	2.42	1.80	18.80
1			160	-1.48	97.0	3.64	0.00	21.10
1			200	-5.83	98.4	5.23	0.00	22.80
10	3,729	3,735						
10			20	25.31	59.3	0.00	5.60	7.60
10			25	24.43	65.2	0.07	5.40	8.30
10			32	23.40	70.6	0.11	5.20	9.20
10			40	22.62	76.0	0.19	5.00	10.30
10			50	21.54	80.9	0.26	4.70	11.50
10			63	19.89	85.3	0.41	4.30	13.00

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	17.41	89.1	0.60	3.70	14.80
10			100	14.17	92.3	0.93	3.00	16.80
10			125	10.13	94.9	1.42	1.80	18.80
10			160	4.68	97.0	2.13	0.00	21.10
10			200	0.99	98.4	3.06	0.00	22.80
11	3,133	3,139						
11			20	26.82	59.3	0.00	5.60	7.60
11			25	25.96	65.2	0.06	5.40	8.30
11			32	24.92	70.6	0.09	5.20	9.20
11			40	24.16	76.0	0.16	5.00	10.30
11			50	23.10	80.9	0.22	4.70	11.50
11			63	21.47	85.3	0.35	4.30	13.00
11			80	19.01	89.1	0.50	3.70	14.80
11			100	15.83	92.3	0.78	3.00	16.80
11			125	11.87	94.9	1.19	1.80	18.80
11			160	6.53	97.0	1.79	0.00	21.10
11			200	2.99	98.4	2.57	0.00	22.80
12	2,836	2,843						
12			20	27.68	59.3	0.00	5.60	7.60
12			25	26.82	65.2	0.06	5.40	8.30
12			32	25.79	70.6	0.09	5.20	9.20
12			40	25.04	76.0	0.14	5.00	10.30
12			50	23.98	80.9	0.20	4.70	11.50
12			63	22.36	85.3	0.31	4.30	13.00
12			80	19.92	89.1	0.45	3.70	14.80
12			100	16.77	92.3	0.71	3.00	16.80
12			125	12.84	94.9	1.08	1.80	18.80
12			160	7.56	97.0	1.62	0.00	21.10
12			200	4.09	98.4	2.33	0.00	22.80
13	3,206	3,214						
13			20	26.61	59.3	0.00	5.60	7.60
13			25	25.75	65.2	0.06	5.40	8.30
13			32	24.72	70.6	0.10	5.20	9.20
13			40	23.95	76.0	0.16	5.00	10.30
13			50	22.89	80.9	0.22	4.70	11.50
13			63	21.26	85.3	0.35	4.30	13.00
13			80	18.80	89.1	0.51	3.70	14.80
13			100	15.61	92.3	0.80	3.00	16.80
13			125	11.64	94.9	1.22	1.80	18.80
13			160	6.28	97.0	1.83	0.00	21.10
13			200	2.72	98.4	2.64	0.00	22.80
14	3,709	3,715						
14			20	25.36	59.3	0.00	5.60	7.60
14			25	24.48	65.2	0.07	5.40	8.30
14			32	23.44	70.6	0.11	5.20	9.20
14			40	22.67	76.0	0.19	5.00	10.30
14			50	21.59	80.9	0.26	4.70	11.50
14			63	19.94	85.3	0.41	4.30	13.00
14			80	17.46	89.1	0.59	3.70	14.80
14			100	14.22	92.3	0.93	3.00	16.80
14			125	10.19	94.9	1.41	1.80	18.80
14			160	4.73	97.0	2.12	0.00	21.10
14			200	1.05	98.4	3.05	0.00	22.80
15	3,429	3,438						
15			20	26.03	59.3	0.00	5.60	7.60
15			25	25.16	65.2	0.07	5.40	8.30
15			32	24.13	70.6	0.10	5.20	9.20
15			40	23.36	76.0	0.17	5.00	10.30
15			50	22.28	80.9	0.24	4.70	11.50
15			63	20.65	85.3	0.38	4.30	13.00
15			80	18.18	89.1	0.55	3.70	14.80
15			100	14.97	92.3	0.86	3.00	16.80
15			125	10.97	94.9	1.31	1.80	18.80
15			160	5.57	97.0	1.96	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	1.95	98.4	2.82	0.00	22.80
16	3,764	3,770						
16			20	25.23	59.3	0.00	5.60	7.60
16			25	24.35	65.2	0.08	5.40	8.30
16			32	23.31	70.6	0.11	5.20	9.20
16			40	22.54	76.0	0.19	5.00	10.30
16			50	21.46	80.9	0.26	4.70	11.50
16			63	19.81	85.3	0.41	4.30	13.00
16			80	17.32	89.1	0.60	3.70	14.80
16			100	14.08	92.3	0.94	3.00	16.80
16			125	10.04	94.9	1.43	1.80	18.80
16			160	4.57	97.0	2.15	0.00	21.10
16			200	0.88	98.4	3.09	0.00	22.80
17	4,404	4,408						
17			20	23.87	59.3	0.00	5.60	7.60
17			25	22.98	65.2	0.09	5.40	8.30
17			32	21.94	70.6	0.13	5.20	9.20
17			40	21.15	76.0	0.22	5.00	10.30
17			50	20.06	80.9	0.31	4.70	11.50
17			63	18.38	85.3	0.48	4.30	13.00
17			80	15.86	89.1	0.71	3.70	14.80
17			100	12.56	92.3	1.10	3.00	16.80
17			125	8.44	94.9	1.68	1.80	18.80
17			160	2.85	97.0	2.51	0.00	21.10
17			200	-1.00	98.4	3.61	0.00	22.80
18	2,738	2,746						
18			20	27.98	59.3	0.00	5.60	7.60
18			25	27.13	65.2	0.05	5.40	8.30
18			32	26.10	70.6	0.08	5.20	9.20
18			40	25.34	76.0	0.14	5.00	10.30
18			50	24.28	80.9	0.19	4.70	11.50
18			63	22.68	85.3	0.30	4.30	13.00
18			80	20.24	89.1	0.44	3.70	14.80
18			100	17.09	92.3	0.69	3.00	16.80
18			125	13.18	94.9	1.04	1.80	18.80
18			160	7.91	97.0	1.57	0.00	21.10
18			200	4.47	98.4	2.25	0.00	22.80
19	2,963	2,972						
19			20	27.29	59.3	0.00	5.60	7.60
19			25	26.43	65.2	0.06	5.40	8.30
19			32	25.40	70.6	0.09	5.20	9.20
19			40	24.64	76.0	0.15	5.00	10.30
19			50	23.58	80.9	0.21	4.70	11.50
19			63	21.96	85.3	0.33	4.30	13.00
19			80	19.51	89.1	0.48	3.70	14.80
19			100	16.35	92.3	0.74	3.00	16.80
19			125	12.41	94.9	1.13	1.80	18.80
19			160	7.10	97.0	1.69	0.00	21.10
19			200	3.60	98.4	2.44	0.00	22.80
2	5,342	5,346						
2			20	22.19	59.3	0.00	5.60	7.60
2			25	21.29	65.2	0.11	5.40	8.30
2			32	20.23	70.6	0.16	5.20	9.20
2			40	19.43	76.0	0.27	5.00	10.30
2			50	18.32	80.9	0.37	4.70	11.50
2			63	16.60	85.3	0.59	4.30	13.00
2			80	14.04	89.1	0.86	3.70	14.80
2			100	10.66	92.3	1.34	3.00	16.80
2			125	6.41	94.9	2.03	1.80	18.80
2			160	0.64	97.0	3.05	0.00	21.10
2			200	-3.44	98.4	4.38	0.00	22.80
20	3,347	3,355						
20			20	26.24	59.3	0.00	5.60	7.60
20			25	25.37	65.2	0.07	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	24.34	70.6	0.10	5.20	9.20
20			40	23.57	76.0	0.17	5.00	10.30
20			50	22.50	80.9	0.23	4.70	11.50
20			63	20.87	85.3	0.37	4.30	13.00
20			80	18.40	89.1	0.54	3.70	14.80
20			100	15.20	92.3	0.84	3.00	16.80
20			125	11.21	94.9	1.27	1.80	18.80
20			160	5.83	97.0	1.91	0.00	21.10
20			200	2.24	98.4	2.75	0.00	22.80
21	3,964	3,969						
21			20	24.78	59.3	0.00	5.60	7.60
21			25	23.90	65.2	0.08	5.40	8.30
21			32	22.86	70.6	0.12	5.20	9.20
21			40	22.08	76.0	0.20	5.00	10.30
21			50	21.00	80.9	0.28	4.70	11.50
21			63	19.34	85.3	0.44	4.30	13.00
21			80	16.84	89.1	0.64	3.70	14.80
21			100	13.59	92.3	0.99	3.00	16.80
21			125	9.52	94.9	1.51	1.80	18.80
21			160	4.01	97.0	2.26	0.00	21.10
21			200	0.27	98.4	3.25	0.00	22.80
22	4,609	4,614						
22			20	23.47	59.3	0.00	5.60	7.60
22			25	22.58	65.2	0.09	5.40	8.30
22			32	21.53	70.6	0.14	5.20	9.20
22			40	20.74	76.0	0.23	5.00	10.30
22			50	19.65	80.9	0.32	4.70	11.50
22			63	17.96	85.3	0.51	4.30	13.00
22			80	15.43	89.1	0.74	3.70	14.80
22			100	12.12	92.3	1.15	3.00	16.80
22			125	7.96	94.9	1.75	1.80	18.80
22			160	2.34	97.0	2.63	0.00	21.10
22			200	-1.57	98.4	3.78	0.00	22.80
23	5,152	5,155						
23			20	22.51	59.3	0.00	5.60	7.60
23			25	21.61	65.2	0.10	5.40	8.30
23			32	20.55	70.6	0.15	5.20	9.20
23			40	19.75	76.0	0.26	5.00	10.30
23			50	18.65	80.9	0.36	4.70	11.50
23			63	16.94	85.3	0.57	4.30	13.00
23			80	14.38	89.1	0.82	3.70	14.80
23			100	11.02	92.3	1.29	3.00	16.80
23			125	6.80	94.9	1.96	1.80	18.80
23			160	1.07	97.0	2.94	0.00	21.10
23			200	-2.97	98.4	4.23	0.00	22.80
24	5,069	5,073						
24			20	22.65	59.3	0.00	5.60	7.60
24			25	21.75	65.2	0.10	5.40	8.30
24			32	20.70	70.6	0.15	5.20	9.20
24			40	19.90	76.0	0.25	5.00	10.30
24			50	18.79	80.9	0.36	4.70	11.50
24			63	17.09	85.3	0.56	4.30	13.00
24			80	14.53	89.1	0.81	3.70	14.80
24			100	11.18	92.3	1.27	3.00	16.80
24			125	6.97	94.9	1.93	1.80	18.80
24			160	1.25	97.0	2.89	0.00	21.10
24			200	-2.77	98.4	4.16	0.00	22.80
3	5,837	5,840						
3			20	21.43	59.3	0.00	5.60	7.60
3			25	20.51	65.2	0.12	5.40	8.30
3			32	19.45	70.6	0.18	5.20	9.20
3			40	18.63	76.0	0.29	5.00	10.30
3			50	17.51	80.9	0.41	4.70	11.50
3			63	15.78	85.3	0.64	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	13.19	89.1	0.93	3.70	14.80
3			100	9.76	92.3	1.46	3.00	16.80
3			125	5.45	94.9	2.22	1.80	18.80
3			160	-0.41	97.0	3.33	0.00	21.10
3			200	-4.62	98.4	4.79	0.00	22.80
4	5,321	5,324						
4			20	22.23	59.3	0.00	5.60	7.60
4			25	21.32	65.2	0.11	5.40	8.30
4			32	20.27	70.6	0.16	5.20	9.20
4			40	19.46	76.0	0.27	5.00	10.30
4			50	18.35	80.9	0.37	4.70	11.50
4			63	16.64	85.3	0.59	4.30	13.00
4			80	14.07	89.1	0.85	3.70	14.80
4			100	10.70	92.3	1.33	3.00	16.80
4			125	6.45	94.9	2.02	1.80	18.80
4			160	0.69	97.0	3.03	0.00	21.10
4			200	-3.39	98.4	4.37	0.00	22.80
5	5,134	5,138						
5			20	22.54	59.3	0.00	5.60	7.60
5			25	21.64	65.2	0.10	5.40	8.30
5			32	20.59	70.6	0.15	5.20	9.20
5			40	19.78	76.0	0.26	5.00	10.30
5			50	18.68	80.9	0.36	4.70	11.50
5			63	16.97	85.3	0.57	4.30	13.00
5			80	14.41	89.1	0.82	3.70	14.80
5			100	11.05	92.3	1.28	3.00	16.80
5			125	6.83	94.9	1.95	1.80	18.80
5			160	1.11	97.0	2.93	0.00	21.10
5			200	-2.93	98.4	4.21	0.00	22.80
6	4,300	4,305						
6			20	24.08	59.3	0.00	5.60	7.60
6			25	23.19	65.2	0.09	5.40	8.30
6			32	22.15	70.6	0.13	5.20	9.20
6			40	21.36	76.0	0.22	5.00	10.30
6			50	20.27	80.9	0.30	4.70	11.50
6			63	18.60	85.3	0.47	4.30	13.00
6			80	16.08	89.1	0.69	3.70	14.80
6			100	12.80	92.3	1.08	3.00	16.80
6			125	8.69	94.9	1.64	1.80	18.80
6			160	3.12	97.0	2.45	0.00	21.10
6			200	-0.71	98.4	3.53	0.00	22.80
7	4,290	4,295						
7			20	24.10	59.3	0.00	5.60	7.60
7			25	23.21	65.2	0.09	5.40	8.30
7			32	22.17	70.6	0.13	5.20	9.20
7			40	21.38	76.0	0.21	5.00	10.30
7			50	20.29	80.9	0.30	4.70	11.50
7			63	18.62	85.3	0.47	4.30	13.00
7			80	16.11	89.1	0.69	3.70	14.80
7			100	12.82	92.3	1.07	3.00	16.80
7			125	8.71	94.9	1.63	1.80	18.80
7			160	3.15	97.0	2.45	0.00	21.10
7			200	-0.68	98.4	3.52	0.00	22.80
8	4,677	4,681						
8			20	23.35	59.3	0.00	5.60	7.60
8			25	22.45	65.2	0.09	5.40	8.30
8			32	21.41	70.6	0.14	5.20	9.20
8			40	20.61	76.0	0.23	5.00	10.30
8			50	19.52	80.9	0.33	4.70	11.50
8			63	17.83	85.3	0.51	4.30	13.00
8			80	15.30	89.1	0.75	3.70	14.80
8			100	11.98	92.3	1.17	3.00	16.80
8			125	7.81	94.9	1.78	1.80	18.80
8			160	2.18	97.0	2.67	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	-1.74	98.4	3.84	0.00	22.80
9	3,640	3,645						
9			20	25.52	59.3	0.00	5.60	7.60
9			25	24.65	65.2	0.07	5.40	8.30
9			32	23.61	70.6	0.11	5.20	9.20
9			40	22.84	76.0	0.18	5.00	10.30
9			50	21.76	80.9	0.26	4.70	11.50
9			63	20.12	85.3	0.40	4.30	13.00
9			80	17.63	89.1	0.58	3.70	14.80
9			100	14.41	92.3	0.91	3.00	16.80
9			125	10.38	94.9	1.39	1.80	18.80
9			160	4.94	97.0	2.08	0.00	21.10
9			200	1.28	98.4	2.99	0.00	22.80
Sum								
Sum			20	38.76				
Sum			25	37.88				
Sum			32	36.84				
Sum			40	36.07				
Sum			50	34.99				
Sum			63	33.34				
Sum			80	30.85				
Sum			100	27.61				
Sum			125	23.57				
Sum			160	18.12				
Sum			200	14.45				

Noise sensitive area: HH Pajaniemi 1 Noise sensitive point: Finnish normal frequency - User defined (289)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,059	2,072						
1			20	30.43	59.3	0.00	5.60	7.60
1			25	29.59	65.2	0.04	5.40	8.30
1			32	28.57	70.6	0.06	5.20	9.20
1			40	27.83	76.0	0.10	5.00	10.30
1			50	26.78	80.9	0.15	4.70	11.50
1			63	25.20	85.3	0.23	4.30	13.00
1			80	22.79	89.1	0.33	3.70	14.80
1			100	19.71	92.3	0.52	3.00	16.80
1			125	15.89	94.9	0.79	1.80	18.80
1			160	10.74	97.0	1.18	0.00	21.10
1			200	7.48	98.4	1.70	0.00	22.80
10	3,636	3,644						
10			20	25.52	59.3	0.00	5.60	7.60
10			25	24.65	65.2	0.07	5.40	8.30
10			32	23.61	70.6	0.11	5.20	9.20
10			40	22.84	76.0	0.18	5.00	10.30
10			50	21.77	80.9	0.26	4.70	11.50
10			63	20.12	85.3	0.40	4.30	13.00
10			80	17.64	89.1	0.58	3.70	14.80
10			100	14.41	92.3	0.91	3.00	16.80
10			125	10.38	94.9	1.38	1.80	18.80
10			160	4.94	97.0	2.08	0.00	21.10
10			200	1.28	98.4	2.99	0.00	22.80
11	4,143	4,149						
11			20	24.39	59.3	0.00	5.60	7.60
11			25	23.51	65.2	0.08	5.40	8.30
11			32	22.47	70.6	0.12	5.20	9.20
11			40	21.69	76.0	0.21	5.00	10.30
11			50	20.60	80.9	0.29	4.70	11.50
11			63	18.94	85.3	0.46	4.30	13.00
11			80	16.43	89.1	0.66	3.70	14.80
11			100	13.15	92.3	1.04	3.00	16.80

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	9.06	94.9	1.58	1.80	18.80
11			160	3.53	97.0	2.37	0.00	21.10
11			200	-0.26	98.4	3.40	0.00	22.80
12	4,161	4,167						
12			20	24.36	59.3	0.00	5.60	7.60
12			25	23.47	65.2	0.08	5.40	8.30
12			32	22.43	70.6	0.13	5.20	9.20
12			40	21.65	76.0	0.21	5.00	10.30
12			50	20.56	80.9	0.29	4.70	11.50
12			63	18.90	85.3	0.46	4.30	13.00
12			80	16.39	89.1	0.67	3.70	14.80
12			100	13.11	92.3	1.04	3.00	16.80
12			125	9.02	94.9	1.58	1.80	18.80
12			160	3.48	97.0	2.38	0.00	21.10
12			200	-0.31	98.4	3.42	0.00	22.80
13	3,673	3,682						
13			20	25.43	59.3	0.00	5.60	7.60
13			25	24.56	65.2	0.07	5.40	8.30
13			32	23.52	70.6	0.11	5.20	9.20
13			40	22.75	76.0	0.18	5.00	10.30
13			50	21.67	80.9	0.26	4.70	11.50
13			63	20.02	85.3	0.41	4.30	13.00
13			80	17.54	89.1	0.59	3.70	14.80
13			100	14.31	92.3	0.92	3.00	16.80
13			125	10.28	94.9	1.40	1.80	18.80
13			160	4.83	97.0	2.10	0.00	21.10
13			200	1.16	98.4	3.02	0.00	22.80
14	3,181	3,192						
14			20	26.67	59.3	0.00	5.60	7.60
14			25	25.81	65.2	0.06	5.40	8.30
14			32	24.78	70.6	0.10	5.20	9.20
14			40	24.01	76.0	0.16	5.00	10.30
14			50	22.95	80.9	0.22	4.70	11.50
14			63	21.32	85.3	0.35	4.30	13.00
14			80	18.86	89.1	0.51	3.70	14.80
14			100	15.67	92.3	0.80	3.00	16.80
14			125	11.71	94.9	1.21	1.80	18.80
14			160	6.35	97.0	1.82	0.00	21.10
14			200	2.80	98.4	2.62	0.00	22.80
15	3,505	3,516						
15			20	25.83	59.3	0.00	5.60	7.60
15			25	24.96	65.2	0.07	5.40	8.30
15			32	23.93	70.6	0.11	5.20	9.20
15			40	23.16	76.0	0.18	5.00	10.30
15			50	22.08	80.9	0.25	4.70	11.50
15			63	20.44	85.3	0.39	4.30	13.00
15			80	17.97	89.1	0.56	3.70	14.80
15			100	14.75	92.3	0.88	3.00	16.80
15			125	10.74	94.9	1.34	1.80	18.80
15			160	5.33	97.0	2.00	0.00	21.10
15			200	1.70	98.4	2.88	0.00	22.80
16	3,389	3,398						
16			20	26.13	59.3	0.00	5.60	7.60
16			25	25.26	65.2	0.07	5.40	8.30
16			32	24.23	70.6	0.10	5.20	9.20
16			40	23.46	76.0	0.17	5.00	10.30
16			50	22.39	80.9	0.24	4.70	11.50
16			63	20.75	85.3	0.37	4.30	13.00
16			80	18.28	89.1	0.54	3.70	14.80
16			100	15.08	92.3	0.85	3.00	16.80
16			125	11.08	94.9	1.29	1.80	18.80
16			160	5.69	97.0	1.94	0.00	21.10
16			200	2.09	98.4	2.79	0.00	22.80
17	2,899	2,908						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	27.48	59.3	0.00	5.60	7.60
17			25	26.62	65.2	0.06	5.40	8.30
17			32	25.60	70.6	0.09	5.20	9.20
17			40	24.84	76.0	0.15	5.00	10.30
17			50	23.78	80.9	0.20	4.70	11.50
17			63	22.16	85.3	0.32	4.30	13.00
17			80	19.71	89.1	0.47	3.70	14.80
17			100	16.55	92.3	0.73	3.00	16.80
17			125	12.62	94.9	1.11	1.80	18.80
17			160	7.32	97.0	1.66	0.00	21.10
17			200	3.84	98.4	2.38	0.00	22.80
18	4,153	4,160						
18			20	24.37	59.3	0.00	5.60	7.60
18			25	23.49	65.2	0.08	5.40	8.30
18			32	22.45	70.6	0.12	5.20	9.20
18			40	21.67	76.0	0.21	5.00	10.30
18			50	20.58	80.9	0.29	4.70	11.50
18			63	18.91	85.3	0.46	4.30	13.00
18			80	16.40	89.1	0.67	3.70	14.80
18			100	13.13	92.3	1.04	3.00	16.80
18			125	9.04	94.9	1.58	1.80	18.80
18			160	3.50	97.0	2.37	0.00	21.10
18			200	-0.29	98.4	3.41	0.00	22.80
19	4,084	4,093						
19			20	24.51	59.3	0.00	5.60	7.60
19			25	23.63	65.2	0.08	5.40	8.30
19			32	22.59	70.6	0.12	5.20	9.20
19			40	21.81	76.0	0.20	5.00	10.30
19			50	20.72	80.9	0.29	4.70	11.50
19			63	19.06	85.3	0.45	4.30	13.00
19			80	16.56	89.1	0.65	3.70	14.80
19			100	13.29	92.3	1.02	3.00	16.80
19			125	9.20	94.9	1.56	1.80	18.80
19			160	3.68	97.0	2.33	0.00	21.10
19			200	-0.10	98.4	3.36	0.00	22.80
2	2,561	2,571						
2			20	28.55	59.3	0.00	5.60	7.60
2			25	27.70	65.2	0.05	5.40	8.30
2			32	26.67	70.6	0.08	5.20	9.20
2			40	25.92	76.0	0.13	5.00	10.30
2			50	24.87	80.9	0.18	4.70	11.50
2			63	23.27	85.3	0.28	4.30	13.00
2			80	20.84	89.1	0.41	3.70	14.80
2			100	17.71	92.3	0.64	3.00	16.80
2			125	13.82	94.9	0.98	1.80	18.80
2			160	8.58	97.0	1.47	0.00	21.10
2			200	5.19	98.4	2.11	0.00	22.80
20	3,929	3,937						
20			20	24.85	59.3	0.00	5.60	7.60
20			25	23.97	65.2	0.08	5.40	8.30
20			32	22.93	70.6	0.12	5.20	9.20
20			40	22.15	76.0	0.20	5.00	10.30
20			50	21.07	80.9	0.28	4.70	11.50
20			63	19.41	85.3	0.43	4.30	13.00
20			80	16.92	89.1	0.63	3.70	14.80
20			100	13.66	92.3	0.98	3.00	16.80
20			125	9.60	94.9	1.50	1.80	18.80
20			160	4.10	97.0	2.24	0.00	21.10
20			200	0.37	98.4	3.23	0.00	22.80
21	3,593	3,601						
21			20	25.63	59.3	0.00	5.60	7.60
21			25	24.75	65.2	0.07	5.40	8.30
21			32	23.72	70.6	0.11	5.20	9.20
21			40	22.95	76.0	0.18	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	21.87	80.9	0.25	4.70	11.50
21			63	20.23	85.3	0.40	4.30	13.00
21			80	17.75	89.1	0.58	3.70	14.80
21			100	14.52	92.3	0.90	3.00	16.80
21			125	10.50	94.9	1.37	1.80	18.80
21			160	5.07	97.0	2.05	0.00	21.10
21			200	1.42	98.4	2.95	0.00	22.80
22	3,336	3,345						
22			20	26.27	59.3	0.00	5.60	7.60
22			25	25.40	65.2	0.07	5.40	8.30
22			32	24.37	70.6	0.10	5.20	9.20
22			40	23.60	76.0	0.17	5.00	10.30
22			50	22.53	80.9	0.23	4.70	11.50
22			63	20.89	85.3	0.37	4.30	13.00
22			80	18.43	89.1	0.54	3.70	14.80
22			100	15.23	92.3	0.84	3.00	16.80
22			125	11.24	94.9	1.27	1.80	18.80
22			160	5.86	97.0	1.91	0.00	21.10
22			200	2.27	98.4	2.74	0.00	22.80
23	2,749	2,758						
23			20	27.94	59.3	0.00	5.60	7.60
23			25	27.09	65.2	0.06	5.40	8.30
23			32	26.06	70.6	0.08	5.20	9.20
23			40	25.30	76.0	0.14	5.00	10.30
23			50	24.25	80.9	0.19	4.70	11.50
23			63	22.63	85.3	0.30	4.30	13.00
23			80	20.20	89.1	0.44	3.70	14.80
23			100	17.05	92.3	0.69	3.00	16.80
23			125	13.14	94.9	1.05	1.80	18.80
23			160	7.87	97.0	1.57	0.00	21.10
23			200	4.42	98.4	2.26	0.00	22.80
24	3,389	3,397						
24			20	26.13	59.3	0.00	5.60	7.60
24			25	25.27	65.2	0.07	5.40	8.30
24			32	24.23	70.6	0.10	5.20	9.20
24			40	23.46	76.0	0.17	5.00	10.30
24			50	22.39	80.9	0.24	4.70	11.50
24			63	20.76	85.3	0.37	4.30	13.00
24			80	18.29	89.1	0.54	3.70	14.80
24			100	15.08	92.3	0.85	3.00	16.80
24			125	11.09	94.9	1.29	1.80	18.80
24			160	5.69	97.0	1.94	0.00	21.10
24			200	2.09	98.4	2.79	0.00	22.80
3	1,998	2,011						
3			20	30.68	59.3	0.00	5.60	7.60
3			25	29.84	65.2	0.04	5.40	8.30
3			32	28.82	70.6	0.06	5.20	9.20
3			40	28.08	76.0	0.10	5.00	10.30
3			50	27.04	80.9	0.14	4.70	11.50
3			63	25.46	85.3	0.22	4.30	13.00
3			80	23.06	89.1	0.32	3.70	14.80
3			100	19.98	92.3	0.50	3.00	16.80
3			125	16.17	94.9	0.76	1.80	18.80
3			160	11.04	97.0	1.15	0.00	21.10
3			200	7.78	98.4	1.65	0.00	22.80
4	2,087	2,100						
4			20	30.31	59.3	0.00	5.60	7.60
4			25	29.47	65.2	0.04	5.40	8.30
4			32	28.45	70.6	0.06	5.20	9.20
4			40	27.70	76.0	0.11	5.00	10.30
4			50	26.66	80.9	0.15	4.70	11.50
4			63	25.07	85.3	0.23	4.30	13.00
4			80	22.67	89.1	0.34	3.70	14.80
4			100	19.58	92.3	0.53	3.00	16.80

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			125	15.76	94.9	0.80	1.80	18.80
4			160	10.61	97.0	1.20	0.00	21.10
4			200	7.33	98.4	1.72	0.00	22.80
5	1,905	1,919						
5			20	31.09	59.3	0.00	5.60	7.60
5			25	30.25	65.2	0.04	5.40	8.30
5			32	29.24	70.6	0.06	5.20	9.20
5			40	28.50	76.0	0.10	5.00	10.30
5			50	27.46	80.9	0.13	4.70	11.50
5			63	25.88	85.3	0.21	4.30	13.00
5			80	23.48	89.1	0.31	3.70	14.80
5			100	20.41	92.3	0.48	3.00	16.80
5			125	16.61	94.9	0.73	1.80	18.80
5			160	11.50	97.0	1.09	0.00	21.10
5			200	8.26	98.4	1.57	0.00	22.80
6	3,513	3,521						
6			20	25.82	59.3	0.00	5.60	7.60
6			25	24.95	65.2	0.07	5.40	8.30
6			32	23.92	70.6	0.11	5.20	9.20
6			40	23.15	76.0	0.18	5.00	10.30
6			50	22.07	80.9	0.25	4.70	11.50
6			63	20.43	85.3	0.39	4.30	13.00
6			80	17.96	89.1	0.56	3.70	14.80
6			100	14.74	92.3	0.88	3.00	16.80
6			125	10.73	94.9	1.34	1.80	18.80
6			160	5.31	97.0	2.01	0.00	21.10
6			200	1.68	98.4	2.89	0.00	22.80
7	3,025	3,034						
7			20	27.11	59.3	0.00	5.60	7.60
7			25	26.25	65.2	0.06	5.40	8.30
7			32	25.22	70.6	0.09	5.20	9.20
7			40	24.46	76.0	0.15	5.00	10.30
7			50	23.40	80.9	0.21	4.70	11.50
7			63	21.78	85.3	0.33	4.30	13.00
7			80	19.33	89.1	0.49	3.70	14.80
7			100	16.15	92.3	0.76	3.00	16.80
7			125	12.21	94.9	1.15	1.80	18.80
7			160	6.88	97.0	1.73	0.00	21.10
7			200	3.37	98.4	2.49	0.00	22.80
8	2,470	2,481						
8			20	28.86	59.3	0.00	5.60	7.60
8			25	28.01	65.2	0.05	5.40	8.30
8			32	26.99	70.6	0.07	5.20	9.20
8			40	26.24	76.0	0.12	5.00	10.30
8			50	25.18	80.9	0.17	4.70	11.50
8			63	23.59	85.3	0.27	4.30	13.00
8			80	21.16	89.1	0.40	3.70	14.80
8			100	18.04	92.3	0.62	3.00	16.80
8			125	14.16	94.9	0.94	1.80	18.80
8			160	8.94	97.0	1.41	0.00	21.10
8			200	5.57	98.4	2.03	0.00	22.80
9	4,159	4,165						
9			20	24.36	59.3	0.00	5.60	7.60
9			25	23.48	65.2	0.08	5.40	8.30
9			32	22.44	70.6	0.12	5.20	9.20
9			40	21.65	76.0	0.21	5.00	10.30
9			50	20.57	80.9	0.29	4.70	11.50
9			63	18.90	85.3	0.46	4.30	13.00
9			80	16.39	89.1	0.67	3.70	14.80
9			100	13.12	92.3	1.04	3.00	16.80
9			125	9.02	94.9	1.58	1.80	18.80
9			160	3.48	97.0	2.37	0.00	21.10
9			200	-0.31	98.4	3.42	0.00	22.80
Sum								

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			20	41.15				
Sum			25	40.30				
Sum			32	39.27				
Sum			40	38.51				
Sum			50	37.45				
Sum			63	35.84				
Sum			80	33.40				
Sum			100	30.24				
Sum			125	26.33				
Sum			160	21.05				
Sum			200	17.60				

Noise sensitive area: HH Pieni Mäkijärvi Noise sensitive point: Finnish normal frequency - User defined (287)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,419	3,425						
1			20	26.06	59.3	0.00	5.60	7.60
1			25	25.19	65.2	0.07	5.40	8.30
1			32	24.16	70.6	0.10	5.20	9.20
1			40	23.39	76.0	0.17	5.00	10.30
1			50	22.32	80.9	0.24	4.70	11.50
1			63	20.68	85.3	0.38	4.30	13.00
1			80	18.21	89.1	0.55	3.70	14.80
1			100	15.00	92.3	0.86	3.00	16.80
1			125	11.01	94.9	1.30	1.80	18.80
1			160	5.61	97.0	1.95	0.00	21.10
1			200	2.00	98.4	2.81	0.00	22.80
10	4,370	4,376						
10			20	23.93	59.3	0.00	5.60	7.60
10			25	23.05	65.2	0.09	5.40	8.30
10			32	22.00	70.6	0.13	5.20	9.20
10			40	21.22	76.0	0.22	5.00	10.30
10			50	20.12	80.9	0.31	4.70	11.50
10			63	18.45	85.3	0.48	4.30	13.00
10			80	15.93	89.1	0.70	3.70	14.80
10			100	12.64	92.3	1.09	3.00	16.80
10			125	8.52	94.9	1.66	1.80	18.80
10			160	2.94	97.0	2.49	0.00	21.10
10			200	-0.91	98.4	3.59	0.00	22.80
11	4,759	4,764						
11			20	23.19	59.3	0.00	5.60	7.60
11			25	22.30	65.2	0.10	5.40	8.30
11			32	21.25	70.6	0.14	5.20	9.20
11			40	20.46	76.0	0.24	5.00	10.30
11			50	19.36	80.9	0.33	4.70	11.50
11			63	17.67	85.3	0.52	4.30	13.00
11			80	15.13	89.1	0.76	3.70	14.80
11			100	11.80	92.3	1.19	3.00	16.80
11			125	7.63	94.9	1.81	1.80	18.80
11			160	1.98	97.0	2.72	0.00	21.10
11			200	-1.97	98.4	3.91	0.00	22.80
12	4,613	4,618						
12			20	23.47	59.3	0.00	5.60	7.60
12			25	22.57	65.2	0.09	5.40	8.30
12			32	21.53	70.6	0.14	5.20	9.20
12			40	20.74	76.0	0.23	5.00	10.30
12			50	19.64	80.9	0.32	4.70	11.50
12			63	17.96	85.3	0.51	4.30	13.00
12			80	15.42	89.1	0.74	3.70	14.80
12			100	12.11	92.3	1.15	3.00	16.80
12			125	7.96	94.9	1.75	1.80	18.80
12			160	2.33	97.0	2.63	0.00	21.10

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			200	-1.57	98.4	3.79	0.00	22.80
13	3,999	4,006						
13			20	24.70	59.3	0.00	5.60	7.60
13			25	23.82	65.2	0.08	5.40	8.30
13			32	22.78	70.6	0.12	5.20	9.20
13			40	22.00	76.0	0.20	5.00	10.30
13			50	20.92	80.9	0.28	4.70	11.50
13			63	19.26	85.3	0.44	4.30	13.00
13			80	16.76	89.1	0.64	3.70	14.80
13			100	13.50	92.3	1.00	3.00	16.80
13			125	9.42	94.9	1.52	1.80	18.80
13			160	3.91	97.0	2.28	0.00	21.10
13			200	0.16	98.4	3.28	0.00	22.80
14	3,591	3,599						
14			20	25.63	59.3	0.00	5.60	7.60
14			25	24.76	65.2	0.07	5.40	8.30
14			32	23.72	70.6	0.11	5.20	9.20
14			40	22.95	76.0	0.18	5.00	10.30
14			50	21.88	80.9	0.25	4.70	11.50
14			63	20.23	85.3	0.40	4.30	13.00
14			80	17.75	89.1	0.58	3.70	14.80
14			100	14.53	92.3	0.90	3.00	16.80
14			125	10.51	94.9	1.37	1.80	18.80
14			160	5.08	97.0	2.05	0.00	21.10
14			200	1.43	98.4	2.95	0.00	22.80
15	3,621	3,631						
15			20	25.56	59.3	0.00	5.60	7.60
15			25	24.68	65.2	0.07	5.40	8.30
15			32	23.65	70.6	0.11	5.20	9.20
15			40	22.87	76.0	0.18	5.00	10.30
15			50	21.80	80.9	0.25	4.70	11.50
15			63	20.15	85.3	0.40	4.30	13.00
15			80	17.67	89.1	0.58	3.70	14.80
15			100	14.44	92.3	0.91	3.00	16.80
15			125	10.42	94.9	1.38	1.80	18.80
15			160	4.98	97.0	2.07	0.00	21.10
15			200	1.32	98.4	2.98	0.00	22.80
16	3,286	3,294						
16			20	26.40	59.3	0.00	5.60	7.60
16			25	25.54	65.2	0.07	5.40	8.30
16			32	24.50	70.6	0.10	5.20	9.20
16			40	23.74	76.0	0.16	5.00	10.30
16			50	22.67	80.9	0.23	4.70	11.50
16			63	21.04	85.3	0.36	4.30	13.00
16			80	18.57	89.1	0.53	3.70	14.80
16			100	15.37	92.3	0.82	3.00	16.80
16			125	11.40	94.9	1.25	1.80	18.80
16			160	6.02	97.0	1.88	0.00	21.10
16			200	2.45	98.4	2.70	0.00	22.80
17	2,662	2,670						
17			20	28.22	59.3	0.00	5.60	7.60
17			25	27.37	65.2	0.05	5.40	8.30
17			32	26.34	70.6	0.08	5.20	9.20
17			40	25.59	76.0	0.13	5.00	10.30
17			50	24.53	80.9	0.19	4.70	11.50
17			63	22.93	85.3	0.29	4.30	13.00
17			80	20.49	89.1	0.43	3.70	14.80
17			100	17.35	92.3	0.67	3.00	16.80
17			125	13.45	94.9	1.01	1.80	18.80
17			160	8.20	97.0	1.52	0.00	21.10
17			200	4.78	98.4	2.19	0.00	22.80
18	4,327	4,333						
18			20	24.02	59.3	0.00	5.60	7.60
18			25	23.13	65.2	0.09	5.40	8.30

To be continued on next page...

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Licensed user:
wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			32	22.09	70.6	0.13	5.20	9.20
18			40	21.30	76.0	0.22	5.00	10.30
18			50	20.21	80.9	0.30	4.70	11.50
18			63	18.54	85.3	0.48	4.30	13.00
18			80	16.02	89.1	0.69	3.70	14.80
18			100	12.73	92.3	1.08	3.00	16.80
18			125	8.62	94.9	1.65	1.80	18.80
18			160	3.05	97.0	2.47	0.00	21.10
18			200	-0.79	98.4	3.55	0.00	22.80
19	4,080	4,088						
19			20	24.52	59.3	0.00	5.60	7.60
19			25	23.64	65.2	0.08	5.40	8.30
19			32	22.60	70.6	0.12	5.20	9.20
19			40	21.82	76.0	0.20	5.00	10.30
19			50	20.74	80.9	0.29	4.70	11.50
19			63	19.07	85.3	0.45	4.30	13.00
19			80	16.57	89.1	0.65	3.70	14.80
19			100	13.30	92.3	1.02	3.00	16.80
19			125	9.22	94.9	1.55	1.80	18.80
19			160	3.69	97.0	2.33	0.00	21.10
19			200	-0.08	98.4	3.35	0.00	22.80
2	3,701	3,707						
2			20	25.37	59.3	0.00	5.60	7.60
2			25	24.50	65.2	0.07	5.40	8.30
2			32	23.46	70.6	0.11	5.20	9.20
2			40	22.69	76.0	0.19	5.00	10.30
2			50	21.61	80.9	0.26	4.70	11.50
2			63	19.96	85.3	0.41	4.30	13.00
2			80	17.48	89.1	0.59	3.70	14.80
2			100	14.24	92.3	0.93	3.00	16.80
2			125	10.21	94.9	1.41	1.80	18.80
2			160	4.76	97.0	2.11	0.00	21.10
2			200	1.08	98.4	3.04	0.00	22.80
20	3,767	3,775						
20			20	25.22	59.3	0.00	5.60	7.60
20			25	24.34	65.2	0.08	5.40	8.30
20			32	23.30	70.6	0.11	5.20	9.20
20			40	22.53	76.0	0.19	5.00	10.30
20			50	21.45	80.9	0.26	4.70	11.50
20			63	19.80	85.3	0.42	4.30	13.00
20			80	17.31	89.1	0.60	3.70	14.80
20			100	14.07	92.3	0.94	3.00	16.80
20			125	10.03	94.9	1.43	1.80	18.80
20			160	4.56	97.0	2.15	0.00	21.10
20			200	0.87	98.4	3.10	0.00	22.80
21	3,252	3,260						
21			20	26.49	59.3	0.00	5.60	7.60
21			25	25.63	65.2	0.07	5.40	8.30
21			32	24.59	70.6	0.10	5.20	9.20
21			40	23.83	76.0	0.16	5.00	10.30
21			50	22.76	80.9	0.23	4.70	11.50
21			63	21.13	85.3	0.36	4.30	13.00
21			80	18.67	89.1	0.52	3.70	14.80
21			100	15.47	92.3	0.81	3.00	16.80
21			125	11.50	94.9	1.24	1.80	18.80
21			160	6.13	97.0	1.86	0.00	21.10
21			200	2.56	98.4	2.67	0.00	22.80
22	2,769	2,779						
22			20	27.88	59.3	0.00	5.60	7.60
22			25	27.02	65.2	0.06	5.40	8.30
22			32	25.99	70.6	0.08	5.20	9.20
22			40	25.24	76.0	0.14	5.00	10.30
22			50	24.18	80.9	0.19	4.70	11.50
22			63	22.57	85.3	0.31	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			80	20.13	89.1	0.44	3.70	14.80
22			100	16.98	92.3	0.69	3.00	16.80
22			125	13.07	94.9	1.06	1.80	18.80
22			160	7.79	97.0	1.58	0.00	21.10
22			200	4.34	98.4	2.28	0.00	22.80
23	2,111	2,121						
23			20	30.22	59.3	0.00	5.60	7.60
23			25	29.38	65.2	0.04	5.40	8.30
23			32	28.36	70.6	0.06	5.20	9.20
23			40	27.62	76.0	0.11	5.00	10.30
23			50	26.57	80.9	0.15	4.70	11.50
23			63	24.99	85.3	0.23	4.30	13.00
23			80	22.58	89.1	0.34	3.70	14.80
23			100	19.49	92.3	0.53	3.00	16.80
23			125	15.66	94.9	0.81	1.80	18.80
23			160	10.51	97.0	1.21	0.00	21.10
23			200	7.23	98.4	1.74	0.00	22.80
24	2,606	2,614						
24			20	28.41	59.3	0.00	5.60	7.60
24			25	27.56	65.2	0.05	5.40	8.30
24			32	26.53	70.6	0.08	5.20	9.20
24			40	25.78	76.0	0.13	5.00	10.30
24			50	24.72	80.9	0.18	4.70	11.50
24			63	23.12	85.3	0.29	4.30	13.00
24			80	20.69	89.1	0.42	3.70	14.80
24			100	17.55	92.3	0.65	3.00	16.80
24			125	13.66	94.9	0.99	1.80	18.80
24			160	8.42	97.0	1.49	0.00	21.10
24			200	5.01	98.4	2.14	0.00	22.80
3	3,236	3,244						
3			20	26.53	59.3	0.00	5.60	7.60
3			25	25.67	65.2	0.06	5.40	8.30
3			32	24.64	70.6	0.10	5.20	9.20
3			40	23.87	76.0	0.16	5.00	10.30
3			50	22.80	80.9	0.23	4.70	11.50
3			63	21.17	85.3	0.36	4.30	13.00
3			80	18.71	89.1	0.52	3.70	14.80
3			100	15.52	92.3	0.81	3.00	16.80
3			125	11.55	94.9	1.23	1.80	18.80
3			160	6.18	97.0	1.85	0.00	21.10
3			200	2.62	98.4	2.66	0.00	22.80
4	3,144	3,152						
4			20	26.78	59.3	0.00	5.60	7.60
4			25	25.92	65.2	0.06	5.40	8.30
4			32	24.89	70.6	0.09	5.20	9.20
4			40	24.13	76.0	0.16	5.00	10.30
4			50	23.06	80.9	0.22	4.70	11.50
4			63	21.43	85.3	0.35	4.30	13.00
4			80	18.98	89.1	0.50	3.70	14.80
4			100	15.79	92.3	0.79	3.00	16.80
4			125	11.83	94.9	1.20	1.80	18.80
4			160	6.48	97.0	1.80	0.00	21.10
4			200	2.94	98.4	2.58	0.00	22.80
5	2,756	2,765						
5			20	27.92	59.3	0.00	5.60	7.60
5			25	27.07	65.2	0.06	5.40	8.30
5			32	26.04	70.6	0.08	5.20	9.20
5			40	25.28	76.0	0.14	5.00	10.30
5			50	24.22	80.9	0.19	4.70	11.50
5			63	22.61	85.3	0.30	4.30	13.00
5			80	20.18	89.1	0.44	3.70	14.80
5			100	17.03	92.3	0.69	3.00	16.80
5			125	13.12	94.9	1.05	1.80	18.80
5			160	7.84	97.0	1.58	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			200	4.40	98.4	2.27	0.00	22.80
6	4,437	4,442						
6			20	23.80	59.3	0.00	5.60	7.60
6			25	22.91	65.2	0.09	5.40	8.30
6			32	21.87	70.6	0.13	5.20	9.20
6			40	21.08	76.0	0.22	5.00	10.30
6			50	19.99	80.9	0.31	4.70	11.50
6			63	18.31	85.3	0.49	4.30	13.00
6			80	15.79	89.1	0.71	3.70	14.80
6			100	12.49	92.3	1.11	3.00	16.80
6			125	8.36	94.9	1.69	1.80	18.80
6			160	2.77	97.0	2.53	0.00	21.10
6			200	-1.10	98.4	3.64	0.00	22.80
7	3,840	3,846						
7			20	25.05	59.3	0.00	5.60	7.60
7			25	24.18	65.2	0.08	5.40	8.30
7			32	23.14	70.6	0.12	5.20	9.20
7			40	22.36	76.0	0.19	5.00	10.30
7			50	21.28	80.9	0.27	4.70	11.50
7			63	19.63	85.3	0.42	4.30	13.00
7			80	17.14	89.1	0.62	3.70	14.80
7			100	13.89	92.3	0.96	3.00	16.80
7			125	9.84	94.9	1.46	1.80	18.80
7			160	4.36	97.0	2.19	0.00	21.10
7			200	0.65	98.4	3.15	0.00	22.80
8	3,289	3,296						
8			20	26.39	59.3	0.00	5.60	7.60
8			25	25.53	65.2	0.07	5.40	8.30
8			32	24.49	70.6	0.10	5.20	9.20
8			40	23.73	76.0	0.16	5.00	10.30
8			50	22.66	80.9	0.23	4.70	11.50
8			63	21.03	85.3	0.36	4.30	13.00
8			80	18.56	89.1	0.53	3.70	14.80
8			100	15.37	92.3	0.82	3.00	16.80
8			125	11.39	94.9	1.25	1.80	18.80
8			160	6.01	97.0	1.88	0.00	21.10
8			200	2.44	98.4	2.70	0.00	22.80
9	4,964	4,969						
9			20	22.83	59.3	0.00	5.60	7.60
9			25	21.93	65.2	0.10	5.40	8.30
9			32	20.88	70.6	0.15	5.20	9.20
9			40	20.08	76.0	0.25	5.00	10.30
9			50	18.98	80.9	0.35	4.70	11.50
9			63	17.28	85.3	0.55	4.30	13.00
9			80	14.73	89.1	0.80	3.70	14.80
9			100	11.38	92.3	1.24	3.00	16.80
9			125	7.19	94.9	1.89	1.80	18.80
9			160	1.49	97.0	2.83	0.00	21.10
9			200	-2.50	98.4	4.07	0.00	22.80
Sum								
Sum			20	39.98				
Sum			25	39.11				
Sum			32	38.08				
Sum			40	37.32				
Sum			50	36.25				
Sum			63	34.62				
Sum			80	32.15				
Sum			100	28.96				
Sum			125	24.98				
Sum			160	19.62				
Sum			200	16.06				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency
Noise sensitive area: HH Pohjoispäänsuo Noise sensitive point: Finnish normal frequency - User defined (285)
Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,800	5,803						
1			20	21.48	59.3	0.00	5.60	7.60
1			25	20.56	65.2	0.12	5.40	8.30
1			32	19.51	70.6	0.17	5.20	9.20
1			40	18.69	76.0	0.29	5.00	10.30
1			50	17.57	80.9	0.41	4.70	11.50
1			63	15.84	85.3	0.64	4.30	13.00
1			80	13.25	89.1	0.93	3.70	14.80
1			100	9.83	92.3	1.45	3.00	16.80
1			125	5.52	94.9	2.21	1.80	18.80
1			160	-0.33	97.0	3.31	0.00	21.10
1			200	-4.53	98.4	4.76	0.00	22.80
10	3,147	3,154						
10			20	26.78	59.3	0.00	5.60	7.60
10			25	25.91	65.2	0.06	5.40	8.30
10			32	24.88	70.6	0.09	5.20	9.20
10			40	24.12	76.0	0.16	5.00	10.30
10			50	23.05	80.9	0.22	4.70	11.50
10			63	21.43	85.3	0.35	4.30	13.00
10			80	18.97	89.1	0.50	3.70	14.80
10			100	15.79	92.3	0.79	3.00	16.80
10			125	11.82	94.9	1.20	1.80	18.80
10			160	6.48	97.0	1.80	0.00	21.10
10			200	2.94	98.4	2.59	0.00	22.80
11	2,552	2,560						
11			20	28.59	59.3	0.00	5.60	7.60
11			25	27.74	65.2	0.05	5.40	8.30
11			32	26.71	70.6	0.08	5.20	9.20
11			40	25.96	76.0	0.13	5.00	10.30
11			50	24.91	80.9	0.18	4.70	11.50
11			63	23.30	85.3	0.28	4.30	13.00
11			80	20.88	89.1	0.41	3.70	14.80
11			100	17.75	92.3	0.64	3.00	16.80
11			125	13.86	94.9	0.97	1.80	18.80
11			160	8.63	97.0	1.46	0.00	21.10
11			200	5.24	98.4	2.10	0.00	22.80
12	2,433	2,441						
12			20	29.00	59.3	0.00	5.60	7.60
12			25	28.15	65.2	0.05	5.40	8.30
12			32	27.13	70.6	0.07	5.20	9.20
12			40	26.38	76.0	0.12	5.00	10.30
12			50	25.33	80.9	0.17	4.70	11.50
12			63	23.73	85.3	0.27	4.30	13.00
12			80	21.31	89.1	0.39	3.70	14.80
12			100	18.19	92.3	0.61	3.00	16.80
12			125	14.32	94.9	0.93	1.80	18.80
12			160	9.11	97.0	1.39	0.00	21.10
12			200	5.75	98.4	2.00	0.00	22.80
13	2,977	2,986						
13			20	27.25	59.3	0.00	5.60	7.60
13			25	26.39	65.2	0.06	5.40	8.30
13			32	25.36	70.6	0.09	5.20	9.20
13			40	24.60	76.0	0.15	5.00	10.30
13			50	23.54	80.9	0.21	4.70	11.50
13			63	21.92	85.3	0.33	4.30	13.00
13			80	19.47	89.1	0.48	3.70	14.80
13			100	16.30	92.3	0.75	3.00	16.80
13			125	12.36	94.9	1.13	1.80	18.80
13			160	7.05	97.0	1.70	0.00	21.10
13			200	3.55	98.4	2.45	0.00	22.80
14	3,432	3,439						
14			20	26.03	59.3	0.00	5.60	7.60
14			25	25.16	65.2	0.07	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	24.12	70.6	0.10	5.20	9.20
14			40	23.35	76.0	0.17	5.00	10.30
14			50	22.28	80.9	0.24	4.70	11.50
14			63	20.64	85.3	0.38	4.30	13.00
14			80	18.17	89.1	0.55	3.70	14.80
14			100	14.96	92.3	0.86	3.00	16.80
14			125	10.96	94.9	1.31	1.80	18.80
14			160	5.56	97.0	1.96	0.00	21.10
14			200	1.95	98.4	2.82	0.00	22.80
15	3,373	3,382						
15			20	26.17	59.3	0.00	5.60	7.60
15			25	25.30	65.2	0.07	5.40	8.30
15			32	24.27	70.6	0.10	5.20	9.20
15			40	23.50	76.0	0.17	5.00	10.30
15			50	22.43	80.9	0.24	4.70	11.50
15			63	20.80	85.3	0.37	4.30	13.00
15			80	18.33	89.1	0.54	3.70	14.80
15			100	15.12	92.3	0.85	3.00	16.80
15			125	11.13	94.9	1.29	1.80	18.80
15			160	5.74	97.0	1.93	0.00	21.10
15			200	2.14	98.4	2.77	0.00	22.80
16	3,832	3,838						
16			20	25.07	59.3	0.00	5.60	7.60
16			25	24.20	65.2	0.08	5.40	8.30
16			32	23.16	70.6	0.12	5.20	9.20
16			40	22.38	76.0	0.19	5.00	10.30
16			50	21.30	80.9	0.27	4.70	11.50
16			63	19.65	85.3	0.42	4.30	13.00
16			80	17.15	89.1	0.61	3.70	14.80
16			100	13.91	92.3	0.96	3.00	16.80
16			125	9.86	94.9	1.46	1.80	18.80
16			160	4.38	97.0	2.19	0.00	21.10
16			200	0.67	98.4	3.15	0.00	22.80
17	4,462	4,466						
17			20	23.76	59.3	0.00	5.60	7.60
17			25	22.87	65.2	0.09	5.40	8.30
17			32	21.82	70.6	0.13	5.20	9.20
17			40	21.03	76.0	0.22	5.00	10.30
17			50	19.94	80.9	0.31	4.70	11.50
17			63	18.26	85.3	0.49	4.30	13.00
17			80	15.74	89.1	0.71	3.70	14.80
17			100	12.44	92.3	1.12	3.00	16.80
17			125	8.30	94.9	1.70	1.80	18.80
17			160	2.71	97.0	2.55	0.00	21.10
17			200	-1.16	98.4	3.66	0.00	22.80
18	2,673	2,682						
18			20	28.19	59.3	0.00	5.60	7.60
18			25	27.33	65.2	0.05	5.40	8.30
18			32	26.30	70.6	0.08	5.20	9.20
18			40	25.55	76.0	0.13	5.00	10.30
18			50	24.49	80.9	0.19	4.70	11.50
18			63	22.89	85.3	0.30	4.30	13.00
18			80	20.45	89.1	0.43	3.70	14.80
18			100	17.31	92.3	0.67	3.00	16.80
18			125	13.41	94.9	1.02	1.80	18.80
18			160	8.15	97.0	1.53	0.00	21.10
18			200	4.73	98.4	2.20	0.00	22.80
19	3,065	3,075						
19			20	27.00	59.3	0.00	5.60	7.60
19			25	26.14	65.2	0.06	5.40	8.30
19			32	25.11	70.6	0.09	5.20	9.20
19			40	24.34	76.0	0.15	5.00	10.30
19			50	23.28	80.9	0.22	4.70	11.50
19			63	21.66	85.3	0.34	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	19.20	89.1	0.49	3.70	14.80
19			100	16.03	92.3	0.77	3.00	16.80
19			125	12.07	94.9	1.17	1.80	18.80
19			160	6.74	97.0	1.75	0.00	21.10
19			200	3.22	98.4	2.52	0.00	22.80
2	4,744	4,748						
2			20	23.22	59.3	0.00	5.60	7.60
2			25	22.33	65.2	0.09	5.40	8.30
2			32	21.28	70.6	0.14	5.20	9.20
2			40	20.49	76.0	0.24	5.00	10.30
2			50	19.39	80.9	0.33	4.70	11.50
2			63	17.70	85.3	0.52	4.30	13.00
2			80	15.16	89.1	0.76	3.70	14.80
2			100	11.83	92.3	1.19	3.00	16.80
2			125	7.67	94.9	1.80	1.80	18.80
2			160	2.01	97.0	2.71	0.00	21.10
2			200	-1.92	98.4	3.89	0.00	22.80
20	3,533	3,540						
20			20	25.77	59.3	0.00	5.60	7.60
20			25	24.90	65.2	0.07	5.40	8.30
20			32	23.87	70.6	0.11	5.20	9.20
20			40	23.10	76.0	0.18	5.00	10.30
20			50	22.02	80.9	0.25	4.70	11.50
20			63	20.38	85.3	0.39	4.30	13.00
20			80	17.90	89.1	0.57	3.70	14.80
20			100	14.69	92.3	0.89	3.00	16.80
20			125	10.67	94.9	1.35	1.80	18.80
20			160	5.25	97.0	2.02	0.00	21.10
20			200	1.62	98.4	2.90	0.00	22.80
21	4,169	4,174						
21			20	24.34	59.3	0.00	5.60	7.60
21			25	23.46	65.2	0.08	5.40	8.30
21			32	22.42	70.6	0.13	5.20	9.20
21			40	21.63	76.0	0.21	5.00	10.30
21			50	20.55	80.9	0.29	4.70	11.50
21			63	18.88	85.3	0.46	4.30	13.00
21			80	16.37	89.1	0.67	3.70	14.80
21			100	13.10	92.3	1.04	3.00	16.80
21			125	9.00	94.9	1.59	1.80	18.80
21			160	3.46	97.0	2.38	0.00	21.10
21			200	-0.33	98.4	3.42	0.00	22.80
22	4,828	4,834						
22			20	23.07	59.3	0.00	5.60	7.60
22			25	22.17	65.2	0.10	5.40	8.30
22			32	21.12	70.6	0.15	5.20	9.20
22			40	20.33	76.0	0.24	5.00	10.30
22			50	19.23	80.9	0.34	4.70	11.50
22			63	17.53	85.3	0.53	4.30	13.00
22			80	14.99	89.1	0.77	3.70	14.80
22			100	11.66	92.3	1.21	3.00	16.80
22			125	7.48	94.9	1.84	1.80	18.80
22			160	1.81	97.0	2.76	0.00	21.10
22			200	-2.15	98.4	3.96	0.00	22.80
23	5,280	5,284						
23			20	22.30	59.3	0.00	5.60	7.60
23			25	21.39	65.2	0.11	5.40	8.30
23			32	20.34	70.6	0.16	5.20	9.20
23			40	19.53	76.0	0.26	5.00	10.30
23			50	18.42	80.9	0.37	4.70	11.50
23			63	16.71	85.3	0.58	4.30	13.00
23			80	14.15	89.1	0.85	3.70	14.80
23			100	10.77	92.3	1.32	3.00	16.80
23			125	6.53	94.9	2.01	1.80	18.80
23			160	0.78	97.0	3.01	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-3.29	98.4	4.33	0.00	22.80
24	5,331	5,335						
24			20	22.21	59.3	0.00	5.60	7.60
24			25	21.31	65.2	0.11	5.40	8.30
24			32	20.25	70.6	0.16	5.20	9.20
24			40	19.45	76.0	0.27	5.00	10.30
24			50	18.34	80.9	0.37	4.70	11.50
24			63	16.62	85.3	0.59	4.30	13.00
24			80	14.06	89.1	0.85	3.70	14.80
24			100	10.68	92.3	1.33	3.00	16.80
24			125	6.43	94.9	2.03	1.80	18.80
24			160	0.67	97.0	3.04	0.00	21.10
24			200	-3.42	98.4	4.37	0.00	22.80
3	5,297	5,301						
3			20	22.27	59.3	0.00	5.60	7.60
3			25	21.36	65.2	0.11	5.40	8.30
3			32	20.31	70.6	0.16	5.20	9.20
3			40	19.50	76.0	0.27	5.00	10.30
3			50	18.39	80.9	0.37	4.70	11.50
3			63	16.68	85.3	0.58	4.30	13.00
3			80	14.12	89.1	0.85	3.70	14.80
3			100	10.74	92.3	1.33	3.00	16.80
3			125	6.50	94.9	2.01	1.80	18.80
3			160	0.74	97.0	3.02	0.00	21.10
3			200	-3.34	98.4	4.35	0.00	22.80
4	4,827	4,832						
4			20	23.07	59.3	0.00	5.60	7.60
4			25	22.18	65.2	0.10	5.40	8.30
4			32	21.13	70.6	0.14	5.20	9.20
4			40	20.33	76.0	0.24	5.00	10.30
4			50	19.23	80.9	0.34	4.70	11.50
4			63	17.54	85.3	0.53	4.30	13.00
4			80	15.00	89.1	0.77	3.70	14.80
4			100	11.66	92.3	1.21	3.00	16.80
4			125	7.48	94.9	1.84	1.80	18.80
4			160	1.82	97.0	2.75	0.00	21.10
4			200	-2.14	98.4	3.96	0.00	22.80
5	4,745	4,749						
5			20	23.22	59.3	0.00	5.60	7.60
5			25	22.33	65.2	0.09	5.40	8.30
5			32	21.28	70.6	0.14	5.20	9.20
5			40	20.48	76.0	0.24	5.00	10.30
5			50	19.39	80.9	0.33	4.70	11.50
5			63	17.70	85.3	0.52	4.30	13.00
5			80	15.16	89.1	0.76	3.70	14.80
5			100	11.83	92.3	1.19	3.00	16.80
5			125	7.66	94.9	1.80	1.80	18.80
5			160	2.01	97.0	2.71	0.00	21.10
5			200	-1.93	98.4	3.89	0.00	22.80
6	3,627	3,633						
6			20	25.55	59.3	0.00	5.60	7.60
6			25	24.68	65.2	0.07	5.40	8.30
6			32	23.64	70.6	0.11	5.20	9.20
6			40	22.87	76.0	0.18	5.00	10.30
6			50	21.79	80.9	0.25	4.70	11.50
6			63	20.15	85.3	0.40	4.30	13.00
6			80	17.66	89.1	0.58	3.70	14.80
6			100	14.44	92.3	0.91	3.00	16.80
6			125	10.41	94.9	1.38	1.80	18.80
6			160	4.98	97.0	2.07	0.00	21.10
6			200	1.32	98.4	2.98	0.00	22.80
7	3,760	3,766						
7			20	25.24	59.3	0.00	5.60	7.60
7			25	24.36	65.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			32	23.32	70.6	0.11	5.20	9.20
7			40	22.55	76.0	0.19	5.00	10.30
7			50	21.47	80.9	0.26	4.70	11.50
7			63	19.82	85.3	0.41	4.30	13.00
7			80	17.33	89.1	0.60	3.70	14.80
7			100	14.09	92.3	0.94	3.00	16.80
7			125	10.05	94.9	1.43	1.80	18.80
7			160	4.59	97.0	2.15	0.00	21.10
7			200	0.89	98.4	3.09	0.00	22.80
8	4,228	4,233						
8			20	24.22	59.3	0.00	5.60	7.60
8			25	23.34	65.2	0.08	5.40	8.30
8			32	22.30	70.6	0.13	5.20	9.20
8			40	21.51	76.0	0.21	5.00	10.30
8			50	20.42	80.9	0.30	4.70	11.50
8			63	18.75	85.3	0.47	4.30	13.00
8			80	16.24	89.1	0.68	3.70	14.80
8			100	12.96	92.3	1.06	3.00	16.80
8			125	8.86	94.9	1.61	1.80	18.80
8			160	3.31	97.0	2.41	0.00	21.10
8			200	-0.50	98.4	3.47	0.00	22.80
9	2,908	2,916						
9			20	27.46	59.3	0.00	5.60	7.60
9			25	26.60	65.2	0.06	5.40	8.30
9			32	25.57	70.6	0.09	5.20	9.20
9			40	24.81	76.0	0.15	5.00	10.30
9			50	23.75	80.9	0.20	4.70	11.50
9			63	22.14	85.3	0.32	4.30	13.00
9			80	19.69	89.1	0.47	3.70	14.80
9			100	16.53	92.3	0.73	3.00	16.80
9			125	12.60	94.9	1.11	1.80	18.80
9			160	7.29	97.0	1.66	0.00	21.10
9			200	3.81	98.4	2.39	0.00	22.80
Sum								
Sum			20	39.39				
Sum			25	38.52				
Sum			32	37.49				
Sum			40	36.72				
Sum			50	35.64				
Sum			63	34.00				
Sum			80	31.53				
Sum			100	28.32				
Sum			125	24.32				
Sum			160	18.92				
Sum			200	15.32				

Noise sensitive area: HH Rampsunniemi Noise sensitive point: Finnish normal frequency - User defined (302)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,382	6,386						
1			20	20.65	59.3	0.00	5.60	7.60
1			25	19.72	65.2	0.13	5.40	8.30
1			32	18.66	70.6	0.19	5.20	9.20
1			40	17.83	76.0	0.32	5.00	10.30
1			50	16.70	80.9	0.45	4.70	11.50
1			63	14.94	85.3	0.70	4.30	13.00
1			80	12.33	89.1	1.02	3.70	14.80
1			100	8.85	92.3	1.60	3.00	16.80
1			125	4.47	94.9	2.43	1.80	18.80
1			160	-1.49	97.0	3.64	0.00	21.10
1			200	-5.84	98.4	5.24	0.00	22.80
10	6,215	6,220						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			20	20.88	59.3	0.00	5.60	7.60
10			25	19.95	65.2	0.12	5.40	8.30
10			32	18.89	70.6	0.19	5.20	9.20
10			40	18.07	76.0	0.31	5.00	10.30
10			50	16.94	80.9	0.44	4.70	11.50
10			63	15.19	85.3	0.68	4.30	13.00
10			80	12.58	89.1	1.00	3.70	14.80
10			100	9.12	92.3	1.56	3.00	16.80
10			125	4.76	94.9	2.36	1.80	18.80
10			160	-1.17	97.0	3.55	0.00	21.10
10			200	-5.48	98.4	5.10	0.00	22.80
11	6,322	6,327						
11			20	20.73	59.3	0.00	5.60	7.60
11			25	19.80	65.2	0.13	5.40	8.30
11			32	18.74	70.6	0.19	5.20	9.20
11			40	17.92	76.0	0.32	5.00	10.30
11			50	16.79	80.9	0.44	4.70	11.50
11			63	15.03	85.3	0.70	4.30	13.00
11			80	12.42	89.1	1.01	3.70	14.80
11			100	8.95	92.3	1.58	3.00	16.80
11			125	4.57	94.9	2.40	1.80	18.80
11			160	-1.38	97.0	3.61	0.00	21.10
11			200	-5.71	98.4	5.19	0.00	22.80
12	5,915	5,920						
12			20	21.31	59.3	0.00	5.60	7.60
12			25	20.39	65.2	0.12	5.40	8.30
12			32	19.33	70.6	0.18	5.20	9.20
12			40	18.51	76.0	0.30	5.00	10.30
12			50	17.39	80.9	0.41	4.70	11.50
12			63	15.65	85.3	0.65	4.30	13.00
12			80	13.06	89.1	0.95	3.70	14.80
12			100	9.62	92.3	1.48	3.00	16.80
12			125	5.30	94.9	2.25	1.80	18.80
12			160	-0.57	97.0	3.37	0.00	21.10
12			200	-4.80	98.4	4.85	0.00	22.80
13	5,254	5,260						
13			20	22.33	59.3	0.00	5.60	7.60
13			25	21.43	65.2	0.11	5.40	8.30
13			32	20.38	70.6	0.16	5.20	9.20
13			40	19.57	76.0	0.26	5.00	10.30
13			50	18.46	80.9	0.37	4.70	11.50
13			63	16.75	85.3	0.58	4.30	13.00
13			80	14.19	89.1	0.84	3.70	14.80
13			100	10.82	92.3	1.32	3.00	16.80
13			125	6.58	94.9	2.00	1.80	18.80
13			160	0.83	97.0	3.00	0.00	21.10
13			200	-3.23	98.4	4.31	0.00	22.80
14	5,126	5,132						
14			20	22.55	59.3	0.00	5.60	7.60
14			25	21.65	65.2	0.10	5.40	8.30
14			32	20.59	70.6	0.15	5.20	9.20
14			40	19.79	76.0	0.26	5.00	10.30
14			50	18.69	80.9	0.36	4.70	11.50
14			63	16.98	85.3	0.56	4.30	13.00
14			80	14.42	89.1	0.82	3.70	14.80
14			100	11.06	92.3	1.28	3.00	16.80
14			125	6.84	94.9	1.95	1.80	18.80
14			160	1.12	97.0	2.93	0.00	21.10
14			200	-2.92	98.4	4.21	0.00	22.80
15	4,648	4,657						
15			20	23.39	59.3	0.00	5.60	7.60
15			25	22.50	65.2	0.09	5.40	8.30
15			32	21.45	70.6	0.14	5.20	9.20
15			40	20.66	76.0	0.23	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			50	19.56	80.9	0.33	4.70	11.50
15			63	17.88	85.3	0.51	4.30	13.00
15			80	15.35	89.1	0.75	3.70	14.80
15			100	12.03	92.3	1.16	3.00	16.80
15			125	7.87	94.9	1.77	1.80	18.80
15			160	2.24	97.0	2.65	0.00	21.10
15			200	-1.68	98.4	3.82	0.00	22.80
16	4,071	4,079						
16			20	24.54	59.3	0.00	5.60	7.60
16			25	23.66	65.2	0.08	5.40	8.30
16			32	22.62	70.6	0.12	5.20	9.20
16			40	21.84	76.0	0.20	5.00	10.30
16			50	20.76	80.9	0.29	4.70	11.50
16			63	19.09	85.3	0.45	4.30	13.00
16			80	16.59	89.1	0.65	3.70	14.80
16			100	13.32	92.3	1.02	3.00	16.80
16			125	9.24	94.9	1.55	1.80	18.80
16			160	3.72	97.0	2.32	0.00	21.10
16			200	-0.06	98.4	3.34	0.00	22.80
17	3,598	3,605						
17			20	25.62	59.3	0.00	5.60	7.60
17			25	24.74	65.2	0.07	5.40	8.30
17			32	23.71	70.6	0.11	5.20	9.20
17			40	22.94	76.0	0.18	5.00	10.30
17			50	21.86	80.9	0.25	4.70	11.50
17			63	20.22	85.3	0.40	4.30	13.00
17			80	17.74	89.1	0.58	3.70	14.80
17			100	14.51	92.3	0.90	3.00	16.80
17			125	10.49	94.9	1.37	1.80	18.80
17			160	5.06	97.0	2.06	0.00	21.10
17			200	1.40	98.4	2.96	0.00	22.80
18	5,199	5,205						
18			20	22.43	59.3	0.00	5.60	7.60
18			25	21.52	65.2	0.10	5.40	8.30
18			32	20.47	70.6	0.16	5.20	9.20
18			40	19.67	76.0	0.26	5.00	10.30
18			50	18.56	80.9	0.36	4.70	11.50
18			63	16.85	85.3	0.57	4.30	13.00
18			80	14.29	89.1	0.83	3.70	14.80
18			100	10.92	92.3	1.30	3.00	16.80
18			125	6.69	94.9	1.98	1.80	18.80
18			160	0.96	97.0	2.97	0.00	21.10
18			200	-3.10	98.4	4.27	0.00	22.80
19	4,692	4,700						
19			20	23.31	59.3	0.00	5.60	7.60
19			25	22.42	65.2	0.09	5.40	8.30
19			32	21.37	70.6	0.14	5.20	9.20
19			40	20.58	76.0	0.24	5.00	10.30
19			50	19.48	80.9	0.33	4.70	11.50
19			63	17.79	85.3	0.52	4.30	13.00
19			80	15.26	89.1	0.75	3.70	14.80
19			100	11.93	92.3	1.18	3.00	16.80
19			125	7.77	94.9	1.79	1.80	18.80
19			160	2.13	97.0	2.68	0.00	21.10
19			200	-1.80	98.4	3.85	0.00	22.80
2	6,293	6,297						
2			20	20.77	59.3	0.00	5.60	7.60
2			25	19.85	65.2	0.13	5.40	8.30
2			32	18.78	70.6	0.19	5.20	9.20
2			40	17.96	76.0	0.31	5.00	10.30
2			50	16.83	80.9	0.44	4.70	11.50
2			63	15.08	85.3	0.69	4.30	13.00
2			80	12.46	89.1	1.01	3.70	14.80
2			100	8.99	92.3	1.57	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			125	4.62	94.9	2.39	1.80	18.80
2			160	-1.32	97.0	3.59	0.00	21.10
2			200	-5.65	98.4	5.16	0.00	22.80
20	4,194	4,203						
20			20	24.28	59.3	0.00	5.60	7.60
20			25	23.40	65.2	0.08	5.40	8.30
20			32	22.36	70.6	0.13	5.20	9.20
20			40	21.57	76.0	0.21	5.00	10.30
20			50	20.49	80.9	0.29	4.70	11.50
20			63	18.82	85.3	0.46	4.30	13.00
20			80	16.31	89.1	0.67	3.70	14.80
20			100	13.03	92.3	1.05	3.00	16.80
20			125	8.93	94.9	1.60	1.80	18.80
20			160	3.39	97.0	2.40	0.00	21.10
20			200	-0.42	98.4	3.45	0.00	22.80
21	3,583	3,592						
21			20	25.65	59.3	0.00	5.60	7.60
21			25	24.78	65.2	0.07	5.40	8.30
21			32	23.74	70.6	0.11	5.20	9.20
21			40	22.97	76.0	0.18	5.00	10.30
21			50	21.89	80.9	0.25	4.70	11.50
21			63	20.25	85.3	0.40	4.30	13.00
21			80	17.77	89.1	0.57	3.70	14.80
21			100	14.55	92.3	0.90	3.00	16.80
21			125	10.53	94.9	1.37	1.80	18.80
21			160	5.10	97.0	2.05	0.00	21.10
21			200	1.45	98.4	2.95	0.00	22.80
22	2,962	2,974						
22			20	27.29	59.3	0.00	5.60	7.60
22			25	26.43	65.2	0.06	5.40	8.30
22			32	25.40	70.6	0.09	5.20	9.20
22			40	24.64	76.0	0.15	5.00	10.30
22			50	23.58	80.9	0.21	4.70	11.50
22			63	21.96	85.3	0.33	4.30	13.00
22			80	19.51	89.1	0.48	3.70	14.80
22			100	16.34	92.3	0.74	3.00	16.80
22			125	12.40	94.9	1.13	1.80	18.80
22			160	7.09	97.0	1.69	0.00	21.10
22			200	3.60	98.4	2.44	0.00	22.80
23	2,802	2,812						
23			20	27.77	59.3	0.00	5.60	7.60
23			25	26.92	65.2	0.06	5.40	8.30
23			32	25.89	70.6	0.08	5.20	9.20
23			40	25.13	76.0	0.14	5.00	10.30
23			50	24.07	80.9	0.20	4.70	11.50
23			63	22.46	85.3	0.31	4.30	13.00
23			80	20.02	89.1	0.45	3.70	14.80
23			100	16.87	92.3	0.70	3.00	16.80
23			125	12.95	94.9	1.07	1.80	18.80
23			160	7.67	97.0	1.60	0.00	21.10
23			200	4.21	98.4	2.31	0.00	22.80
24	2,438	2,449						
24			20	28.98	59.3	0.00	5.60	7.60
24			25	28.13	65.2	0.05	5.40	8.30
24			32	27.10	70.6	0.07	5.20	9.20
24			40	26.35	76.0	0.12	5.00	10.30
24			50	25.30	80.9	0.17	4.70	11.50
24			63	23.70	85.3	0.27	4.30	13.00
24			80	21.28	89.1	0.39	3.70	14.80
24			100	18.16	92.3	0.61	3.00	16.80
24			125	14.29	94.9	0.93	1.80	18.80
24			160	9.08	97.0	1.40	0.00	21.10
24			200	5.71	98.4	2.01	0.00	22.80
3	6,030	6,035						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			20	21.14	59.3	0.00	5.60	7.60
3			25	20.22	65.2	0.12	5.40	8.30
3			32	19.16	70.6	0.18	5.20	9.20
3			40	18.34	76.0	0.30	5.00	10.30
3			50	17.22	80.9	0.42	4.70	11.50
3			63	15.47	85.3	0.66	4.30	13.00
3			80	12.87	89.1	0.97	3.70	14.80
3			100	9.43	92.3	1.51	3.00	16.80
3			125	5.09	94.9	2.29	1.80	18.80
3			160	-0.80	97.0	3.44	0.00	21.10
3			200	-5.06	98.4	4.95	0.00	22.80
4	5,716	5,721						
4			20	21.61	59.3	0.00	5.60	7.60
4			25	20.69	65.2	0.11	5.40	8.30
4			32	19.63	70.6	0.17	5.20	9.20
4			40	18.82	76.0	0.29	5.00	10.30
4			50	17.70	80.9	0.40	4.70	11.50
4			63	15.97	85.3	0.63	4.30	13.00
4			80	13.39	89.1	0.92	3.70	14.80
4			100	9.97	92.3	1.43	3.00	16.80
4			125	5.68	94.9	2.17	1.80	18.80
4			160	-0.16	97.0	3.26	0.00	21.10
4			200	-4.34	98.4	4.69	0.00	22.80
5	5,179	5,184						
5			20	22.46	59.3	0.00	5.60	7.60
5			25	21.56	65.2	0.10	5.40	8.30
5			32	20.51	70.6	0.16	5.20	9.20
5			40	19.70	76.0	0.26	5.00	10.30
5			50	18.59	80.9	0.36	4.70	11.50
5			63	16.89	85.3	0.57	4.30	13.00
5			80	14.33	89.1	0.83	3.70	14.80
5			100	10.96	92.3	1.30	3.00	16.80
5			125	6.74	94.9	1.97	1.80	18.80
5			160	1.00	97.0	2.96	0.00	21.10
5			200	-3.05	98.4	4.25	0.00	22.80
6	6,582	6,586						
6			20	20.38	59.3	0.00	5.60	7.60
6			25	19.45	65.2	0.13	5.40	8.30
6			32	18.38	70.6	0.20	5.20	9.20
6			40	17.55	76.0	0.33	5.00	10.30
6			50	16.42	80.9	0.46	4.70	11.50
6			63	14.65	85.3	0.72	4.30	13.00
6			80	12.03	89.1	1.05	3.70	14.80
6			100	8.53	92.3	1.65	3.00	16.80
6			125	4.12	94.9	2.50	1.80	18.80
6			160	-1.88	97.0	3.75	0.00	21.10
6			200	-6.27	98.4	5.40	0.00	22.80
7	5,928	5,933						
7			20	21.29	59.3	0.00	5.60	7.60
7			25	20.37	65.2	0.12	5.40	8.30
7			32	19.31	70.6	0.18	5.20	9.20
7			40	18.49	76.0	0.30	5.00	10.30
7			50	17.37	80.9	0.42	4.70	11.50
7			63	15.63	85.3	0.65	4.30	13.00
7			80	13.04	89.1	0.95	3.70	14.80
7			100	9.60	92.3	1.48	3.00	16.80
7			125	5.28	94.9	2.25	1.80	18.80
7			160	-0.60	97.0	3.38	0.00	21.10
7			200	-4.83	98.4	4.86	0.00	22.80
8	5,519	5,524						
8			20	21.91	59.3	0.00	5.60	7.60
8			25	21.00	65.2	0.11	5.40	8.30
8			32	19.94	70.6	0.17	5.20	9.20
8			40	19.13	76.0	0.28	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	18.02	80.9	0.39	4.70	11.50
8			63	16.30	85.3	0.61	4.30	13.00
8			80	13.72	89.1	0.88	3.70	14.80
8			100	10.33	92.3	1.38	3.00	16.80
8			125	6.06	94.9	2.10	1.80	18.80
8			160	0.26	97.0	3.15	0.00	21.10
8			200	-3.87	98.4	4.53	0.00	22.80
9	6,821	6,825						
9			20	20.07	59.3	0.00	5.60	7.60
9			25	19.14	65.2	0.14	5.40	8.30
9			32	18.07	70.6	0.20	5.20	9.20
9			40	17.23	76.0	0.34	5.00	10.30
9			50	16.09	80.9	0.48	4.70	11.50
9			63	14.32	85.3	0.75	4.30	13.00
9			80	11.68	89.1	1.09	3.70	14.80
9			100	8.16	92.3	1.71	3.00	16.80
9			125	3.72	94.9	2.59	1.80	18.80
9			160	-2.32	97.0	3.89	0.00	21.10
9			200	-6.78	98.4	5.60	0.00	22.80
Sum								
Sum			20	37.58				
Sum			25	36.70				
Sum			32	35.66				
Sum			40	34.87				
Sum			50	33.78				
Sum			63	32.12				
Sum			80	29.61				
Sum			100	26.33				
Sum			125	22.25				
Sum			160	16.73				
Sum			200	12.99				

Noise sensitive area: HH Rantala 1 Noise sensitive point: Finnish normal frequency - User defined (288)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,704	1,718						
1			20	32.05	59.3	0.00	5.60	7.60
1			25	31.22	65.2	0.03	5.40	8.30
1			32	30.20	70.6	0.05	5.20	9.20
1			40	29.47	76.0	0.09	5.00	10.30
1			50	28.43	80.9	0.12	4.70	11.50
1			63	26.86	85.3	0.19	4.30	13.00
1			80	24.47	89.1	0.27	3.70	14.80
1			100	21.42	92.3	0.43	3.00	16.80
1			125	17.64	94.9	0.65	1.80	18.80
1			160	12.57	97.0	0.98	0.00	21.10
1			200	9.39	98.4	1.41	0.00	22.80
10	4,036	4,043						
10			20	24.62	59.3	0.00	5.60	7.60
10			25	23.74	65.2	0.08	5.40	8.30
10			32	22.70	70.6	0.12	5.20	9.20
10			40	21.92	76.0	0.20	5.00	10.30
10			50	20.84	80.9	0.28	4.70	11.50
10			63	19.17	85.3	0.44	4.30	13.00
10			80	16.67	89.1	0.65	3.70	14.80
10			100	13.41	92.3	1.01	3.00	16.80
10			125	9.33	94.9	1.54	1.80	18.80
10			160	3.81	97.0	2.30	0.00	21.10
10			200	0.05	98.4	3.32	0.00	22.80
11	4,610	4,615						
11			20	23.47	59.3	0.00	5.60	7.60
11			25	22.58	65.2	0.09	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			32	21.53	70.6	0.14	5.20	9.20
11			40	20.74	76.0	0.23	5.00	10.30
11			50	19.64	80.9	0.32	4.70	11.50
11			63	17.96	85.3	0.51	4.30	13.00
11			80	15.43	89.1	0.74	3.70	14.80
11			100	12.11	92.3	1.15	3.00	16.80
11			125	7.96	94.9	1.75	1.80	18.80
11			160	2.34	97.0	2.63	0.00	21.10
11			200	-1.57	98.4	3.78	0.00	22.80
12	4,755	4,760						
12			20	23.20	59.3	0.00	5.60	7.60
12			25	22.31	65.2	0.10	5.40	8.30
12			32	21.26	70.6	0.14	5.20	9.20
12			40	20.46	76.0	0.24	5.00	10.30
12			50	19.37	80.9	0.33	4.70	11.50
12			63	17.68	85.3	0.52	4.30	13.00
12			80	15.14	89.1	0.76	3.70	14.80
12			100	11.81	92.3	1.19	3.00	16.80
12			125	7.64	94.9	1.81	1.80	18.80
12			160	1.99	97.0	2.71	0.00	21.10
12			200	-1.96	98.4	3.90	0.00	22.80
13	4,383	4,391						
13			20	23.90	59.3	0.00	5.60	7.60
13			25	23.02	65.2	0.09	5.40	8.30
13			32	21.97	70.6	0.13	5.20	9.20
13			40	21.18	76.0	0.22	5.00	10.30
13			50	20.09	80.9	0.31	4.70	11.50
13			63	18.42	85.3	0.48	4.30	13.00
13			80	15.90	89.1	0.70	3.70	14.80
13			100	12.60	92.3	1.10	3.00	16.80
13			125	8.48	94.9	1.67	1.80	18.80
13			160	2.90	97.0	2.50	0.00	21.10
13			200	-0.95	98.4	3.60	0.00	22.80
14	3,875	3,883						
14			20	24.97	59.3	0.00	5.60	7.60
14			25	24.09	65.2	0.08	5.40	8.30
14			32	23.05	70.6	0.12	5.20	9.20
14			40	22.28	76.0	0.19	5.00	10.30
14			50	21.20	80.9	0.27	4.70	11.50
14			63	19.54	85.3	0.43	4.30	13.00
14			80	17.05	89.1	0.62	3.70	14.80
14			100	13.80	92.3	0.97	3.00	16.80
14			125	9.74	94.9	1.48	1.80	18.80
14			160	4.25	97.0	2.21	0.00	21.10
14			200	0.53	98.4	3.18	0.00	22.80
15	4,346	4,354						
15			20	23.98	59.3	0.00	5.60	7.60
15			25	23.09	65.2	0.09	5.40	8.30
15			32	22.05	70.6	0.13	5.20	9.20
15			40	21.26	76.0	0.22	5.00	10.30
15			50	20.17	80.9	0.30	4.70	11.50
15			63	18.49	85.3	0.48	4.30	13.00
15			80	15.98	89.1	0.70	3.70	14.80
15			100	12.68	92.3	1.09	3.00	16.80
15			125	8.57	94.9	1.65	1.80	18.80
15			160	2.99	97.0	2.48	0.00	21.10
15			200	-0.85	98.4	3.57	0.00	22.80
16	4,338	4,345						
16			20	24.00	59.3	0.00	5.60	7.60
16			25	23.11	65.2	0.09	5.40	8.30
16			32	22.07	70.6	0.13	5.20	9.20
16			40	21.28	76.0	0.22	5.00	10.30
16			50	20.19	80.9	0.30	4.70	11.50
16			63	18.51	85.3	0.48	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			80	16.00	89.1	0.70	3.70	14.80
16			100	12.71	92.3	1.09	3.00	16.80
16			125	8.59	94.9	1.65	1.80	18.80
16			160	3.02	97.0	2.48	0.00	21.10
16			200	-0.82	98.4	3.56	0.00	22.80
17	3,922	3,929						
17			20	24.87	59.3	0.00	5.60	7.60
17			25	23.99	65.2	0.08	5.40	8.30
17			32	22.95	70.6	0.12	5.20	9.20
17			40	22.17	76.0	0.20	5.00	10.30
17			50	21.09	80.9	0.27	4.70	11.50
17			63	19.43	85.3	0.43	4.30	13.00
17			80	16.94	89.1	0.63	3.70	14.80
17			100	13.68	92.3	0.98	3.00	16.80
17			125	9.62	94.9	1.49	1.80	18.80
17			160	4.13	97.0	2.24	0.00	21.10
17			200	0.39	98.4	3.22	0.00	22.80
18	4,926	4,932						
18			20	22.89	59.3	0.00	5.60	7.60
18			25	22.00	65.2	0.10	5.40	8.30
18			32	20.95	70.6	0.15	5.20	9.20
18			40	20.15	76.0	0.25	5.00	10.30
18			50	19.05	80.9	0.35	4.70	11.50
18			63	17.35	85.3	0.54	4.30	13.00
18			80	14.80	89.1	0.79	3.70	14.80
18			100	11.46	92.3	1.23	3.00	16.80
18			125	7.27	94.9	1.87	1.80	18.80
18			160	1.58	97.0	2.81	0.00	21.10
18			200	-2.41	98.4	4.04	0.00	22.80
19	4,955	4,963						
19			20	22.84	59.3	0.00	5.60	7.60
19			25	21.94	65.2	0.10	5.40	8.30
19			32	20.89	70.6	0.15	5.20	9.20
19			40	20.09	76.0	0.25	5.00	10.30
19			50	18.99	80.9	0.35	4.70	11.50
19			63	17.29	85.3	0.55	4.30	13.00
19			80	14.74	89.1	0.79	3.70	14.80
19			100	11.40	92.3	1.24	3.00	16.80
19			125	7.20	94.9	1.89	1.80	18.80
19			160	1.51	97.0	2.83	0.00	21.10
19			200	-2.48	98.4	4.07	0.00	22.80
2	2,604	2,614						
2			20	28.41	59.3	0.00	5.60	7.60
2			25	27.56	65.2	0.05	5.40	8.30
2			32	26.53	70.6	0.08	5.20	9.20
2			40	25.78	76.0	0.13	5.00	10.30
2			50	24.72	80.9	0.18	4.70	11.50
2			63	23.12	85.3	0.29	4.30	13.00
2			80	20.69	89.1	0.42	3.70	14.80
2			100	17.55	92.3	0.65	3.00	16.80
2			125	13.66	94.9	0.99	1.80	18.80
2			160	8.42	97.0	1.49	0.00	21.10
2			200	5.01	98.4	2.14	0.00	22.80
20	4,877	4,884						
20			20	22.98	59.3	0.00	5.60	7.60
20			25	22.08	65.2	0.10	5.40	8.30
20			32	21.03	70.6	0.15	5.20	9.20
20			40	20.24	76.0	0.24	5.00	10.30
20			50	19.13	80.9	0.34	4.70	11.50
20			63	17.44	85.3	0.54	4.30	13.00
20			80	14.89	89.1	0.78	3.70	14.80
20			100	11.56	92.3	1.22	3.00	16.80
20			125	7.37	94.9	1.86	1.80	18.80
20			160	1.69	97.0	2.78	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			200	-2.28	98.4	4.00	0.00	22.80
21	4,620	4,626						
21			20	23.45	59.3	0.00	5.60	7.60
21			25	22.56	65.2	0.09	5.40	8.30
21			32	21.51	70.6	0.14	5.20	9.20
21			40	20.72	76.0	0.23	5.00	10.30
21			50	19.62	80.9	0.32	4.70	11.50
21			63	17.94	85.3	0.51	4.30	13.00
21			80	15.41	89.1	0.74	3.70	14.80
21			100	12.09	92.3	1.16	3.00	16.80
21			125	7.94	94.9	1.76	1.80	18.80
21			160	2.31	97.0	2.64	0.00	21.10
21			200	-1.60	98.4	3.79	0.00	22.80
22	4,432	4,439						
22			20	23.81	59.3	0.00	5.60	7.60
22			25	22.92	65.2	0.09	5.40	8.30
22			32	21.88	70.6	0.13	5.20	9.20
22			40	21.09	76.0	0.22	5.00	10.30
22			50	20.00	80.9	0.31	4.70	11.50
22			63	18.32	85.3	0.49	4.30	13.00
22			80	15.80	89.1	0.71	3.70	14.80
22			100	12.50	92.3	1.11	3.00	16.80
22			125	8.37	94.9	1.69	1.80	18.80
22			160	2.78	97.0	2.53	0.00	21.10
22			200	-1.08	98.4	3.64	0.00	22.80
23	3,873	3,879						
23			20	24.98	59.3	0.00	5.60	7.60
23			25	24.10	65.2	0.08	5.40	8.30
23			32	23.06	70.6	0.12	5.20	9.20
23			40	22.29	76.0	0.19	5.00	10.30
23			50	21.21	80.9	0.27	4.70	11.50
23			63	19.55	85.3	0.43	4.30	13.00
23			80	17.06	89.1	0.62	3.70	14.80
23			100	13.81	92.3	0.97	3.00	16.80
23			125	9.75	94.9	1.47	1.80	18.80
23			160	4.27	97.0	2.21	0.00	21.10
23			200	0.54	98.4	3.18	0.00	22.80
24	4,523	4,528						
24			20	23.64	59.3	0.00	5.60	7.60
24			25	22.75	65.2	0.09	5.40	8.30
24			32	21.70	70.6	0.14	5.20	9.20
24			40	20.91	76.0	0.23	5.00	10.30
24			50	19.82	80.9	0.32	4.70	11.50
24			63	18.14	85.3	0.50	4.30	13.00
24			80	15.61	89.1	0.72	3.70	14.80
24			100	12.30	92.3	1.13	3.00	16.80
24			125	8.16	94.9	1.72	1.80	18.80
24			160	2.55	97.0	2.58	0.00	21.10
24			200	-1.33	98.4	3.71	0.00	22.80
3	1,974	1,988						
3			20	30.79	59.3	0.00	5.60	7.60
3			25	29.95	65.2	0.04	5.40	8.30
3			32	28.93	70.6	0.06	5.20	9.20
3			40	28.19	76.0	0.10	5.00	10.30
3			50	27.14	80.9	0.14	4.70	11.50
3			63	25.56	85.3	0.22	4.30	13.00
3			80	23.16	89.1	0.32	3.70	14.80
3			100	20.09	92.3	0.50	3.00	16.80
3			125	16.28	94.9	0.76	1.80	18.80
3			160	11.15	97.0	1.13	0.00	21.10
3			200	7.90	98.4	1.63	0.00	22.80
4	2,342	2,353						
4			20	29.32	59.3	0.00	5.60	7.60
4			25	28.47	65.2	0.05	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	27.45	70.6	0.07	5.20	9.20
4			40	26.70	76.0	0.12	5.00	10.30
4			50	25.65	80.9	0.16	4.70	11.50
4			63	24.06	85.3	0.26	4.30	13.00
4			80	21.64	89.1	0.38	3.70	14.80
4			100	18.53	92.3	0.59	3.00	16.80
4			125	14.67	94.9	0.89	1.80	18.80
4			160	9.48	97.0	1.34	0.00	21.10
4			200	6.14	98.4	1.93	0.00	22.80
5	2,435	2,446						
5			20	28.99	59.3	0.00	5.60	7.60
5			25	28.14	65.2	0.05	5.40	8.30
5			32	27.11	70.6	0.07	5.20	9.20
5			40	26.36	76.0	0.12	5.00	10.30
5			50	25.31	80.9	0.17	4.70	11.50
5			63	23.71	85.3	0.27	4.30	13.00
5			80	21.29	89.1	0.39	3.70	14.80
5			100	18.17	92.3	0.61	3.00	16.80
5			125	14.30	94.9	0.93	1.80	18.80
5			160	9.09	97.0	1.39	0.00	21.10
5			200	5.73	98.4	2.01	0.00	22.80
6	3,728	3,736						
6			20	25.31	59.3	0.00	5.60	7.60
6			25	24.43	65.2	0.07	5.40	8.30
6			32	23.40	70.6	0.11	5.20	9.20
6			40	22.62	76.0	0.19	5.00	10.30
6			50	21.54	80.9	0.26	4.70	11.50
6			63	19.89	85.3	0.41	4.30	13.00
6			80	17.41	89.1	0.60	3.70	14.80
6			100	14.17	92.3	0.93	3.00	16.80
6			125	10.13	94.9	1.42	1.80	18.80
6			160	4.67	97.0	2.13	0.00	21.10
6			200	0.99	98.4	3.06	0.00	22.80
7	3,407	3,415						
7			20	26.09	59.3	0.00	5.60	7.60
7			25	25.22	65.2	0.07	5.40	8.30
7			32	24.18	70.6	0.10	5.20	9.20
7			40	23.42	76.0	0.17	5.00	10.30
7			50	22.34	80.9	0.24	4.70	11.50
7			63	20.71	85.3	0.38	4.30	13.00
7			80	18.24	89.1	0.55	3.70	14.80
7			100	15.03	92.3	0.85	3.00	16.80
7			125	11.03	94.9	1.30	1.80	18.80
7			160	5.64	97.0	1.95	0.00	21.10
7			200	2.03	98.4	2.80	0.00	22.80
8	2,923	2,932						
8			20	27.41	59.3	0.00	5.60	7.60
8			25	26.55	65.2	0.06	5.40	8.30
8			32	25.52	70.6	0.09	5.20	9.20
8			40	24.76	76.0	0.15	5.00	10.30
8			50	23.70	80.9	0.21	4.70	11.50
8			63	22.08	85.3	0.32	4.30	13.00
8			80	19.64	89.1	0.47	3.70	14.80
8			100	16.47	92.3	0.73	3.00	16.80
8			125	12.54	94.9	1.11	1.80	18.80
8			160	7.24	97.0	1.67	0.00	21.10
8			200	3.75	98.4	2.40	0.00	22.80
9	4,451	4,457						
9			20	23.77	59.3	0.00	5.60	7.60
9			25	22.88	65.2	0.09	5.40	8.30
9			32	21.84	70.6	0.13	5.20	9.20
9			40	21.05	76.0	0.22	5.00	10.30
9			50	19.96	80.9	0.31	4.70	11.50
9			63	18.28	85.3	0.49	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	15.76	89.1	0.71	3.70	14.80
9			100	12.46	92.3	1.11	3.00	16.80
9			125	8.33	94.9	1.69	1.80	18.80
9			160	2.73	97.0	2.54	0.00	21.10
9			200	-1.14	98.4	3.65	0.00	22.80
Sum								
Sum			20	40.15				
Sum			25	39.29				
Sum			32	38.26				
Sum			40	37.50				
Sum			50	36.43				
Sum			63	34.81				
Sum			80	32.35				
Sum			100	29.18				
Sum			125	25.23				
Sum			160	19.92				
Sum			200	16.43				

Noise sensitive area: HH Suonpää 1 Noise sensitive point: Finnish normal frequency - User defined (286)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,916	4,921						
1			20	22.91	59.3	0.00	5.60	7.60
1			25	22.02	65.2	0.10	5.40	8.30
1			32	20.97	70.6	0.15	5.20	9.20
1			40	20.17	76.0	0.25	5.00	10.30
1			50	19.07	80.9	0.34	4.70	11.50
1			63	17.37	85.3	0.54	4.30	13.00
1			80	14.82	89.1	0.79	3.70	14.80
1			100	11.48	92.3	1.23	3.00	16.80
1			125	7.29	94.9	1.87	1.80	18.80
1			160	1.61	97.0	2.80	0.00	21.10
1			200	-2.38	98.4	4.03	0.00	22.80
10	2,769	2,777						
10			20	27.88	59.3	0.00	5.60	7.60
10			25	27.03	65.2	0.06	5.40	8.30
10			32	26.00	70.6	0.08	5.20	9.20
10			40	25.24	76.0	0.14	5.00	10.30
10			50	24.18	80.9	0.19	4.70	11.50
10			63	22.57	85.3	0.31	4.30	13.00
10			80	20.13	89.1	0.44	3.70	14.80
10			100	16.98	92.3	0.69	3.00	16.80
10			125	13.07	94.9	1.06	1.80	18.80
10			160	7.80	97.0	1.58	0.00	21.10
10			200	4.35	98.4	2.28	0.00	22.80
11	2,440	2,450						
11			20	28.97	59.3	0.00	5.60	7.60
11			25	28.12	65.2	0.05	5.40	8.30
11			32	27.10	70.6	0.07	5.20	9.20
11			40	26.35	76.0	0.12	5.00	10.30
11			50	25.30	80.9	0.17	4.70	11.50
11			63	23.70	85.3	0.27	4.30	13.00
11			80	21.28	89.1	0.39	3.70	14.80
11			100	18.16	92.3	0.61	3.00	16.80
11			125	14.29	94.9	0.93	1.80	18.80
11			160	9.07	97.0	1.40	0.00	21.10
11			200	5.71	98.4	2.01	0.00	22.80
12	2,792	2,800						
12			20	27.81	59.3	0.00	5.60	7.60
12			25	26.96	65.2	0.06	5.40	8.30
12			32	25.93	70.6	0.08	5.20	9.20
12			40	25.17	76.0	0.14	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	24.11	80.9	0.20	4.70	11.50
12			63	22.50	85.3	0.31	4.30	13.00
12			80	20.06	89.1	0.45	3.70	14.80
12			100	16.91	92.3	0.70	3.00	16.80
12			125	12.99	94.9	1.06	1.80	18.80
12			160	7.71	97.0	1.60	0.00	21.10
12			200	4.26	98.4	2.30	0.00	22.80
13	3,459	3,468						
13			20	25.95	59.3	0.00	5.60	7.60
13			25	25.08	65.2	0.07	5.40	8.30
13			32	24.05	70.6	0.10	5.20	9.20
13			40	23.28	76.0	0.17	5.00	10.30
13			50	22.21	80.9	0.24	4.70	11.50
13			63	20.57	85.3	0.38	4.30	13.00
13			80	18.10	89.1	0.55	3.70	14.80
13			100	14.88	92.3	0.87	3.00	16.80
13			125	10.88	94.9	1.32	1.80	18.80
13			160	5.47	97.0	1.98	0.00	21.10
13			200	1.86	98.4	2.84	0.00	22.80
14	3,678	3,686						
14			20	25.42	59.3	0.00	5.60	7.60
14			25	24.55	65.2	0.07	5.40	8.30
14			32	23.51	70.6	0.11	5.20	9.20
14			40	22.74	76.0	0.18	5.00	10.30
14			50	21.66	80.9	0.26	4.70	11.50
14			63	20.01	85.3	0.41	4.30	13.00
14			80	17.53	89.1	0.59	3.70	14.80
14			100	14.30	92.3	0.92	3.00	16.80
14			125	10.27	94.9	1.40	1.80	18.80
14			160	4.82	97.0	2.10	0.00	21.10
14			200	1.15	98.4	3.02	0.00	22.80
15	4,059	4,067						
15			20	24.57	59.3	0.00	5.60	7.60
15			25	23.69	65.2	0.08	5.40	8.30
15			32	22.65	70.6	0.12	5.20	9.20
15			40	21.87	76.0	0.20	5.00	10.30
15			50	20.78	80.9	0.28	4.70	11.50
15			63	19.12	85.3	0.45	4.30	13.00
15			80	16.61	89.1	0.65	3.70	14.80
15			100	13.35	92.3	1.02	3.00	16.80
15			125	9.27	94.9	1.55	1.80	18.80
15			160	3.75	97.0	2.32	0.00	21.10
15			200	-0.02	98.4	3.34	0.00	22.80
16	4,636	4,642						
16			20	23.42	59.3	0.00	5.60	7.60
16			25	22.53	65.2	0.09	5.40	8.30
16			32	21.48	70.6	0.14	5.20	9.20
16			40	20.69	76.0	0.23	5.00	10.30
16			50	19.59	80.9	0.32	4.70	11.50
16			63	17.91	85.3	0.51	4.30	13.00
16			80	15.38	89.1	0.74	3.70	14.80
16			100	12.06	92.3	1.16	3.00	16.80
16			125	7.90	94.9	1.76	1.80	18.80
16			160	2.27	97.0	2.65	0.00	21.10
16			200	-1.64	98.4	3.81	0.00	22.80
17	5,142	5,147						
17			20	22.52	59.3	0.00	5.60	7.60
17			25	21.62	65.2	0.10	5.40	8.30
17			32	20.57	70.6	0.15	5.20	9.20
17			40	19.77	76.0	0.26	5.00	10.30
17			50	18.66	80.9	0.36	4.70	11.50
17			63	16.96	85.3	0.57	4.30	13.00
17			80	14.40	89.1	0.82	3.70	14.80
17			100	11.03	92.3	1.29	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	6.81	94.9	1.96	1.80	18.80
17			160	1.09	97.0	2.93	0.00	21.10
17			200	-2.95	98.4	4.22	0.00	22.80
18	3,552	3,559						
18			20	25.73	59.3	0.00	5.60	7.60
18			25	24.86	65.2	0.07	5.40	8.30
18			32	23.82	70.6	0.11	5.20	9.20
18			40	23.05	76.0	0.18	5.00	10.30
18			50	21.98	80.9	0.25	4.70	11.50
18			63	20.33	85.3	0.39	4.30	13.00
18			80	17.86	89.1	0.57	3.70	14.80
18			100	14.64	92.3	0.89	3.00	16.80
18			125	10.62	94.9	1.35	1.80	18.80
18			160	5.20	97.0	2.03	0.00	21.10
18			200	1.56	98.4	2.92	0.00	22.80
19	4,093	4,101						
19			20	24.50	59.3	0.00	5.60	7.60
19			25	23.61	65.2	0.08	5.40	8.30
19			32	22.57	70.6	0.12	5.20	9.20
19			40	21.79	76.0	0.21	5.00	10.30
19			50	20.71	80.9	0.29	4.70	11.50
19			63	19.04	85.3	0.45	4.30	13.00
19			80	16.54	89.1	0.66	3.70	14.80
19			100	13.27	92.3	1.03	3.00	16.80
19			125	9.18	94.9	1.56	1.80	18.80
19			160	3.66	97.0	2.34	0.00	21.10
19			200	-0.12	98.4	3.36	0.00	22.80
2	3,936	3,942						
2			20	24.84	59.3	0.00	5.60	7.60
2			25	23.96	65.2	0.08	5.40	8.30
2			32	22.92	70.6	0.12	5.20	9.20
2			40	22.14	76.0	0.20	5.00	10.30
2			50	21.06	80.9	0.28	4.70	11.50
2			63	19.40	85.3	0.43	4.30	13.00
2			80	16.91	89.1	0.63	3.70	14.80
2			100	13.65	92.3	0.99	3.00	16.80
2			125	9.59	94.9	1.50	1.80	18.80
2			160	4.09	97.0	2.25	0.00	21.10
2			200	0.35	98.4	3.23	0.00	22.80
20	4,587	4,593						
20			20	23.51	59.3	0.00	5.60	7.60
20			25	22.62	65.2	0.09	5.40	8.30
20			32	21.57	70.6	0.14	5.20	9.20
20			40	20.78	76.0	0.23	5.00	10.30
20			50	19.69	80.9	0.32	4.70	11.50
20			63	18.00	85.3	0.51	4.30	13.00
20			80	15.47	89.1	0.73	3.70	14.80
20			100	12.16	92.3	1.15	3.00	16.80
20			125	8.01	94.9	1.75	1.80	18.80
20			160	2.39	97.0	2.62	0.00	21.10
20			200	-1.51	98.4	3.77	0.00	22.80
21	5,148	5,153						
21			20	22.51	59.3	0.00	5.60	7.60
21			25	21.61	65.2	0.10	5.40	8.30
21			32	20.56	70.6	0.15	5.20	9.20
21			40	19.76	76.0	0.26	5.00	10.30
21			50	18.65	80.9	0.36	4.70	11.50
21			63	16.94	85.3	0.57	4.30	13.00
21			80	14.39	89.1	0.82	3.70	14.80
21			100	11.02	92.3	1.29	3.00	16.80
21			125	6.80	94.9	1.96	1.80	18.80
21			160	1.07	97.0	2.94	0.00	21.10
21			200	-2.97	98.4	4.23	0.00	22.80
22	5,745	5,750						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	21.56	59.3	0.00	5.60	7.60
22			25	20.65	65.2	0.12	5.40	8.30
22			32	19.59	70.6	0.17	5.20	9.20
22			40	18.77	76.0	0.29	5.00	10.30
22			50	17.66	80.9	0.40	4.70	11.50
22			63	15.93	85.3	0.63	4.30	13.00
22			80	13.34	89.1	0.92	3.70	14.80
22			100	9.92	92.3	1.44	3.00	16.80
22			125	5.62	94.9	2.19	1.80	18.80
22			160	-0.22	97.0	3.28	0.00	21.10
22			200	-4.41	98.4	4.72	0.00	22.80
23	5,986	5,990						
23			20	21.21	59.3	0.00	5.60	7.60
23			25	20.29	65.2	0.12	5.40	8.30
23			32	19.23	70.6	0.18	5.20	9.20
23			40	18.41	76.0	0.30	5.00	10.30
23			50	17.28	80.9	0.42	4.70	11.50
23			63	15.54	85.3	0.66	4.30	13.00
23			80	12.95	89.1	0.96	3.70	14.80
23			100	9.51	92.3	1.50	3.00	16.80
23			125	5.18	94.9	2.28	1.80	18.80
23			160	-0.71	97.0	3.41	0.00	21.10
23			200	-4.96	98.4	4.91	0.00	22.80
24	6,269	6,273						
24			20	20.81	59.3	0.00	5.60	7.60
24			25	19.88	65.2	0.13	5.40	8.30
24			32	18.82	70.6	0.19	5.20	9.20
24			40	17.99	76.0	0.31	5.00	10.30
24			50	16.86	80.9	0.44	4.70	11.50
24			63	15.11	85.3	0.69	4.30	13.00
24			80	12.50	89.1	1.00	3.70	14.80
24			100	9.03	92.3	1.57	3.00	16.80
24			125	4.67	94.9	2.38	1.80	18.80
24			160	-1.27	97.0	3.58	0.00	21.10
24			200	-5.59	98.4	5.14	0.00	22.80
3	4,566	4,571						
3			20	23.55	59.3	0.00	5.60	7.60
3			25	22.66	65.2	0.09	5.40	8.30
3			32	21.62	70.6	0.14	5.20	9.20
3			40	20.83	76.0	0.23	5.00	10.30
3			50	19.73	80.9	0.32	4.70	11.50
3			63	18.05	85.3	0.50	4.30	13.00
3			80	15.52	89.1	0.73	3.70	14.80
3			100	12.21	92.3	1.14	3.00	16.80
3			125	8.06	94.9	1.74	1.80	18.80
3			160	2.45	97.0	2.61	0.00	21.10
3			200	-1.45	98.4	3.75	0.00	22.80
4	4,278	4,283						
4			20	24.12	59.3	0.00	5.60	7.60
4			25	23.23	65.2	0.09	5.40	8.30
4			32	22.19	70.6	0.13	5.20	9.20
4			40	21.41	76.0	0.21	5.00	10.30
4			50	20.32	80.9	0.30	4.70	11.50
4			63	18.64	85.3	0.47	4.30	13.00
4			80	16.13	89.1	0.69	3.70	14.80
4			100	12.85	92.3	1.07	3.00	16.80
4			125	8.74	94.9	1.63	1.80	18.80
4			160	3.17	97.0	2.44	0.00	21.10
4			200	-0.65	98.4	3.51	0.00	22.80
5	4,461	4,466						
5			20	23.76	59.3	0.00	5.60	7.60
5			25	22.87	65.2	0.09	5.40	8.30
5			32	21.82	70.6	0.13	5.20	9.20
5			40	21.03	76.0	0.22	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			50	19.94	80.9	0.31	4.70	11.50
5			63	18.26	85.3	0.49	4.30	13.00
5			80	15.74	89.1	0.71	3.70	14.80
5			100	12.44	92.3	1.12	3.00	16.80
5			125	8.30	94.9	1.70	1.80	18.80
5			160	2.71	97.0	2.55	0.00	21.10
5			200	-1.16	98.4	3.66	0.00	22.80
6	2,840	2,848						
6			20	27.66	59.3	0.00	5.60	7.60
6			25	26.81	65.2	0.06	5.40	8.30
6			32	25.78	70.6	0.09	5.20	9.20
6			40	25.02	76.0	0.14	5.00	10.30
6			50	23.96	80.9	0.20	4.70	11.50
6			63	22.35	85.3	0.31	4.30	13.00
6			80	19.90	89.1	0.46	3.70	14.80
6			100	16.75	92.3	0.71	3.00	16.80
6			125	12.83	94.9	1.08	1.80	18.80
6			160	7.54	97.0	1.62	0.00	21.10
6			200	4.07	98.4	2.34	0.00	22.80
7	3,332	3,339						
7			20	26.28	59.3	0.00	5.60	7.60
7			25	25.42	65.2	0.07	5.40	8.30
7			32	24.38	70.6	0.10	5.20	9.20
7			40	23.61	76.0	0.17	5.00	10.30
7			50	22.54	80.9	0.23	4.70	11.50
7			63	20.91	85.3	0.37	4.30	13.00
7			80	18.44	89.1	0.53	3.70	14.80
7			100	15.24	92.3	0.83	3.00	16.80
7			125	11.26	94.9	1.27	1.80	18.80
7			160	5.88	97.0	1.90	0.00	21.10
7			200	2.29	98.4	2.74	0.00	22.80
8	3,895	3,901						
8			20	24.93	59.3	0.00	5.60	7.60
8			25	24.05	65.2	0.08	5.40	8.30
8			32	23.01	70.6	0.12	5.20	9.20
8			40	22.24	76.0	0.20	5.00	10.30
8			50	21.16	80.9	0.27	4.70	11.50
8			63	19.50	85.3	0.43	4.30	13.00
8			80	17.00	89.1	0.62	3.70	14.80
8			100	13.75	92.3	0.98	3.00	16.80
8			125	9.69	94.9	1.48	1.80	18.80
8			160	4.20	97.0	2.22	0.00	21.10
8			200	0.48	98.4	3.20	0.00	22.80
9	2,190	2,201						
9			20	29.90	59.3	0.00	5.60	7.60
9			25	29.06	65.2	0.04	5.40	8.30
9			32	28.04	70.6	0.07	5.20	9.20
9			40	27.29	76.0	0.11	5.00	10.30
9			50	26.25	80.9	0.15	4.70	11.50
9			63	24.66	85.3	0.24	4.30	13.00
9			80	22.25	89.1	0.35	3.70	14.80
9			100	19.15	92.3	0.55	3.00	16.80
9			125	15.31	94.9	0.84	1.80	18.80
9			160	10.15	97.0	1.25	0.00	21.10
9			200	6.84	98.4	1.80	0.00	22.80
Sum								
Sum			20	39.25				
Sum			25	38.38				
Sum			32	37.34				
Sum			40	36.57				
Sum			50	35.50				
Sum			63	33.86				
Sum			80	31.38				
Sum			100	28.17				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			125	24.17				
Sum			160	18.77				
Sum			200	15.17				

Noise sensitive area: HH Viitajärvi 3 Noise sensitive point: Finnish normal frequency - User defined (306)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,269	6,272						
1			20	20.81	59.3	0.00	5.60	7.60
1			25	19.88	65.2	0.13	5.40	8.30
1			32	18.82	70.6	0.19	5.20	9.20
1			40	17.99	76.0	0.31	5.00	10.30
1			50	16.86	80.9	0.44	4.70	11.50
1			63	15.11	85.3	0.69	4.30	13.00
1			80	12.50	89.1	1.00	3.70	14.80
1			100	9.04	92.3	1.57	3.00	16.80
1			125	4.67	94.9	2.38	1.80	18.80
1			160	-1.27	97.0	3.58	0.00	21.10
1			200	-5.59	98.4	5.14	0.00	22.80
10	4,668	4,672						
10			20	23.36	59.3	0.00	5.60	7.60
10			25	22.47	65.2	0.09	5.40	8.30
10			32	21.42	70.6	0.14	5.20	9.20
10			40	20.63	76.0	0.23	5.00	10.30
10			50	19.53	80.9	0.33	4.70	11.50
10			63	17.85	85.3	0.51	4.30	13.00
10			80	15.31	89.1	0.75	3.70	14.80
10			100	11.99	92.3	1.17	3.00	16.80
10			125	7.83	94.9	1.78	1.80	18.80
10			160	2.20	97.0	2.66	0.00	21.10
10			200	-1.72	98.4	3.83	0.00	22.80
11	4,438	4,442						
11			20	23.80	59.3	0.00	5.60	7.60
11			25	22.91	65.2	0.09	5.40	8.30
11			32	21.87	70.6	0.13	5.20	9.20
11			40	21.08	76.0	0.22	5.00	10.30
11			50	19.99	80.9	0.31	4.70	11.50
11			63	18.31	85.3	0.49	4.30	13.00
11			80	15.79	89.1	0.71	3.70	14.80
11			100	12.49	92.3	1.11	3.00	16.80
11			125	8.36	94.9	1.69	1.80	18.80
11			160	2.77	97.0	2.53	0.00	21.10
11			200	-1.09	98.4	3.64	0.00	22.80
12	3,890	3,895						
12			20	24.94	59.3	0.00	5.60	7.60
12			25	24.07	65.2	0.08	5.40	8.30
12			32	23.03	70.6	0.12	5.20	9.20
12			40	22.25	76.0	0.19	5.00	10.30
12			50	21.17	80.9	0.27	4.70	11.50
12			63	19.51	85.3	0.43	4.30	13.00
12			80	17.02	89.1	0.62	3.70	14.80
12			100	13.77	92.3	0.97	3.00	16.80
12			125	9.71	94.9	1.48	1.80	18.80
12			160	4.22	97.0	2.22	0.00	21.10
12			200	0.50	98.4	3.19	0.00	22.80
13	3,443	3,450						
13			20	26.00	59.3	0.00	5.60	7.60
13			25	25.13	65.2	0.07	5.40	8.30
13			32	24.10	70.6	0.10	5.20	9.20
13			40	23.33	76.0	0.17	5.00	10.30
13			50	22.25	80.9	0.24	4.70	11.50
13			63	20.62	85.3	0.38	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			80	18.14	89.1	0.55	3.70	14.80
13			100	14.93	92.3	0.86	3.00	16.80
13			125	10.93	94.9	1.31	1.80	18.80
13			160	5.53	97.0	1.97	0.00	21.10
13			200	1.92	98.4	2.83	0.00	22.80
14	3,675	3,681						
14			20	25.44	59.3	0.00	5.60	7.60
14			25	24.56	65.2	0.07	5.40	8.30
14			32	23.53	70.6	0.11	5.20	9.20
14			40	22.75	76.0	0.18	5.00	10.30
14			50	21.68	80.9	0.26	4.70	11.50
14			63	20.03	85.3	0.40	4.30	13.00
14			80	17.54	89.1	0.59	3.70	14.80
14			100	14.31	92.3	0.92	3.00	16.80
14			125	10.28	94.9	1.40	1.80	18.80
14			160	4.83	97.0	2.10	0.00	21.10
14			200	1.16	98.4	3.02	0.00	22.80
15	2,927	2,936						
15			20	27.40	59.3	0.00	5.60	7.60
15			25	26.54	65.2	0.06	5.40	8.30
15			32	25.51	70.6	0.09	5.20	9.20
15			40	24.75	76.0	0.15	5.00	10.30
15			50	23.69	80.9	0.21	4.70	11.50
15			63	22.07	85.3	0.32	4.30	13.00
15			80	19.63	89.1	0.47	3.70	14.80
15			100	16.46	92.3	0.73	3.00	16.80
15			125	12.53	94.9	1.12	1.80	18.80
15			160	7.22	97.0	1.67	0.00	21.10
15			200	3.74	98.4	2.41	0.00	22.80
16	2,521	2,529						
16			20	28.70	59.3	0.00	5.60	7.60
16			25	27.85	65.2	0.05	5.40	8.30
16			32	26.82	70.6	0.08	5.20	9.20
16			40	26.07	76.0	0.13	5.00	10.30
16			50	25.02	80.9	0.18	4.70	11.50
16			63	23.41	85.3	0.28	4.30	13.00
16			80	20.99	89.1	0.40	3.70	14.80
16			100	17.86	92.3	0.63	3.00	16.80
16			125	13.98	94.9	0.96	1.80	18.80
16			160	8.75	97.0	1.44	0.00	21.10
16			200	5.37	98.4	2.07	0.00	22.80
17	2,677	2,684						
17			20	28.18	59.3	0.00	5.60	7.60
17			25	27.33	65.2	0.05	5.40	8.30
17			32	26.30	70.6	0.08	5.20	9.20
17			40	25.55	76.0	0.13	5.00	10.30
17			50	24.49	80.9	0.19	4.70	11.50
17			63	22.88	85.3	0.30	4.30	13.00
17			80	20.45	89.1	0.43	3.70	14.80
17			100	17.31	92.3	0.67	3.00	16.80
17			125	13.41	94.9	1.02	1.80	18.80
17			160	8.15	97.0	1.53	0.00	21.10
17			200	4.72	98.4	2.20	0.00	22.80
18	3,016	3,022						
18			20	27.15	59.3	0.00	5.60	7.60
18			25	26.29	65.2	0.06	5.40	8.30
18			32	25.26	70.6	0.09	5.20	9.20
18			40	24.50	76.0	0.15	5.00	10.30
18			50	23.43	80.9	0.21	4.70	11.50
18			63	21.81	85.3	0.33	4.30	13.00
18			80	19.36	89.1	0.48	3.70	14.80
18			100	16.19	92.3	0.76	3.00	16.80
18			125	12.24	94.9	1.15	1.80	18.80
18			160	6.92	97.0	1.72	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			200	3.41	98.4	2.48	0.00	22.80
19	2,502	2,512						
19			20	28.75	59.3	0.00	5.60	7.60
19			25	27.90	65.2	0.05	5.40	8.30
19			32	26.88	70.6	0.08	5.20	9.20
19			40	26.13	76.0	0.13	5.00	10.30
19			50	25.08	80.9	0.18	4.70	11.50
19			63	23.48	85.3	0.28	4.30	13.00
19			80	21.05	89.1	0.40	3.70	14.80
19			100	17.92	92.3	0.63	3.00	16.80
19			125	14.05	94.9	0.95	1.80	18.80
19			160	8.82	97.0	1.43	0.00	21.10
19			200	5.44	98.4	2.06	0.00	22.80
2	5,627	5,630						
2			20	21.74	59.3	0.00	5.60	7.60
2			25	20.83	65.2	0.11	5.40	8.30
2			32	19.78	70.6	0.17	5.20	9.20
2			40	18.96	76.0	0.28	5.00	10.30
2			50	17.85	80.9	0.39	4.70	11.50
2			63	16.12	85.3	0.62	4.30	13.00
2			80	13.54	89.1	0.90	3.70	14.80
2			100	10.13	92.3	1.41	3.00	16.80
2			125	5.85	94.9	2.14	1.80	18.80
2			160	0.03	97.0	3.21	0.00	21.10
2			200	-4.13	98.4	4.62	0.00	22.80
20	2,147	2,157						
20			20	30.08	59.3	0.00	5.60	7.60
20			25	29.23	65.2	0.04	5.40	8.30
20			32	28.21	70.6	0.06	5.20	9.20
20			40	27.47	76.0	0.11	5.00	10.30
20			50	26.42	80.9	0.15	4.70	11.50
20			63	24.84	85.3	0.24	4.30	13.00
20			80	22.43	89.1	0.35	3.70	14.80
20			100	19.33	92.3	0.54	3.00	16.80
20			125	15.50	94.9	0.82	1.80	18.80
20			160	10.34	97.0	1.23	0.00	21.10
20			200	7.05	98.4	1.77	0.00	22.80
21	2,025	2,035						
21			20	30.58	59.3	0.00	5.60	7.60
21			25	29.74	65.2	0.04	5.40	8.30
21			32	28.72	70.6	0.06	5.20	9.20
21			40	27.98	76.0	0.10	5.00	10.30
21			50	26.94	80.9	0.14	4.70	11.50
21			63	25.36	85.3	0.22	4.30	13.00
21			80	22.95	89.1	0.33	3.70	14.80
21			100	19.87	92.3	0.51	3.00	16.80
21			125	16.06	94.9	0.77	1.80	18.80
21			160	10.92	97.0	1.16	0.00	21.10
21			200	7.66	98.4	1.67	0.00	22.80
22	2,108	2,118						
22			20	30.24	59.3	0.00	5.60	7.60
22			25	29.39	65.2	0.04	5.40	8.30
22			32	28.37	70.6	0.06	5.20	9.20
22			40	27.63	76.0	0.11	5.00	10.30
22			50	26.58	80.9	0.15	4.70	11.50
22			63	25.00	85.3	0.23	4.30	13.00
22			80	22.59	89.1	0.34	3.70	14.80
22			100	19.50	92.3	0.53	3.00	16.80
22			125	15.68	94.9	0.80	1.80	18.80
22			160	10.53	97.0	1.21	0.00	21.10
22			200	7.24	98.4	1.74	0.00	22.80
23	2,715	2,721						
23			20	28.06	59.3	0.00	5.60	7.60
23			25	27.20	65.2	0.05	5.40	8.30

To be continued on next page...

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wpd AG
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			32	26.18	70.6	0.08	5.20	9.20
23			40	25.42	76.0	0.14	5.00	10.30
23			50	24.37	80.9	0.19	4.70	11.50
23			63	22.76	85.3	0.30	4.30	13.00
23			80	20.32	89.1	0.44	3.70	14.80
23			100	17.18	92.3	0.68	3.00	16.80
23			125	13.27	94.9	1.03	1.80	18.80
23			160	8.00	97.0	1.55	0.00	21.10
23			200	4.57	98.4	2.23	0.00	22.80
24	2,145	2,153						
24			20	30.09	59.3	0.00	5.60	7.60
24			25	29.25	65.2	0.04	5.40	8.30
24			32	28.23	70.6	0.06	5.20	9.20
24			40	27.49	76.0	0.11	5.00	10.30
24			50	26.44	80.9	0.15	4.70	11.50
24			63	24.85	85.3	0.24	4.30	13.00
24			80	22.45	89.1	0.34	3.70	14.80
24			100	19.35	92.3	0.54	3.00	16.80
24			125	15.52	94.9	0.82	1.80	18.80
24			160	10.36	97.0	1.23	0.00	21.10
24			200	7.07	98.4	1.77	0.00	22.80
3	5,726	5,730						
3			20	21.59	59.3	0.00	5.60	7.60
3			25	20.68	65.2	0.11	5.40	8.30
3			32	19.62	70.6	0.17	5.20	9.20
3			40	18.81	76.0	0.29	5.00	10.30
3			50	17.69	80.9	0.40	4.70	11.50
3			63	15.96	85.3	0.63	4.30	13.00
3			80	13.37	89.1	0.92	3.70	14.80
3			100	9.96	92.3	1.43	3.00	16.80
3			125	5.66	94.9	2.18	1.80	18.80
3			160	-0.18	97.0	3.27	0.00	21.10
3			200	-4.36	98.4	4.70	0.00	22.80
4	5,201	5,205						
4			20	22.43	59.3	0.00	5.60	7.60
4			25	21.52	65.2	0.10	5.40	8.30
4			32	20.47	70.6	0.16	5.20	9.20
4			40	19.67	76.0	0.26	5.00	10.30
4			50	18.56	80.9	0.36	4.70	11.50
4			63	16.85	85.3	0.57	4.30	13.00
4			80	14.29	89.1	0.83	3.70	14.80
4			100	10.92	92.3	1.30	3.00	16.80
4			125	6.69	94.9	1.98	1.80	18.80
4			160	0.96	97.0	2.97	0.00	21.10
4			200	-3.10	98.4	4.27	0.00	22.80
5	4,688	4,692						
5			20	23.33	59.3	0.00	5.60	7.60
5			25	22.43	65.2	0.09	5.40	8.30
5			32	21.39	70.6	0.14	5.20	9.20
5			40	20.59	76.0	0.23	5.00	10.30
5			50	19.50	80.9	0.33	4.70	11.50
5			63	17.81	85.3	0.52	4.30	13.00
5			80	15.27	89.1	0.75	3.70	14.80
5			100	11.95	92.3	1.17	3.00	16.80
5			125	7.79	94.9	1.78	1.80	18.80
5			160	2.15	97.0	2.67	0.00	21.10
5			200	-1.77	98.4	3.85	0.00	22.80
6	5,270	5,273						
6			20	22.31	59.3	0.00	5.60	7.60
6			25	21.41	65.2	0.11	5.40	8.30
6			32	20.35	70.6	0.16	5.20	9.20
6			40	19.55	76.0	0.26	5.00	10.30
6			50	18.44	80.9	0.37	4.70	11.50
6			63	16.73	85.3	0.58	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			80	14.17	89.1	0.84	3.70	14.80
6			100	10.79	92.3	1.32	3.00	16.80
6			125	6.55	94.9	2.00	1.80	18.80
6			160	0.80	97.0	3.01	0.00	21.10
6			200	-3.27	98.4	4.32	0.00	22.80
7	4,751	4,755						
7			20	23.21	59.3	0.00	5.60	7.60
7			25	22.32	65.2	0.10	5.40	8.30
7			32	21.27	70.6	0.14	5.20	9.20
7			40	20.47	76.0	0.24	5.00	10.30
7			50	19.38	80.9	0.33	4.70	11.50
7			63	17.69	85.3	0.52	4.30	13.00
7			80	15.15	89.1	0.76	3.70	14.80
7			100	11.82	92.3	1.19	3.00	16.80
7			125	7.65	94.9	1.81	1.80	18.80
7			160	2.00	97.0	2.71	0.00	21.10
7			200	-1.94	98.4	3.90	0.00	22.80
8	4,658	4,662						
8			20	23.38	59.3	0.00	5.60	7.60
8			25	22.49	65.2	0.09	5.40	8.30
8			32	21.44	70.6	0.14	5.20	9.20
8			40	20.65	76.0	0.23	5.00	10.30
8			50	19.55	80.9	0.33	4.70	11.50
8			63	17.87	85.3	0.51	4.30	13.00
8			80	15.33	89.1	0.75	3.70	14.80
8			100	12.01	92.3	1.17	3.00	16.80
8			125	7.86	94.9	1.77	1.80	18.80
8			160	2.22	97.0	2.66	0.00	21.10
8			200	-1.69	98.4	3.82	0.00	22.80
9	5,118	5,121						
9			20	22.57	59.3	0.00	5.60	7.60
9			25	21.66	65.2	0.10	5.40	8.30
9			32	20.61	70.6	0.15	5.20	9.20
9			40	19.81	76.0	0.26	5.00	10.30
9			50	18.71	80.9	0.36	4.70	11.50
9			63	17.00	85.3	0.56	4.30	13.00
9			80	14.44	89.1	0.82	3.70	14.80
9			100	11.08	92.3	1.28	3.00	16.80
9			125	6.87	94.9	1.95	1.80	18.80
9			160	1.14	97.0	2.92	0.00	21.10
9			200	-2.89	98.4	4.20	0.00	22.80
Sum								
Sum			20	40.49				
Sum			25	39.63				
Sum			32	38.60				
Sum			40	37.84				
Sum			50	36.78				
Sum			63	35.16				
Sum			80	32.71				
Sum			100	29.55				
Sum			125	25.62				
Sum			160	20.32				
Sum			200	16.86				

Noise sensitive area: RH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (322)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,783	2,790						
1			20	27.84	59.3	0.00	5.60	7.60
1			25	26.99	65.2	0.06	5.40	8.30
1			32	25.96	70.6	0.08	5.20	9.20
1			40	25.20	76.0	0.14	5.00	10.30

To be continued on next page...

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			50	24.14	80.9	0.20	4.70	11.50
1			63	22.53	85.3	0.31	4.30	13.00
1			80	20.09	89.1	0.45	3.70	14.80
1			100	16.94	92.3	0.70	3.00	16.80
1			125	13.03	94.9	1.06	1.80	18.80
1			160	7.75	97.0	1.59	0.00	21.10
1			200	4.30	98.4	2.29	0.00	22.80
10	3,241	3,247						
10			20	26.52	59.3	0.00	5.60	7.60
10			25	25.66	65.2	0.06	5.40	8.30
10			32	24.63	70.6	0.10	5.20	9.20
10			40	23.86	76.0	0.16	5.00	10.30
10			50	22.79	80.9	0.23	4.70	11.50
10			63	21.16	85.3	0.36	4.30	13.00
10			80	18.70	89.1	0.52	3.70	14.80
10			100	15.51	92.3	0.81	3.00	16.80
10			125	11.54	94.9	1.23	1.80	18.80
10			160	6.17	97.0	1.85	0.00	21.10
10			200	2.61	98.4	2.66	0.00	22.80
11	3,628	3,633						
11			20	25.55	59.3	0.00	5.60	7.60
11			25	24.68	65.2	0.07	5.40	8.30
11			32	23.64	70.6	0.11	5.20	9.20
11			40	22.87	76.0	0.18	5.00	10.30
11			50	21.79	80.9	0.25	4.70	11.50
11			63	20.15	85.3	0.40	4.30	13.00
11			80	17.66	89.1	0.58	3.70	14.80
11			100	14.44	92.3	0.91	3.00	16.80
11			125	10.41	94.9	1.38	1.80	18.80
11			160	4.97	97.0	2.07	0.00	21.10
11			200	1.31	98.4	2.98	0.00	22.80
12	4,166	4,171						
12			20	24.35	59.3	0.00	5.60	7.60
12			25	23.47	65.2	0.08	5.40	8.30
12			32	22.43	70.6	0.13	5.20	9.20
12			40	21.64	76.0	0.21	5.00	10.30
12			50	20.56	80.9	0.29	4.70	11.50
12			63	18.89	85.3	0.46	4.30	13.00
12			80	16.38	89.1	0.67	3.70	14.80
12			100	13.10	92.3	1.04	3.00	16.80
12			125	9.01	94.9	1.58	1.80	18.80
12			160	3.47	97.0	2.38	0.00	21.10
12			200	-0.32	98.4	3.42	0.00	22.80
13	4,456	4,462						
13			20	23.76	59.3	0.00	5.60	7.60
13			25	22.88	65.2	0.09	5.40	8.30
13			32	21.83	70.6	0.13	5.20	9.20
13			40	21.04	76.0	0.22	5.00	10.30
13			50	19.95	80.9	0.31	4.70	11.50
13			63	18.27	85.3	0.49	4.30	13.00
13			80	15.75	89.1	0.71	3.70	14.80
13			100	12.45	92.3	1.12	3.00	16.80
13			125	8.31	94.9	1.70	1.80	18.80
13			160	2.72	97.0	2.54	0.00	21.10
13			200	-1.15	98.4	3.66	0.00	22.80
14	4,213	4,220						
14			20	24.25	59.3	0.00	5.60	7.60
14			25	23.37	65.2	0.08	5.40	8.30
14			32	22.32	70.6	0.13	5.20	9.20
14			40	21.54	76.0	0.21	5.00	10.30
14			50	20.45	80.9	0.30	4.70	11.50
14			63	18.78	85.3	0.46	4.30	13.00
14			80	16.27	89.1	0.68	3.70	14.80
14			100	12.99	92.3	1.05	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			125	8.89	94.9	1.60	1.80	18.80
14			160	3.34	97.0	2.41	0.00	21.10
14			200	-0.47	98.4	3.46	0.00	22.80
15	4,955	4,961						
15			20	22.84	59.3	0.00	5.60	7.60
15			25	21.94	65.2	0.10	5.40	8.30
15			32	20.89	70.6	0.15	5.20	9.20
15			40	20.09	76.0	0.25	5.00	10.30
15			50	18.99	80.9	0.35	4.70	11.50
15			63	17.29	85.3	0.55	4.30	13.00
15			80	14.75	89.1	0.79	3.70	14.80
15			100	11.40	92.3	1.24	3.00	16.80
15			125	7.20	94.9	1.89	1.80	18.80
15			160	1.51	97.0	2.83	0.00	21.10
15			200	-2.48	98.4	4.07	0.00	22.80
16	5,419	5,424						
16			20	22.07	59.3	0.00	5.60	7.60
16			25	21.16	65.2	0.11	5.40	8.30
16			32	20.11	70.6	0.16	5.20	9.20
16			40	19.30	76.0	0.27	5.00	10.30
16			50	18.19	80.9	0.38	4.70	11.50
16			63	16.47	85.3	0.60	4.30	13.00
16			80	13.90	89.1	0.87	3.70	14.80
16			100	10.51	92.3	1.36	3.00	16.80
16			125	6.25	94.9	2.06	1.80	18.80
16			160	0.47	97.0	3.09	0.00	21.10
16			200	-3.63	98.4	4.45	0.00	22.80
17	5,545	5,549						
17			20	21.87	59.3	0.00	5.60	7.60
17			25	20.96	65.2	0.11	5.40	8.30
17			32	19.90	70.6	0.17	5.20	9.20
17			40	19.09	76.0	0.28	5.00	10.30
17			50	17.98	80.9	0.39	4.70	11.50
17			63	16.26	85.3	0.61	4.30	13.00
17			80	13.68	89.1	0.89	3.70	14.80
17			100	10.28	92.3	1.39	3.00	16.80
17			125	6.01	94.9	2.11	1.80	18.80
17			160	0.20	97.0	3.16	0.00	21.10
17			200	-3.93	98.4	4.55	0.00	22.80
18	4,969	4,974						
18			20	22.82	59.3	0.00	5.60	7.60
18			25	21.92	65.2	0.10	5.40	8.30
18			32	20.87	70.6	0.15	5.20	9.20
18			40	20.07	76.0	0.25	5.00	10.30
18			50	18.97	80.9	0.35	4.70	11.50
18			63	17.27	85.3	0.55	4.30	13.00
18			80	14.72	89.1	0.80	3.70	14.80
18			100	11.37	92.3	1.24	3.00	16.80
18			125	7.18	94.9	1.89	1.80	18.80
18			160	1.48	97.0	2.84	0.00	21.10
18			200	-2.51	98.4	4.08	0.00	22.80
19	5,414	5,419						
19			20	22.08	59.3	0.00	5.60	7.60
19			25	21.17	65.2	0.11	5.40	8.30
19			32	20.11	70.6	0.16	5.20	9.20
19			40	19.31	76.0	0.27	5.00	10.30
19			50	18.19	80.9	0.38	4.70	11.50
19			63	16.48	85.3	0.60	4.30	13.00
19			80	13.91	89.1	0.87	3.70	14.80
19			100	10.52	92.3	1.35	3.00	16.80
19			125	6.26	94.9	2.06	1.80	18.80
19			160	0.48	97.0	3.09	0.00	21.10
19			200	-3.62	98.4	4.44	0.00	22.80
2	2,560	2,568						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			20	28.56	59.3	0.00	5.60	7.60
2			25	27.71	65.2	0.05	5.40	8.30
2			32	26.69	70.6	0.08	5.20	9.20
2			40	25.93	76.0	0.13	5.00	10.30
2			50	24.88	80.9	0.18	4.70	11.50
2			63	23.28	85.3	0.28	4.30	13.00
2			80	20.85	89.1	0.41	3.70	14.80
2			100	17.72	92.3	0.64	3.00	16.80
2			125	13.83	94.9	0.98	1.80	18.80
2			160	8.60	97.0	1.46	0.00	21.10
2			200	5.20	98.4	2.11	0.00	22.80
20	5,733	5,738						
20			20	21.58	59.3	0.00	5.60	7.60
20			25	20.66	65.2	0.11	5.40	8.30
20			32	19.61	70.6	0.17	5.20	9.20
20			40	18.79	76.0	0.29	5.00	10.30
20			50	17.67	80.9	0.40	4.70	11.50
20			63	15.95	85.3	0.63	4.30	13.00
20			80	13.36	89.1	0.92	3.70	14.80
20			100	9.94	92.3	1.43	3.00	16.80
20			125	5.64	94.9	2.18	1.80	18.80
20			160	-0.19	97.0	3.27	0.00	21.10
20			200	-4.38	98.4	4.71	0.00	22.80
21	5,986	5,990						
21			20	21.21	59.3	0.00	5.60	7.60
21			25	20.29	65.2	0.12	5.40	8.30
21			32	19.23	70.6	0.18	5.20	9.20
21			40	18.41	76.0	0.30	5.00	10.30
21			50	17.28	80.9	0.42	4.70	11.50
21			63	15.54	85.3	0.66	4.30	13.00
21			80	12.95	89.1	0.96	3.70	14.80
21			100	9.51	92.3	1.50	3.00	16.80
21			125	5.18	94.9	2.28	1.80	18.80
21			160	-0.71	97.0	3.41	0.00	21.10
21			200	-4.96	98.4	4.91	0.00	22.80
22	6,303	6,307						
22			20	20.76	59.3	0.00	5.60	7.60
22			25	19.83	65.2	0.13	5.40	8.30
22			32	18.77	70.6	0.19	5.20	9.20
22			40	17.94	76.0	0.32	5.00	10.30
22			50	16.81	80.9	0.44	4.70	11.50
22			63	15.06	85.3	0.69	4.30	13.00
22			80	12.45	89.1	1.01	3.70	14.80
22			100	8.98	92.3	1.58	3.00	16.80
22			125	4.61	94.9	2.40	1.80	18.80
22			160	-1.34	97.0	3.59	0.00	21.10
22			200	-5.67	98.4	5.17	0.00	22.80
23	6,148	6,151						
23			20	20.98	59.3	0.00	5.60	7.60
23			25	20.05	65.2	0.12	5.40	8.30
23			32	18.99	70.6	0.18	5.20	9.20
23			40	18.17	76.0	0.31	5.00	10.30
23			50	17.04	80.9	0.43	4.70	11.50
23			63	15.30	85.3	0.68	4.30	13.00
23			80	12.69	89.1	0.98	3.70	14.80
23			100	9.23	92.3	1.54	3.00	16.80
23			125	4.88	94.9	2.34	1.80	18.80
23			160	-1.03	97.0	3.51	0.00	21.10
23			200	-5.32	98.4	5.04	0.00	22.80
24	6,716	6,719						
24			20	20.21	59.3	0.00	5.60	7.60
24			25	19.27	65.2	0.13	5.40	8.30
24			32	18.21	70.6	0.20	5.20	9.20
24			40	17.37	76.0	0.34	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			50	16.23	80.9	0.47	4.70	11.50
24			63	14.47	85.3	0.74	4.30	13.00
24			80	11.83	89.1	1.08	3.70	14.80
24			100	8.33	92.3	1.68	3.00	16.80
24			125	3.90	94.9	2.55	1.80	18.80
24			160	-2.12	97.0	3.83	0.00	21.10
24			200	-6.56	98.4	5.51	0.00	22.80
3	2,910	2,918						
3			20	27.45	59.3	0.00	5.60	7.60
3			25	26.60	65.2	0.06	5.40	8.30
3			32	25.57	70.6	0.09	5.20	9.20
3			40	24.81	76.0	0.15	5.00	10.30
3			50	23.75	80.9	0.20	4.70	11.50
3			63	22.13	85.3	0.32	4.30	13.00
3			80	19.68	89.1	0.47	3.70	14.80
3			100	16.52	92.3	0.73	3.00	16.80
3			125	12.59	94.9	1.11	1.80	18.80
3			160	7.29	97.0	1.66	0.00	21.10
3			200	3.81	98.4	2.39	0.00	22.80
4	3,139	3,146						
4			20	26.80	59.3	0.00	5.60	7.60
4			25	25.94	65.2	0.06	5.40	8.30
4			32	24.91	70.6	0.09	5.20	9.20
4			40	24.14	76.0	0.16	5.00	10.30
4			50	23.08	80.9	0.22	4.70	11.50
4			63	21.45	85.3	0.35	4.30	13.00
4			80	18.99	89.1	0.50	3.70	14.80
4			100	15.81	92.3	0.79	3.00	16.80
4			125	11.85	94.9	1.20	1.80	18.80
4			160	6.50	97.0	1.79	0.00	21.10
4			200	2.97	98.4	2.58	0.00	22.80
5	3,674	3,680						
5			20	25.44	59.3	0.00	5.60	7.60
5			25	24.56	65.2	0.07	5.40	8.30
5			32	23.53	70.6	0.11	5.20	9.20
5			40	22.75	76.0	0.18	5.00	10.30
5			50	21.68	80.9	0.26	4.70	11.50
5			63	20.03	85.3	0.40	4.30	13.00
5			80	17.55	89.1	0.59	3.70	14.80
5			100	14.32	92.3	0.92	3.00	16.80
5			125	10.29	94.9	1.40	1.80	18.80
5			160	4.84	97.0	2.10	0.00	21.10
5			200	1.17	98.4	3.02	0.00	22.80
6	2,613	2,621						
6			20	28.39	59.3	0.00	5.60	7.60
6			25	27.53	65.2	0.05	5.40	8.30
6			32	26.51	70.6	0.08	5.20	9.20
6			40	25.75	76.0	0.13	5.00	10.30
6			50	24.70	80.9	0.18	4.70	11.50
6			63	23.09	85.3	0.29	4.30	13.00
6			80	20.66	89.1	0.42	3.70	14.80
6			100	17.53	92.3	0.66	3.00	16.80
6			125	13.63	94.9	1.00	1.80	18.80
6			160	8.39	97.0	1.49	0.00	21.10
6			200	4.98	98.4	2.15	0.00	22.80
7	3,151	3,158						
7			20	26.77	59.3	0.00	5.60	7.60
7			25	25.90	65.2	0.06	5.40	8.30
7			32	24.87	70.6	0.09	5.20	9.20
7			40	24.11	76.0	0.16	5.00	10.30
7			50	23.04	80.9	0.22	4.70	11.50
7			63	21.42	85.3	0.35	4.30	13.00
7			80	18.96	89.1	0.51	3.70	14.80
7			100	15.77	92.3	0.79	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	11.81	94.9	1.20	1.80	18.80
7			160	6.46	97.0	1.80	0.00	21.10
7			200	2.92	98.4	2.59	0.00	22.80
8	3,399	3,405						
8			20	26.11	59.3	0.00	5.60	7.60
8			25	25.24	65.2	0.07	5.40	8.30
8			32	24.21	70.6	0.10	5.20	9.20
8			40	23.44	76.0	0.17	5.00	10.30
8			50	22.37	80.9	0.24	4.70	11.50
8			63	20.73	85.3	0.37	4.30	13.00
8			80	18.26	89.1	0.54	3.70	14.80
8			100	15.06	92.3	0.85	3.00	16.80
8			125	11.06	94.9	1.29	1.80	18.80
8			160	5.67	97.0	1.94	0.00	21.10
8			200	2.06	98.4	2.79	0.00	22.80
9	2,940	2,947						
9			20	27.37	59.3	0.00	5.60	7.60
9			25	26.51	65.2	0.06	5.40	8.30
9			32	25.48	70.6	0.09	5.20	9.20
9			40	24.72	76.0	0.15	5.00	10.30
9			50	23.66	80.9	0.21	4.70	11.50
9			63	22.04	85.3	0.32	4.30	13.00
9			80	19.59	89.1	0.47	3.70	14.80
9			100	16.43	92.3	0.74	3.00	16.80
9			125	12.49	94.9	1.12	1.80	18.80
9			160	7.18	97.0	1.68	0.00	21.10
9			200	3.70	98.4	2.42	0.00	22.80
Sum								
Sum			20	38.98				
Sum			25	38.10				
Sum			32	37.07				
Sum			40	36.29				
Sum			50	35.22				
Sum			63	33.57				
Sum			80	31.09				
Sum			100	27.87				
Sum			125	23.86				
Sum			160	18.44				
Sum			200	14.83				

Noise sensitive area: RH Hiekkala Noise sensitive point: Finnish normal frequency - User defined (311)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,468	3,475						
1			20	25.94	59.3	0.00	5.60	7.60
1			25	25.07	65.2	0.07	5.40	8.30
1			32	24.03	70.6	0.10	5.20	9.20
1			40	23.26	76.0	0.17	5.00	10.30
1			50	22.19	80.9	0.24	4.70	11.50
1			63	20.55	85.3	0.38	4.30	13.00
1			80	18.08	89.1	0.56	3.70	14.80
1			100	14.86	92.3	0.87	3.00	16.80
1			125	10.86	94.9	1.32	1.80	18.80
1			160	5.45	97.0	1.98	0.00	21.10
1			200	1.83	98.4	2.85	0.00	22.80
10	4,777	4,783						
10			20	23.16	59.3	0.00	5.60	7.60
10			25	22.27	65.2	0.10	5.40	8.30
10			32	21.22	70.6	0.14	5.20	9.20
10			40	20.42	76.0	0.24	5.00	10.30
10			50	19.32	80.9	0.33	4.70	11.50
10			63	17.63	85.3	0.53	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	15.09	89.1	0.77	3.70	14.80
10			100	11.76	92.3	1.20	3.00	16.80
10			125	7.59	94.9	1.82	1.80	18.80
10			160	1.93	97.0	2.73	0.00	21.10
10			200	-2.01	98.4	3.92	0.00	22.80
11	5,210	5,214						
11			20	22.41	59.3	0.00	5.60	7.60
11			25	21.51	65.2	0.10	5.40	8.30
11			32	20.45	70.6	0.16	5.20	9.20
11			40	19.65	76.0	0.26	5.00	10.30
11			50	18.54	80.9	0.37	4.70	11.50
11			63	16.83	85.3	0.57	4.30	13.00
11			80	14.27	89.1	0.83	3.70	14.80
11			100	10.90	92.3	1.30	3.00	16.80
11			125	6.67	94.9	1.98	1.80	18.80
11			160	0.94	97.0	2.97	0.00	21.10
11			200	-3.12	98.4	4.28	0.00	22.80
12	5,110	5,114						
12			20	22.58	59.3	0.00	5.60	7.60
12			25	21.68	65.2	0.10	5.40	8.30
12			32	20.63	70.6	0.15	5.20	9.20
12			40	19.82	76.0	0.26	5.00	10.30
12			50	18.72	80.9	0.36	4.70	11.50
12			63	17.01	85.3	0.56	4.30	13.00
12			80	14.46	89.1	0.82	3.70	14.80
12			100	11.10	92.3	1.28	3.00	16.80
12			125	6.88	94.9	1.94	1.80	18.80
12			160	1.16	97.0	2.92	0.00	21.10
12			200	-2.87	98.4	4.19	0.00	22.80
13	4,521	4,528						
13			20	23.64	59.3	0.00	5.60	7.60
13			25	22.75	65.2	0.09	5.40	8.30
13			32	21.70	70.6	0.14	5.20	9.20
13			40	20.91	76.0	0.23	5.00	10.30
13			50	19.82	80.9	0.32	4.70	11.50
13			63	18.13	85.3	0.50	4.30	13.00
13			80	15.61	89.1	0.72	3.70	14.80
13			100	12.30	92.3	1.13	3.00	16.80
13			125	8.16	94.9	1.72	1.80	18.80
13			160	2.55	97.0	2.58	0.00	21.10
13			200	-1.33	98.4	3.71	0.00	22.80
14	4,087	4,094						
14			20	24.51	59.3	0.00	5.60	7.60
14			25	23.63	65.2	0.08	5.40	8.30
14			32	22.59	70.6	0.12	5.20	9.20
14			40	21.81	76.0	0.20	5.00	10.30
14			50	20.72	80.9	0.29	4.70	11.50
14			63	19.06	85.3	0.45	4.30	13.00
14			80	16.55	89.1	0.66	3.70	14.80
14			100	13.28	92.3	1.02	3.00	16.80
14			125	9.20	94.9	1.56	1.80	18.80
14			160	3.67	97.0	2.33	0.00	21.10
14			200	-0.10	98.4	3.36	0.00	22.80
15	4,184	4,193						
15			20	24.30	59.3	0.00	5.60	7.60
15			25	23.42	65.2	0.08	5.40	8.30
15			32	22.38	70.6	0.13	5.20	9.20
15			40	21.59	76.0	0.21	5.00	10.30
15			50	20.51	80.9	0.29	4.70	11.50
15			63	18.84	85.3	0.46	4.30	13.00
15			80	16.33	89.1	0.67	3.70	14.80
15			100	13.05	92.3	1.05	3.00	16.80
15			125	8.96	94.9	1.59	1.80	18.80
15			160	3.41	97.0	2.39	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	-0.39	98.4	3.44	0.00	22.80
16	3,882	3,890						
16			20	24.96	59.3	0.00	5.60	7.60
16			25	24.08	65.2	0.08	5.40	8.30
16			32	23.04	70.6	0.12	5.20	9.20
16			40	22.26	76.0	0.19	5.00	10.30
16			50	21.18	80.9	0.27	4.70	11.50
16			63	19.53	85.3	0.43	4.30	13.00
16			80	17.03	89.1	0.62	3.70	14.80
16			100	13.78	92.3	0.97	3.00	16.80
16			125	9.72	94.9	1.48	1.80	18.80
16			160	4.24	97.0	2.22	0.00	21.10
16			200	0.51	98.4	3.19	0.00	22.80
17	3,269	3,277						
17			20	26.45	59.3	0.00	5.60	7.60
17			25	25.58	65.2	0.07	5.40	8.30
17			32	24.55	70.6	0.10	5.20	9.20
17			40	23.78	76.0	0.16	5.00	10.30
17			50	22.71	80.9	0.23	4.70	11.50
17			63	21.08	85.3	0.36	4.30	13.00
17			80	18.62	89.1	0.52	3.70	14.80
17			100	15.42	92.3	0.82	3.00	16.80
17			125	11.45	94.9	1.25	1.80	18.80
17			160	6.07	97.0	1.87	0.00	21.10
17			200	2.50	98.4	2.69	0.00	22.80
18	4,886	4,892						
18			20	22.96	59.3	0.00	5.60	7.60
18			25	22.07	65.2	0.10	5.40	8.30
18			32	21.02	70.6	0.15	5.20	9.20
18			40	20.22	76.0	0.24	5.00	10.30
18			50	19.12	80.9	0.34	4.70	11.50
18			63	17.42	85.3	0.54	4.30	13.00
18			80	14.88	89.1	0.78	3.70	14.80
18			100	11.54	92.3	1.22	3.00	16.80
18			125	7.35	94.9	1.86	1.80	18.80
18			160	1.67	97.0	2.79	0.00	21.10
18			200	-2.30	98.4	4.01	0.00	22.80
19	4,669	4,677						
19			20	23.36	59.3	0.00	5.60	7.60
19			25	22.46	65.2	0.09	5.40	8.30
19			32	21.42	70.6	0.14	5.20	9.20
19			40	20.62	76.0	0.23	5.00	10.30
19			50	19.53	80.9	0.33	4.70	11.50
19			63	17.84	85.3	0.51	4.30	13.00
19			80	15.30	89.1	0.75	3.70	14.80
19			100	11.98	92.3	1.17	3.00	16.80
19			125	7.82	94.9	1.78	1.80	18.80
19			160	2.19	97.0	2.67	0.00	21.10
19			200	-1.73	98.4	3.83	0.00	22.80
2	3,920	3,926						
2			20	24.87	59.3	0.00	5.60	7.60
2			25	24.00	65.2	0.08	5.40	8.30
2			32	22.96	70.6	0.12	5.20	9.20
2			40	22.18	76.0	0.20	5.00	10.30
2			50	21.10	80.9	0.27	4.70	11.50
2			63	19.44	85.3	0.43	4.30	13.00
2			80	16.94	89.1	0.63	3.70	14.80
2			100	13.69	92.3	0.98	3.00	16.80
2			125	9.63	94.9	1.49	1.80	18.80
2			160	4.13	97.0	2.24	0.00	21.10
2			200	0.40	98.4	3.22	0.00	22.80
20	4,376	4,384						
20			20	23.92	59.3	0.00	5.60	7.60
20			25	23.03	65.2	0.09	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	21.99	70.6	0.13	5.20	9.20
20			40	21.20	76.0	0.22	5.00	10.30
20			50	20.11	80.9	0.31	4.70	11.50
20			63	18.43	85.3	0.48	4.30	13.00
20			80	15.91	89.1	0.70	3.70	14.80
20			100	12.62	92.3	1.10	3.00	16.80
20			125	8.50	94.9	1.67	1.80	18.80
20			160	2.92	97.0	2.50	0.00	21.10
20			200	-0.93	98.4	3.59	0.00	22.80
21	3,876	3,884						
21			20	24.97	59.3	0.00	5.60	7.60
21			25	24.09	65.2	0.08	5.40	8.30
21			32	23.05	70.6	0.12	5.20	9.20
21			40	22.28	76.0	0.19	5.00	10.30
21			50	21.19	80.9	0.27	4.70	11.50
21			63	19.54	85.3	0.43	4.30	13.00
21			80	17.05	89.1	0.62	3.70	14.80
21			100	13.80	92.3	0.97	3.00	16.80
21			125	9.74	94.9	1.48	1.80	18.80
21			160	4.25	97.0	2.21	0.00	21.10
21			200	0.53	98.4	3.18	0.00	22.80
22	3,404	3,413						
22			20	26.09	59.3	0.00	5.60	7.60
22			25	25.22	65.2	0.07	5.40	8.30
22			32	24.19	70.6	0.10	5.20	9.20
22			40	23.42	76.0	0.17	5.00	10.30
22			50	22.35	80.9	0.24	4.70	11.50
22			63	20.71	85.3	0.38	4.30	13.00
22			80	18.24	89.1	0.55	3.70	14.80
22			100	15.04	92.3	0.85	3.00	16.80
22			125	11.04	94.9	1.30	1.80	18.80
22			160	5.64	97.0	1.95	0.00	21.10
22			200	2.04	98.4	2.80	0.00	22.80
23	2,746	2,755						
23			20	27.95	59.3	0.00	5.60	7.60
23			25	27.10	65.2	0.06	5.40	8.30
23			32	26.07	70.6	0.08	5.20	9.20
23			40	25.32	76.0	0.14	5.00	10.30
23			50	24.26	80.9	0.19	4.70	11.50
23			63	22.65	85.3	0.30	4.30	13.00
23			80	20.21	89.1	0.44	3.70	14.80
23			100	17.06	92.3	0.69	3.00	16.80
23			125	13.15	94.9	1.05	1.80	18.80
23			160	7.88	97.0	1.57	0.00	21.10
23			200	4.44	98.4	2.26	0.00	22.80
24	3,237	3,245						
24			20	26.53	59.3	0.00	5.60	7.60
24			25	25.67	65.2	0.06	5.40	8.30
24			32	24.63	70.6	0.10	5.20	9.20
24			40	23.87	76.0	0.16	5.00	10.30
24			50	22.80	80.9	0.23	4.70	11.50
24			63	21.17	85.3	0.36	4.30	13.00
24			80	18.71	89.1	0.52	3.70	14.80
24			100	15.52	92.3	0.81	3.00	16.80
24			125	11.54	94.9	1.23	1.80	18.80
24			160	6.18	97.0	1.85	0.00	21.10
24			200	2.62	98.4	2.66	0.00	22.80
3	3,390	3,397						
3			20	26.13	59.3	0.00	5.60	7.60
3			25	25.26	65.2	0.07	5.40	8.30
3			32	24.23	70.6	0.10	5.20	9.20
3			40	23.46	76.0	0.17	5.00	10.30
3			50	22.39	80.9	0.24	4.70	11.50
3			63	20.76	85.3	0.37	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	18.29	89.1	0.54	3.70	14.80
3			100	15.08	92.3	0.85	3.00	16.80
3			125	11.09	94.9	1.29	1.80	18.80
3			160	5.69	97.0	1.94	0.00	21.10
3			200	2.09	98.4	2.79	0.00	22.80
4	3,400	3,408						
4			20	26.11	59.3	0.00	5.60	7.60
4			25	25.24	65.2	0.07	5.40	8.30
4			32	24.20	70.6	0.10	5.20	9.20
4			40	23.44	76.0	0.17	5.00	10.30
4			50	22.36	80.9	0.24	4.70	11.50
4			63	20.73	85.3	0.37	4.30	13.00
4			80	18.26	89.1	0.55	3.70	14.80
4			100	15.05	92.3	0.85	3.00	16.80
4			125	11.06	94.9	1.29	1.80	18.80
4			160	5.66	97.0	1.94	0.00	21.10
4			200	2.06	98.4	2.79	0.00	22.80
5	3,091	3,099						
5			20	26.93	59.3	0.00	5.60	7.60
5			25	26.07	65.2	0.06	5.40	8.30
5			32	25.04	70.6	0.09	5.20	9.20
5			40	24.27	76.0	0.15	5.00	10.30
5			50	23.21	80.9	0.22	4.70	11.50
5			63	21.59	85.3	0.34	4.30	13.00
5			80	19.13	89.1	0.50	3.70	14.80
5			100	15.95	92.3	0.77	3.00	16.80
5			125	12.00	94.9	1.18	1.80	18.80
5			160	6.66	97.0	1.77	0.00	21.10
5			200	3.13	98.4	2.54	0.00	22.80
6	4,770	4,776						
6			20	23.17	59.3	0.00	5.60	7.60
6			25	22.28	65.2	0.10	5.40	8.30
6			32	21.23	70.6	0.14	5.20	9.20
6			40	20.44	76.0	0.24	5.00	10.30
6			50	19.34	80.9	0.33	4.70	11.50
6			63	17.65	85.3	0.53	4.30	13.00
6			80	15.11	89.1	0.76	3.70	14.80
6			100	11.78	92.3	1.19	3.00	16.80
6			125	7.60	94.9	1.81	1.80	18.80
6			160	1.95	97.0	2.72	0.00	21.10
6			200	-2.00	98.4	3.92	0.00	22.80
7	4,211	4,217						
7			20	24.26	59.3	0.00	5.60	7.60
7			25	23.37	65.2	0.08	5.40	8.30
7			32	22.33	70.6	0.13	5.20	9.20
7			40	21.54	76.0	0.21	5.00	10.30
7			50	20.46	80.9	0.30	4.70	11.50
7			63	18.79	85.3	0.46	4.30	13.00
7			80	16.28	89.1	0.67	3.70	14.80
7			100	13.00	92.3	1.05	3.00	16.80
7			125	8.90	94.9	1.60	1.80	18.80
7			160	3.35	97.0	2.40	0.00	21.10
7			200	-0.46	98.4	3.46	0.00	22.80
8	3,649	3,656						
8			20	25.49	59.3	0.00	5.60	7.60
8			25	24.62	65.2	0.07	5.40	8.30
8			32	23.58	70.6	0.11	5.20	9.20
8			40	22.81	76.0	0.18	5.00	10.30
8			50	21.73	80.9	0.26	4.70	11.50
8			63	20.09	85.3	0.40	4.30	13.00
8			80	17.61	89.1	0.59	3.70	14.80
8			100	14.38	92.3	0.91	3.00	16.80
8			125	10.35	94.9	1.39	1.80	18.80
8			160	4.91	97.0	2.08	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	1.24	98.4	3.00	0.00	22.80
9	5,351	5,355						
9			20	22.18	59.3	0.00	5.60	7.60
9			25	21.27	65.2	0.11	5.40	8.30
9			32	20.22	70.6	0.16	5.20	9.20
9			40	19.41	76.0	0.27	5.00	10.30
9			50	18.30	80.9	0.37	4.70	11.50
9			63	16.59	85.3	0.59	4.30	13.00
9			80	14.02	89.1	0.86	3.70	14.80
9			100	10.64	92.3	1.34	3.00	16.80
9			125	6.39	94.9	2.04	1.80	18.80
9			160	0.62	97.0	3.05	0.00	21.10
9			200	-3.47	98.4	4.39	0.00	22.80
Sum								
Sum			20	38.79				
Sum			25	37.91				
Sum			32	36.87				
Sum			40	36.09				
Sum			50	35.02				
Sum			63	33.36				
Sum			80	30.87				
Sum			100	27.63				
Sum			125	23.59				
Sum			160	18.12				
Sum			200	14.44				

Noise sensitive area: RH Honkala Noise sensitive point: Finnish normal frequency - User defined (329)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,705	6,707						
1			20	20.22	59.3	0.00	5.60	7.60
1			25	19.29	65.2	0.13	5.40	8.30
1			32	18.22	70.6	0.20	5.20	9.20
1			40	17.39	76.0	0.34	5.00	10.30
1			50	16.25	80.9	0.47	4.70	11.50
1			63	14.48	85.3	0.74	4.30	13.00
1			80	11.85	89.1	1.07	3.70	14.80
1			100	8.34	92.3	1.68	3.00	16.80
1			125	3.92	94.9	2.55	1.80	18.80
1			160	-2.10	97.0	3.82	0.00	21.10
1			200	-6.53	98.4	5.50	0.00	22.80
10	5,285	5,289						
10			20	22.29	59.3	0.00	5.60	7.60
10			25	21.38	65.2	0.11	5.40	8.30
10			32	20.33	70.6	0.16	5.20	9.20
10			40	19.52	76.0	0.26	5.00	10.30
10			50	18.41	80.9	0.37	4.70	11.50
10			63	16.70	85.3	0.58	4.30	13.00
10			80	14.14	89.1	0.85	3.70	14.80
10			100	10.76	92.3	1.32	3.00	16.80
10			125	6.52	94.9	2.01	1.80	18.80
10			160	0.77	97.0	3.01	0.00	21.10
10			200	-3.30	98.4	4.34	0.00	22.80
11	5,092	5,095						
11			20	22.61	59.3	0.00	5.60	7.60
11			25	21.71	65.2	0.10	5.40	8.30
11			32	20.66	70.6	0.15	5.20	9.20
11			40	19.86	76.0	0.25	5.00	10.30
11			50	18.75	80.9	0.36	4.70	11.50
11			63	17.05	85.3	0.56	4.30	13.00
11			80	14.49	89.1	0.82	3.70	14.80
11			100	11.13	92.3	1.27	3.00	16.80

To be continued on next page...

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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	6.92	94.9	1.94	1.80	18.80
11			160	1.20	97.0	2.90	0.00	21.10
11			200	-2.82	98.4	4.18	0.00	22.80
12	4,552	4,555						
12			20	23.58	59.3	0.00	5.60	7.60
12			25	22.69	65.2	0.09	5.40	8.30
12			32	21.65	70.6	0.14	5.20	9.20
12			40	20.86	76.0	0.23	5.00	10.30
12			50	19.76	80.9	0.32	4.70	11.50
12			63	18.08	85.3	0.50	4.30	13.00
12			80	15.55	89.1	0.73	3.70	14.80
12			100	12.24	92.3	1.14	3.00	16.80
12			125	8.10	94.9	1.73	1.80	18.80
12			160	2.49	97.0	2.60	0.00	21.10
12			200	-1.41	98.4	3.74	0.00	22.80
13	4,066	4,071						
13			20	24.56	59.3	0.00	5.60	7.60
13			25	23.68	65.2	0.08	5.40	8.30
13			32	22.64	70.6	0.12	5.20	9.20
13			40	21.86	76.0	0.20	5.00	10.30
13			50	20.77	80.9	0.28	4.70	11.50
13			63	19.11	85.3	0.45	4.30	13.00
13			80	16.61	89.1	0.65	3.70	14.80
13			100	13.34	92.3	1.02	3.00	16.80
13			125	9.26	94.9	1.55	1.80	18.80
13			160	3.74	97.0	2.32	0.00	21.10
13			200	-0.03	98.4	3.34	0.00	22.80
14	4,252	4,256						
14			20	24.17	59.3	0.00	5.60	7.60
14			25	23.29	65.2	0.09	5.40	8.30
14			32	22.25	70.6	0.13	5.20	9.20
14			40	21.46	76.0	0.21	5.00	10.30
14			50	20.37	80.9	0.30	4.70	11.50
14			63	18.70	85.3	0.47	4.30	13.00
14			80	16.19	89.1	0.68	3.70	14.80
14			100	12.91	92.3	1.06	3.00	16.80
14			125	8.80	94.9	1.62	1.80	18.80
14			160	3.24	97.0	2.43	0.00	21.10
14			200	-0.57	98.4	3.49	0.00	22.80
15	3,517	3,524						
15			20	25.82	59.3	0.00	5.60	7.60
15			25	24.94	65.2	0.07	5.40	8.30
15			32	23.91	70.6	0.11	5.20	9.20
15			40	23.14	76.0	0.18	5.00	10.30
15			50	22.07	80.9	0.25	4.70	11.50
15			63	20.42	85.3	0.39	4.30	13.00
15			80	17.95	89.1	0.56	3.70	14.80
15			100	14.73	92.3	0.88	3.00	16.80
15			125	10.72	94.9	1.34	1.80	18.80
15			160	5.30	97.0	2.01	0.00	21.10
15			200	1.67	98.4	2.89	0.00	22.80
16	3,054	3,060						
16			20	27.04	59.3	0.00	5.60	7.60
16			25	26.18	65.2	0.06	5.40	8.30
16			32	25.15	70.6	0.09	5.20	9.20
16			40	24.39	76.0	0.15	5.00	10.30
16			50	23.32	80.9	0.21	4.70	11.50
16			63	21.70	85.3	0.34	4.30	13.00
16			80	19.25	89.1	0.49	3.70	14.80
16			100	16.07	92.3	0.77	3.00	16.80
16			125	12.12	94.9	1.16	1.80	18.80
16			160	6.79	97.0	1.74	0.00	21.10
16			200	3.28	98.4	2.51	0.00	22.80
17	3,092	3,096						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	26.94	59.3	0.00	5.60	7.60
17			25	26.08	65.2	0.06	5.40	8.30
17			32	25.04	70.6	0.09	5.20	9.20
17			40	24.28	76.0	0.15	5.00	10.30
17			50	23.22	80.9	0.22	4.70	11.50
17			63	21.59	85.3	0.34	4.30	13.00
17			80	19.14	89.1	0.50	3.70	14.80
17			100	15.96	92.3	0.77	3.00	16.80
17			125	12.01	94.9	1.18	1.80	18.80
17			160	6.67	97.0	1.76	0.00	21.10
17			200	3.14	98.4	2.54	0.00	22.80
18	3,678	3,682						
18			20	25.43	59.3	0.00	5.60	7.60
18			25	24.56	65.2	0.07	5.40	8.30
18			32	23.52	70.6	0.11	5.20	9.20
18			40	22.75	76.0	0.18	5.00	10.30
18			50	21.67	80.9	0.26	4.70	11.50
18			63	20.02	85.3	0.41	4.30	13.00
18			80	17.54	89.1	0.59	3.70	14.80
18			100	14.31	92.3	0.92	3.00	16.80
18			125	10.28	94.9	1.40	1.80	18.80
18			160	4.83	97.0	2.10	0.00	21.10
18			200	1.16	98.4	3.02	0.00	22.80
19	3,148	3,155						
19			20	26.77	59.3	0.00	5.60	7.60
19			25	25.91	65.2	0.06	5.40	8.30
19			32	24.88	70.6	0.09	5.20	9.20
19			40	24.12	76.0	0.16	5.00	10.30
19			50	23.05	80.9	0.22	4.70	11.50
19			63	21.42	85.3	0.35	4.30	13.00
19			80	18.97	89.1	0.50	3.70	14.80
19			100	15.78	92.3	0.79	3.00	16.80
19			125	11.82	94.9	1.20	1.80	18.80
19			160	6.47	97.0	1.80	0.00	21.10
19			200	2.93	98.4	2.59	0.00	22.80
2	6,137	6,139						
2			20	20.99	59.3	0.00	5.60	7.60
2			25	20.07	65.2	0.12	5.40	8.30
2			32	19.01	70.6	0.18	5.20	9.20
2			40	18.19	76.0	0.31	5.00	10.30
2			50	17.06	80.9	0.43	4.70	11.50
2			63	15.31	85.3	0.68	4.30	13.00
2			80	12.71	89.1	0.98	3.70	14.80
2			100	9.25	92.3	1.53	3.00	16.80
2			125	4.90	94.9	2.33	1.80	18.80
2			160	-1.01	97.0	3.50	0.00	21.10
2			200	-5.30	98.4	5.03	0.00	22.80
20	2,750	2,757						
20			20	27.95	59.3	0.00	5.60	7.60
20			25	27.09	65.2	0.06	5.40	8.30
20			32	26.06	70.6	0.08	5.20	9.20
20			40	25.31	76.0	0.14	5.00	10.30
20			50	24.25	80.9	0.19	4.70	11.50
20			63	22.64	85.3	0.30	4.30	13.00
20			80	20.20	89.1	0.44	3.70	14.80
20			100	17.05	92.3	0.69	3.00	16.80
20			125	13.14	94.9	1.05	1.80	18.80
20			160	7.87	97.0	1.57	0.00	21.10
20			200	4.43	98.4	2.26	0.00	22.80
21	2,509	2,516						
21			20	28.74	59.3	0.00	5.60	7.60
21			25	27.89	65.2	0.05	5.40	8.30
21			32	26.87	70.6	0.08	5.20	9.20
21			40	26.12	76.0	0.13	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	25.06	80.9	0.18	4.70	11.50
21			63	23.46	85.3	0.28	4.30	13.00
21			80	21.04	89.1	0.40	3.70	14.80
21			100	17.91	92.3	0.63	3.00	16.80
21			125	14.03	94.9	0.96	1.80	18.80
21			160	8.80	97.0	1.43	0.00	21.10
21			200	5.42	98.4	2.06	0.00	22.80
22	2,419	2,427						
22			20	29.05	59.3	0.00	5.60	7.60
22			25	28.20	65.2	0.05	5.40	8.30
22			32	27.18	70.6	0.07	5.20	9.20
22			40	26.43	76.0	0.12	5.00	10.30
22			50	25.38	80.9	0.17	4.70	11.50
22			63	23.78	85.3	0.27	4.30	13.00
22			80	21.36	89.1	0.39	3.70	14.80
22			100	18.24	92.3	0.61	3.00	16.80
22			125	14.38	94.9	0.92	1.80	18.80
22			160	9.17	97.0	1.38	0.00	21.10
22			200	5.81	98.4	1.99	0.00	22.80
23	2,940	2,945						
23			20	27.37	59.3	0.00	5.60	7.60
23			25	26.51	65.2	0.06	5.40	8.30
23			32	25.48	70.6	0.09	5.20	9.20
23			40	24.73	76.0	0.15	5.00	10.30
23			50	23.66	80.9	0.21	4.70	11.50
23			63	22.05	85.3	0.32	4.30	13.00
23			80	19.60	89.1	0.47	3.70	14.80
23			100	16.43	92.3	0.74	3.00	16.80
23			125	12.50	94.9	1.12	1.80	18.80
23			160	7.19	97.0	1.68	0.00	21.10
23			200	3.70	98.4	2.41	0.00	22.80
24	2,299	2,305						
24			20	29.50	59.3	0.00	5.60	7.60
24			25	28.65	65.2	0.05	5.40	8.30
24			32	27.63	70.6	0.07	5.20	9.20
24			40	26.88	76.0	0.12	5.00	10.30
24			50	25.83	80.9	0.16	4.70	11.50
24			63	24.24	85.3	0.25	4.30	13.00
24			80	21.83	89.1	0.37	3.70	14.80
24			100	18.72	92.3	0.58	3.00	16.80
24			125	14.87	94.9	0.88	1.80	18.80
24			160	9.68	97.0	1.31	0.00	21.10
24			200	6.35	98.4	1.89	0.00	22.80
3	6,181	6,183						
3			20	20.93	59.3	0.00	5.60	7.60
3			25	20.01	65.2	0.12	5.40	8.30
3			32	18.94	70.6	0.19	5.20	9.20
3			40	18.12	76.0	0.31	5.00	10.30
3			50	16.99	80.9	0.43	4.70	11.50
3			63	15.25	85.3	0.68	4.30	13.00
3			80	12.64	89.1	0.99	3.70	14.80
3			100	9.18	92.3	1.55	3.00	16.80
3			125	4.83	94.9	2.35	1.80	18.80
3			160	-1.10	97.0	3.52	0.00	21.10
3			200	-5.39	98.4	5.07	0.00	22.80
4	5,677	5,680						
4			20	21.67	59.3	0.00	5.60	7.60
4			25	20.75	65.2	0.11	5.40	8.30
4			32	19.70	70.6	0.17	5.20	9.20
4			40	18.88	76.0	0.28	5.00	10.30
4			50	17.77	80.9	0.40	4.70	11.50
4			63	16.04	85.3	0.62	4.30	13.00
4			80	13.46	89.1	0.91	3.70	14.80
4			100	10.05	92.3	1.42	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			125	5.76	94.9	2.16	1.80	18.80
4			160	-0.07	97.0	3.24	0.00	21.10
4			200	-4.24	98.4	4.66	0.00	22.80
5	5,144	5,147						
5			20	22.52	59.3	0.00	5.60	7.60
5			25	21.62	65.2	0.10	5.40	8.30
5			32	20.57	70.6	0.15	5.20	9.20
5			40	19.77	76.0	0.26	5.00	10.30
5			50	18.66	80.9	0.36	4.70	11.50
5			63	16.96	85.3	0.57	4.30	13.00
5			80	14.40	89.1	0.82	3.70	14.80
5			100	11.03	92.3	1.29	3.00	16.80
5			125	6.81	94.9	1.96	1.80	18.80
5			160	1.09	97.0	2.93	0.00	21.10
5			200	-2.95	98.4	4.22	0.00	22.80
6	5,867	5,869						
6			20	21.38	59.3	0.00	5.60	7.60
6			25	20.47	65.2	0.12	5.40	8.30
6			32	19.41	70.6	0.18	5.20	9.20
6			40	18.59	76.0	0.29	5.00	10.30
6			50	17.47	80.9	0.41	4.70	11.50
6			63	15.73	85.3	0.65	4.30	13.00
6			80	13.14	89.1	0.94	3.70	14.80
6			100	9.71	92.3	1.47	3.00	16.80
6			125	5.40	94.9	2.23	1.80	18.80
6			160	-0.47	97.0	3.35	0.00	21.10
6			200	-4.68	98.4	4.81	0.00	22.80
7	5,318	5,321						
7			20	22.23	59.3	0.00	5.60	7.60
7			25	21.33	65.2	0.11	5.40	8.30
7			32	20.28	70.6	0.16	5.20	9.20
7			40	19.47	76.0	0.27	5.00	10.30
7			50	18.36	80.9	0.37	4.70	11.50
7			63	16.65	85.3	0.59	4.30	13.00
7			80	14.08	89.1	0.85	3.70	14.80
7			100	10.70	92.3	1.33	3.00	16.80
7			125	6.46	94.9	2.02	1.80	18.80
7			160	0.70	97.0	3.03	0.00	21.10
7			200	-3.38	98.4	4.36	0.00	22.80
8	5,174	5,177						
8			20	22.47	59.3	0.00	5.60	7.60
8			25	21.57	65.2	0.10	5.40	8.30
8			32	20.52	70.6	0.16	5.20	9.20
8			40	19.71	76.0	0.26	5.00	10.30
8			50	18.61	80.9	0.36	4.70	11.50
8			63	16.90	85.3	0.57	4.30	13.00
8			80	14.34	89.1	0.83	3.70	14.80
8			100	10.98	92.3	1.29	3.00	16.80
8			125	6.75	94.9	1.97	1.80	18.80
8			160	1.02	97.0	2.95	0.00	21.10
8			200	-3.03	98.4	4.25	0.00	22.80
9	5,761	5,764						
9			20	21.54	59.3	0.00	5.60	7.60
9			25	20.63	65.2	0.12	5.40	8.30
9			32	19.57	70.6	0.17	5.20	9.20
9			40	18.75	76.0	0.29	5.00	10.30
9			50	17.63	80.9	0.40	4.70	11.50
9			63	15.90	85.3	0.63	4.30	13.00
9			80	13.31	89.1	0.92	3.70	14.80
9			100	9.90	92.3	1.44	3.00	16.80
9			125	5.60	94.9	2.19	1.80	18.80
9			160	-0.25	97.0	3.29	0.00	21.10
9			200	-4.44	98.4	4.73	0.00	22.80
Sum								

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			20	39.17				
Sum			25	38.30				
Sum			32	37.26				
Sum			40	36.49				
Sum			50	35.42				
Sum			63	33.78				
Sum			80	31.30				
Sum			100	28.09				
Sum			125	24.10				
Sum			160	18.71				
Sum			200	15.13				

Noise sensitive area: RH Kauvanjärvi 2 Noise sensitive point: Finnish normal frequency - User defined (324)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,558	6,562						
1			20	20.41	59.3	0.00	5.60	7.60
1			25	19.48	65.2	0.13	5.40	8.30
1			32	18.42	70.6	0.20	5.20	9.20
1			40	17.59	76.0	0.33	5.00	10.30
1			50	16.45	80.9	0.46	4.70	11.50
1			63	14.69	85.3	0.72	4.30	13.00
1			80	12.06	89.1	1.05	3.70	14.80
1			100	8.57	92.3	1.64	3.00	16.80
1			125	4.17	94.9	2.49	1.80	18.80
1			160	-1.83	97.0	3.74	0.00	21.10
1			200	-6.22	98.4	5.38	0.00	22.80
10	6,159	6,163						
10			20	20.96	59.3	0.00	5.60	7.60
10			25	20.04	65.2	0.12	5.40	8.30
10			32	18.97	70.6	0.18	5.20	9.20
10			40	18.15	76.0	0.31	5.00	10.30
10			50	17.02	80.9	0.43	4.70	11.50
10			63	15.28	85.3	0.68	4.30	13.00
10			80	12.67	89.1	0.99	3.70	14.80
10			100	9.21	92.3	1.54	3.00	16.80
10			125	4.86	94.9	2.34	1.80	18.80
10			160	-1.06	97.0	3.51	0.00	21.10
10			200	-5.35	98.4	5.05	0.00	22.80
11	6,212	6,217						
11			20	20.88	59.3	0.00	5.60	7.60
11			25	19.96	65.2	0.12	5.40	8.30
11			32	18.90	70.6	0.19	5.20	9.20
11			40	18.07	76.0	0.31	5.00	10.30
11			50	16.95	80.9	0.44	4.70	11.50
11			63	15.20	85.3	0.68	4.30	13.00
11			80	12.59	89.1	0.99	3.70	14.80
11			100	9.13	92.3	1.55	3.00	16.80
11			125	4.77	94.9	2.36	1.80	18.80
11			160	-1.16	97.0	3.54	0.00	21.10
11			200	-5.47	98.4	5.10	0.00	22.80
12	5,773	5,778						
12			20	21.52	59.3	0.00	5.60	7.60
12			25	20.60	65.2	0.12	5.40	8.30
12			32	19.55	70.6	0.17	5.20	9.20
12			40	18.73	76.0	0.29	5.00	10.30
12			50	17.61	80.9	0.40	4.70	11.50
12			63	15.88	85.3	0.64	4.30	13.00
12			80	13.29	89.1	0.92	3.70	14.80
12			100	9.87	92.3	1.44	3.00	16.80
12			125	5.57	94.9	2.20	1.80	18.80
12			160	-0.28	97.0	3.29	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			200	-4.47	98.4	4.74	0.00	22.80
13	5,127	5,134						
13			20	22.55	59.3	0.00	5.60	7.60
13			25	21.64	65.2	0.10	5.40	8.30
13			32	20.59	70.6	0.15	5.20	9.20
13			40	19.79	76.0	0.26	5.00	10.30
13			50	18.68	80.9	0.36	4.70	11.50
13			63	16.98	85.3	0.56	4.30	13.00
13			80	14.42	89.1	0.82	3.70	14.80
13			100	11.06	92.3	1.28	3.00	16.80
13			125	6.84	94.9	1.95	1.80	18.80
13			160	1.12	97.0	2.93	0.00	21.10
13			200	-2.92	98.4	4.21	0.00	22.80
14	5,053	5,060						
14			20	22.67	59.3	0.00	5.60	7.60
14			25	21.77	65.2	0.10	5.40	8.30
14			32	20.72	70.6	0.15	5.20	9.20
14			40	19.92	76.0	0.25	5.00	10.30
14			50	18.82	80.9	0.35	4.70	11.50
14			63	17.11	85.3	0.56	4.30	13.00
14			80	14.56	89.1	0.81	3.70	14.80
14			100	11.20	92.3	1.26	3.00	16.80
14			125	6.99	94.9	1.92	1.80	18.80
14			160	1.29	97.0	2.88	0.00	21.10
14			200	-2.73	98.4	4.15	0.00	22.80
15	4,512	4,521						
15			20	23.65	59.3	0.00	5.60	7.60
15			25	22.76	65.2	0.09	5.40	8.30
15			32	21.71	70.6	0.14	5.20	9.20
15			40	20.92	76.0	0.23	5.00	10.30
15			50	19.83	80.9	0.32	4.70	11.50
15			63	18.15	85.3	0.50	4.30	13.00
15			80	15.62	89.1	0.72	3.70	14.80
15			100	12.32	92.3	1.13	3.00	16.80
15			125	8.18	94.9	1.72	1.80	18.80
15			160	2.57	97.0	2.58	0.00	21.10
15			200	-1.31	98.4	3.71	0.00	22.80
16	3,931	3,939						
16			20	24.85	59.3	0.00	5.60	7.60
16			25	23.97	65.2	0.08	5.40	8.30
16			32	22.93	70.6	0.12	5.20	9.20
16			40	22.15	76.0	0.20	5.00	10.30
16			50	21.07	80.9	0.28	4.70	11.50
16			63	19.41	85.3	0.43	4.30	13.00
16			80	16.91	89.1	0.63	3.70	14.80
16			100	13.66	92.3	0.98	3.00	16.80
16			125	9.60	94.9	1.50	1.80	18.80
16			160	4.10	97.0	2.25	0.00	21.10
16			200	0.36	98.4	3.23	0.00	22.80
17	3,525	3,533						
17			20	25.79	59.3	0.00	5.60	7.60
17			25	24.92	65.2	0.07	5.40	8.30
17			32	23.89	70.6	0.11	5.20	9.20
17			40	23.11	76.0	0.18	5.00	10.30
17			50	22.04	80.9	0.25	4.70	11.50
17			63	20.40	85.3	0.39	4.30	13.00
17			80	17.92	89.1	0.57	3.70	14.80
17			100	14.70	92.3	0.88	3.00	16.80
17			125	10.69	94.9	1.34	1.80	18.80
17			160	5.27	97.0	2.01	0.00	21.10
17			200	1.64	98.4	2.90	0.00	22.80
18	5,011	5,017						
18			20	22.75	59.3	0.00	5.60	7.60
18			25	21.85	65.2	0.10	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			32	20.80	70.6	0.15	5.20	9.20
18			40	19.99	76.0	0.25	5.00	10.30
18			50	18.89	80.9	0.35	4.70	11.50
18			63	17.19	85.3	0.55	4.30	13.00
18			80	14.64	89.1	0.80	3.70	14.80
18			100	11.29	92.3	1.25	3.00	16.80
18			125	7.08	94.9	1.91	1.80	18.80
18			160	1.38	97.0	2.86	0.00	21.10
18			200	-2.62	98.4	4.11	0.00	22.80
19	4,484	4,493						
19			20	23.70	59.3	0.00	5.60	7.60
19			25	22.81	65.2	0.09	5.40	8.30
19			32	21.77	70.6	0.13	5.20	9.20
19			40	20.98	76.0	0.22	5.00	10.30
19			50	19.89	80.9	0.31	4.70	11.50
19			63	18.21	85.3	0.49	4.30	13.00
19			80	15.68	89.1	0.72	3.70	14.80
19			100	12.38	92.3	1.12	3.00	16.80
19			125	8.24	94.9	1.71	1.80	18.80
19			160	2.64	97.0	2.56	0.00	21.10
19			200	-1.23	98.4	3.68	0.00	22.80
2	6,379	6,384						
2			20	20.65	59.3	0.00	5.60	7.60
2			25	19.73	65.2	0.13	5.40	8.30
2			32	18.66	70.6	0.19	5.20	9.20
2			40	17.83	76.0	0.32	5.00	10.30
2			50	16.70	80.9	0.45	4.70	11.50
2			63	14.95	85.3	0.70	4.30	13.00
2			80	12.33	89.1	1.02	3.70	14.80
2			100	8.85	92.3	1.60	3.00	16.80
2			125	4.47	94.9	2.43	1.80	18.80
2			160	-1.49	97.0	3.64	0.00	21.10
2			200	-5.84	98.4	5.23	0.00	22.80
20	3,984	3,993						
20			20	24.73	59.3	0.00	5.60	7.60
20			25	23.85	65.2	0.08	5.40	8.30
20			32	22.81	70.6	0.12	5.20	9.20
20			40	22.03	76.0	0.20	5.00	10.30
20			50	20.95	80.9	0.28	4.70	11.50
20			63	19.29	85.3	0.44	4.30	13.00
20			80	16.79	89.1	0.64	3.70	14.80
20			100	13.53	92.3	1.00	3.00	16.80
20			125	9.46	94.9	1.52	1.80	18.80
20			160	3.95	97.0	2.28	0.00	21.10
20			200	0.20	98.4	3.27	0.00	22.80
21	3,404	3,413						
21			20	26.09	59.3	0.00	5.60	7.60
21			25	25.22	65.2	0.07	5.40	8.30
21			32	24.19	70.6	0.10	5.20	9.20
21			40	23.42	76.0	0.17	5.00	10.30
21			50	22.35	80.9	0.24	4.70	11.50
21			63	20.71	85.3	0.38	4.30	13.00
21			80	18.24	89.1	0.55	3.70	14.80
21			100	15.04	92.3	0.85	3.00	16.80
21			125	11.04	94.9	1.30	1.80	18.80
21			160	5.64	97.0	1.95	0.00	21.10
21			200	2.04	98.4	2.80	0.00	22.80
22	2,829	2,841						
22			20	27.69	59.3	0.00	5.60	7.60
22			25	26.83	65.2	0.06	5.40	8.30
22			32	25.80	70.6	0.09	5.20	9.20
22			40	25.04	76.0	0.14	5.00	10.30
22			50	23.98	80.9	0.20	4.70	11.50
22			63	22.37	85.3	0.31	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			80	19.93	89.1	0.45	3.70	14.80
22			100	16.77	92.3	0.71	3.00	16.80
22			125	12.85	94.9	1.08	1.80	18.80
22			160	7.56	97.0	1.62	0.00	21.10
22			200	4.10	98.4	2.33	0.00	22.80
23	2,796	2,805						
23			20	27.79	59.3	0.00	5.60	7.60
23			25	26.94	65.2	0.06	5.40	8.30
23			32	25.91	70.6	0.08	5.20	9.20
23			40	25.15	76.0	0.14	5.00	10.30
23			50	24.10	80.9	0.20	4.70	11.50
23			63	22.48	85.3	0.31	4.30	13.00
23			80	20.04	89.1	0.45	3.70	14.80
23			100	16.89	92.3	0.70	3.00	16.80
23			125	12.97	94.9	1.07	1.80	18.80
23			160	7.69	97.0	1.60	0.00	21.10
23			200	4.24	98.4	2.30	0.00	22.80
24	2,321	2,332						
24			20	29.40	59.3	0.00	5.60	7.60
24			25	28.55	65.2	0.05	5.40	8.30
24			32	27.53	70.6	0.07	5.20	9.20
24			40	26.78	76.0	0.12	5.00	10.30
24			50	25.73	80.9	0.16	4.70	11.50
24			63	24.14	85.3	0.26	4.30	13.00
24			80	21.72	89.1	0.37	3.70	14.80
24			100	18.61	92.3	0.58	3.00	16.80
24			125	14.76	94.9	0.89	1.80	18.80
24			160	9.57	97.0	1.33	0.00	21.10
24			200	6.23	98.4	1.91	0.00	22.80
3	6,168	6,173						
3			20	20.95	59.3	0.00	5.60	7.60
3			25	20.02	65.2	0.12	5.40	8.30
3			32	18.96	70.6	0.19	5.20	9.20
3			40	18.14	76.0	0.31	5.00	10.30
3			50	17.01	80.9	0.43	4.70	11.50
3			63	15.26	85.3	0.68	4.30	13.00
3			80	12.65	89.1	0.99	3.70	14.80
3			100	9.20	92.3	1.54	3.00	16.80
3			125	4.84	94.9	2.35	1.80	18.80
3			160	-1.08	97.0	3.52	0.00	21.10
3			200	-5.37	98.4	5.06	0.00	22.80
4	5,813	5,818						
4			20	21.46	59.3	0.00	5.60	7.60
4			25	20.54	65.2	0.12	5.40	8.30
4			32	19.49	70.6	0.17	5.20	9.20
4			40	18.67	76.0	0.29	5.00	10.30
4			50	17.55	80.9	0.41	4.70	11.50
4			63	15.82	85.3	0.64	4.30	13.00
4			80	13.23	89.1	0.93	3.70	14.80
4			100	9.80	92.3	1.45	3.00	16.80
4			125	5.49	94.9	2.21	1.80	18.80
4			160	-0.36	97.0	3.32	0.00	21.10
4			200	-4.57	98.4	4.77	0.00	22.80
5	5,263	5,269						
5			20	22.32	59.3	0.00	5.60	7.60
5			25	21.42	65.2	0.11	5.40	8.30
5			32	20.36	70.6	0.16	5.20	9.20
5			40	19.56	76.0	0.26	5.00	10.30
5			50	18.45	80.9	0.37	4.70	11.50
5			63	16.74	85.3	0.58	4.30	13.00
5			80	14.17	89.1	0.84	3.70	14.80
5			100	10.80	92.3	1.32	3.00	16.80
5			125	6.56	94.9	2.00	1.80	18.80
5			160	0.81	97.0	3.00	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			200	-3.25	98.4	4.32	0.00	22.80
6	6,571	6,575						
6			20	20.40	59.3	0.00	5.60	7.60
6			25	19.46	65.2	0.13	5.40	8.30
6			32	18.40	70.6	0.20	5.20	9.20
6			40	17.57	76.0	0.33	5.00	10.30
6			50	16.43	80.9	0.46	4.70	11.50
6			63	14.67	85.3	0.72	4.30	13.00
6			80	12.04	89.1	1.05	3.70	14.80
6			100	8.55	92.3	1.64	3.00	16.80
6			125	4.14	94.9	2.50	1.80	18.80
6			160	-1.85	97.0	3.75	0.00	21.10
6			200	-6.25	98.4	5.39	0.00	22.80
7	5,924	5,929						
7			20	21.30	59.3	0.00	5.60	7.60
7			25	20.38	65.2	0.12	5.40	8.30
7			32	19.32	70.6	0.18	5.20	9.20
7			40	18.50	76.0	0.30	5.00	10.30
7			50	17.38	80.9	0.42	4.70	11.50
7			63	15.64	85.3	0.65	4.30	13.00
7			80	13.04	89.1	0.95	3.70	14.80
7			100	9.61	92.3	1.48	3.00	16.80
7			125	5.29	94.9	2.25	1.80	18.80
7			160	-0.59	97.0	3.38	0.00	21.10
7			200	-4.82	98.4	4.86	0.00	22.80
8	5,554	5,559						
8			20	21.85	59.3	0.00	5.60	7.60
8			25	20.94	65.2	0.11	5.40	8.30
8			32	19.89	70.6	0.17	5.20	9.20
8			40	19.08	76.0	0.28	5.00	10.30
8			50	17.96	80.9	0.39	4.70	11.50
8			63	16.24	85.3	0.61	4.30	13.00
8			80	13.66	89.1	0.89	3.70	14.80
8			100	10.26	92.3	1.39	3.00	16.80
8			125	5.99	94.9	2.11	1.80	18.80
8			160	0.18	97.0	3.17	0.00	21.10
8			200	-3.96	98.4	4.56	0.00	22.80
9	6,751	6,755						
9			20	20.16	59.3	0.00	5.60	7.60
9			25	19.23	65.2	0.14	5.40	8.30
9			32	18.16	70.6	0.20	5.20	9.20
9			40	17.32	76.0	0.34	5.00	10.30
9			50	16.19	80.9	0.47	4.70	11.50
9			63	14.42	85.3	0.74	4.30	13.00
9			80	11.78	89.1	1.08	3.70	14.80
9			100	8.27	92.3	1.69	3.00	16.80
9			125	3.84	94.9	2.57	1.80	18.80
9			160	-2.19	97.0	3.85	0.00	21.10
9			200	-6.63	98.4	5.54	0.00	22.80
Sum								
Sum			20	37.80				
Sum			25	36.91				
Sum			32	35.87				
Sum			40	35.09				
Sum			50	34.00				
Sum			63	32.34				
Sum			80	29.84				
Sum			100	26.58				
Sum			125	22.51				
Sum			160	17.02				
Sum			200	13.31				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: RH Kirnumäki Noise sensitive point: Finnish normal frequency - User defined (307)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,894	5,897						
1			20	21.34	59.3	0.00	5.60	7.60
1			25	20.42	65.2	0.12	5.40	8.30
1			32	19.37	70.6	0.18	5.20	9.20
1			40	18.55	76.0	0.29	5.00	10.30
1			50	17.43	80.9	0.41	4.70	11.50
1			63	15.69	85.3	0.65	4.30	13.00
1			80	13.10	89.1	0.94	3.70	14.80
1			100	9.66	92.3	1.47	3.00	16.80
1			125	5.35	94.9	2.24	1.80	18.80
1			160	-0.52	97.0	3.36	0.00	21.10
1			200	-4.75	98.4	4.84	0.00	22.80
10	3,351	3,357						
10			20	26.24	59.3	0.00	5.60	7.60
10			25	25.37	65.2	0.07	5.40	8.30
10			32	24.34	70.6	0.10	5.20	9.20
10			40	23.57	76.0	0.17	5.00	10.30
10			50	22.50	80.9	0.23	4.70	11.50
10			63	20.86	85.3	0.37	4.30	13.00
10			80	18.40	89.1	0.54	3.70	14.80
10			100	15.19	92.3	0.84	3.00	16.80
10			125	11.21	94.9	1.28	1.80	18.80
10			160	5.82	97.0	1.91	0.00	21.10
10			200	2.23	98.4	2.75	0.00	22.80
11	2,813	2,819						
11			20	27.75	59.3	0.00	5.60	7.60
11			25	26.90	65.2	0.06	5.40	8.30
11			32	25.87	70.6	0.08	5.20	9.20
11			40	25.11	76.0	0.14	5.00	10.30
11			50	24.05	80.9	0.20	4.70	11.50
11			63	22.44	85.3	0.31	4.30	13.00
11			80	20.00	89.1	0.45	3.70	14.80
11			100	16.84	92.3	0.70	3.00	16.80
11			125	12.93	94.9	1.07	1.80	18.80
11			160	7.64	97.0	1.61	0.00	21.10
11			200	4.19	98.4	2.31	0.00	22.80
12	2,876	2,883						
12			20	27.56	59.3	0.00	5.60	7.60
12			25	26.70	65.2	0.06	5.40	8.30
12			32	25.67	70.6	0.09	5.20	9.20
12			40	24.91	76.0	0.14	5.00	10.30
12			50	23.85	80.9	0.20	4.70	11.50
12			63	22.24	85.3	0.32	4.30	13.00
12			80	19.79	89.1	0.46	3.70	14.80
12			100	16.64	92.3	0.72	3.00	16.80
12			125	12.71	94.9	1.10	1.80	18.80
12			160	7.41	97.0	1.64	0.00	21.10
12			200	3.94	98.4	2.36	0.00	22.80
13	3,509	3,515						
13			20	25.84	59.3	0.00	5.60	7.60
13			25	24.96	65.2	0.07	5.40	8.30
13			32	23.93	70.6	0.11	5.20	9.20
13			40	23.16	76.0	0.18	5.00	10.30
13			50	22.09	80.9	0.25	4.70	11.50
13			63	20.45	85.3	0.39	4.30	13.00
13			80	17.97	89.1	0.56	3.70	14.80
13			100	14.75	92.3	0.88	3.00	16.80
13			125	10.74	94.9	1.34	1.80	18.80
13			160	5.33	97.0	2.00	0.00	21.10
13			200	1.70	98.4	2.88	0.00	22.80
14	3,899	3,905						
14			20	24.92	59.3	0.00	5.60	7.60
14			25	24.05	65.2	0.08	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	23.01	70.6	0.12	5.20	9.20
14			40	22.23	76.0	0.20	5.00	10.30
14			50	21.15	80.9	0.27	4.70	11.50
14			63	19.49	85.3	0.43	4.30	13.00
14			80	17.00	89.1	0.62	3.70	14.80
14			100	13.74	92.3	0.98	3.00	16.80
14			125	9.68	94.9	1.48	1.80	18.80
14			160	4.19	97.0	2.23	0.00	21.10
14			200	0.47	98.4	3.20	0.00	22.80
15	3,997	4,004						
15			20	24.70	59.3	0.00	5.60	7.60
15			25	23.82	65.2	0.08	5.40	8.30
15			32	22.78	70.6	0.12	5.20	9.20
15			40	22.00	76.0	0.20	5.00	10.30
15			50	20.92	80.9	0.28	4.70	11.50
15			63	19.26	85.3	0.44	4.30	13.00
15			80	16.76	89.1	0.64	3.70	14.80
15			100	13.50	92.3	1.00	3.00	16.80
15			125	9.43	94.9	1.52	1.80	18.80
15			160	3.92	97.0	2.28	0.00	21.10
15			200	0.17	98.4	3.28	0.00	22.80
16	4,512	4,517						
16			20	23.66	59.3	0.00	5.60	7.60
16			25	22.77	65.2	0.09	5.40	8.30
16			32	21.72	70.6	0.14	5.20	9.20
16			40	20.93	76.0	0.23	5.00	10.30
16			50	19.84	80.9	0.32	4.70	11.50
16			63	18.16	85.3	0.50	4.30	13.00
16			80	15.63	89.1	0.72	3.70	14.80
16			100	12.33	92.3	1.13	3.00	16.80
16			125	8.19	94.9	1.72	1.80	18.80
16			160	2.58	97.0	2.57	0.00	21.10
16			200	-1.30	98.4	3.70	0.00	22.80
17	5,116	5,120						
17			20	22.57	59.3	0.00	5.60	7.60
17			25	21.67	65.2	0.10	5.40	8.30
17			32	20.62	70.6	0.15	5.20	9.20
17			40	19.81	76.0	0.26	5.00	10.30
17			50	18.71	80.9	0.36	4.70	11.50
17			63	17.00	85.3	0.56	4.30	13.00
17			80	14.45	89.1	0.82	3.70	14.80
17			100	11.09	92.3	1.28	3.00	16.80
17			125	6.87	94.9	1.95	1.80	18.80
17			160	1.15	97.0	2.92	0.00	21.10
17			200	-2.88	98.4	4.20	0.00	22.80
18	3,334	3,340						
18			20	26.28	59.3	0.00	5.60	7.60
18			25	25.41	65.2	0.07	5.40	8.30
18			32	24.38	70.6	0.10	5.20	9.20
18			40	23.61	76.0	0.17	5.00	10.30
18			50	22.54	80.9	0.23	4.70	11.50
18			63	20.91	85.3	0.37	4.30	13.00
18			80	18.44	89.1	0.53	3.70	14.80
18			100	15.24	92.3	0.84	3.00	16.80
18			125	11.25	94.9	1.27	1.80	18.80
18			160	5.87	97.0	1.90	0.00	21.10
18			200	2.28	98.4	2.74	0.00	22.80
19	3,795	3,802						
19			20	25.15	59.3	0.00	5.60	7.60
19			25	24.28	65.2	0.08	5.40	8.30
19			32	23.24	70.6	0.11	5.20	9.20
19			40	22.46	76.0	0.19	5.00	10.30
19			50	21.39	80.9	0.27	4.70	11.50
19			63	19.73	85.3	0.42	4.30	13.00

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	17.24	89.1	0.61	3.70	14.80
19			100	14.00	92.3	0.95	3.00	16.80
19			125	9.96	94.9	1.44	1.80	18.80
19			160	4.48	97.0	2.17	0.00	21.10
19			200	0.78	98.4	3.12	0.00	22.80
2	4,846	4,849						
2			20	23.04	59.3	0.00	5.60	7.60
2			25	22.14	65.2	0.10	5.40	8.30
2			32	21.10	70.6	0.15	5.20	9.20
2			40	20.30	76.0	0.24	5.00	10.30
2			50	19.20	80.9	0.34	4.70	11.50
2			63	17.50	85.3	0.53	4.30	13.00
2			80	14.96	89.1	0.78	3.70	14.80
2			100	11.63	92.3	1.21	3.00	16.80
2			125	7.44	94.9	1.84	1.80	18.80
2			160	1.77	97.0	2.76	0.00	21.10
2			200	-2.19	98.4	3.98	0.00	22.80
20	4,285	4,290						
20			20	24.11	59.3	0.00	5.60	7.60
20			25	23.22	65.2	0.09	5.40	8.30
20			32	22.18	70.6	0.13	5.20	9.20
20			40	21.39	76.0	0.21	5.00	10.30
20			50	20.30	80.9	0.30	4.70	11.50
20			63	18.63	85.3	0.47	4.30	13.00
20			80	16.12	89.1	0.69	3.70	14.80
20			100	12.83	92.3	1.07	3.00	16.80
20			125	8.72	94.9	1.63	1.80	18.80
20			160	3.16	97.0	2.45	0.00	21.10
20			200	-0.67	98.4	3.52	0.00	22.80
21	4,912	4,916						
21			20	22.92	59.3	0.00	5.60	7.60
21			25	22.02	65.2	0.10	5.40	8.30
21			32	20.97	70.6	0.15	5.20	9.20
21			40	20.18	76.0	0.25	5.00	10.30
21			50	19.07	80.9	0.34	4.70	11.50
21			63	17.38	85.3	0.54	4.30	13.00
21			80	14.83	89.1	0.79	3.70	14.80
21			100	11.49	92.3	1.23	3.00	16.80
21			125	7.30	94.9	1.87	1.80	18.80
21			160	1.62	97.0	2.80	0.00	21.10
21			200	-2.36	98.4	4.03	0.00	22.80
22	5,565	5,569						
22			20	21.84	59.3	0.00	5.60	7.60
22			25	20.93	65.2	0.11	5.40	8.30
22			32	19.87	70.6	0.17	5.20	9.20
22			40	19.06	76.0	0.28	5.00	10.30
22			50	17.95	80.9	0.39	4.70	11.50
22			63	16.22	85.3	0.61	4.30	13.00
22			80	13.65	89.1	0.89	3.70	14.80
22			100	10.24	92.3	1.39	3.00	16.80
22			125	5.97	94.9	2.12	1.80	18.80
22			160	0.16	97.0	3.17	0.00	21.10
22			200	-3.98	98.4	4.57	0.00	22.80
23	5,958	5,961						
23			20	21.25	59.3	0.00	5.60	7.60
23			25	20.33	65.2	0.12	5.40	8.30
23			32	19.27	70.6	0.18	5.20	9.20
23			40	18.45	76.0	0.30	5.00	10.30
23			50	17.33	80.9	0.42	4.70	11.50
23			63	15.59	85.3	0.66	4.30	13.00
23			80	12.99	89.1	0.95	3.70	14.80
23			100	9.55	92.3	1.49	3.00	16.80
23			125	5.23	94.9	2.27	1.80	18.80
23			160	-0.65	97.0	3.40	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-4.89	98.4	4.89	0.00	22.80
24	6,081	6,084						
24			20	21.07	59.3	0.00	5.60	7.60
24			25	20.15	65.2	0.12	5.40	8.30
24			32	19.09	70.6	0.18	5.20	9.20
24			40	18.27	76.0	0.30	5.00	10.30
24			50	17.14	80.9	0.43	4.70	11.50
24			63	15.40	85.3	0.67	4.30	13.00
24			80	12.79	89.1	0.97	3.70	14.80
24			100	9.35	92.3	1.52	3.00	16.80
24			125	5.00	94.9	2.31	1.80	18.80
24			160	-0.90	97.0	3.47	0.00	21.10
24			200	-5.17	98.4	4.99	0.00	22.80
3	5,445	5,449						
3			20	22.03	59.3	0.00	5.60	7.60
3			25	21.12	65.2	0.11	5.40	8.30
3			32	20.07	70.6	0.16	5.20	9.20
3			40	19.26	76.0	0.27	5.00	10.30
3			50	18.14	80.9	0.38	4.70	11.50
3			63	16.43	85.3	0.60	4.30	13.00
3			80	13.85	89.1	0.87	3.70	14.80
3			100	10.46	92.3	1.36	3.00	16.80
3			125	6.20	94.9	2.07	1.80	18.80
3			160	0.42	97.0	3.11	0.00	21.10
3			200	-3.69	98.4	4.47	0.00	22.80
4	5,038	5,041						
4			20	22.70	59.3	0.00	5.60	7.60
4			25	21.80	65.2	0.10	5.40	8.30
4			32	20.75	70.6	0.15	5.20	9.20
4			40	19.95	76.0	0.25	5.00	10.30
4			50	18.85	80.9	0.35	4.70	11.50
4			63	17.15	85.3	0.55	4.30	13.00
4			80	14.59	89.1	0.81	3.70	14.80
4			100	11.24	92.3	1.26	3.00	16.80
4			125	7.03	94.9	1.92	1.80	18.80
4			160	1.33	97.0	2.87	0.00	21.10
4			200	-2.68	98.4	4.13	0.00	22.80
5	5,058	5,062						
5			20	22.67	59.3	0.00	5.60	7.60
5			25	21.77	65.2	0.10	5.40	8.30
5			32	20.72	70.6	0.15	5.20	9.20
5			40	19.92	76.0	0.25	5.00	10.30
5			50	18.81	80.9	0.35	4.70	11.50
5			63	17.11	85.3	0.56	4.30	13.00
5			80	14.56	89.1	0.81	3.70	14.80
5			100	11.20	92.3	1.27	3.00	16.80
5			125	6.99	94.9	1.92	1.80	18.80
5			160	1.28	97.0	2.89	0.00	21.10
5			200	-2.74	98.4	4.15	0.00	22.80
6	3,693	3,698						
6			20	25.39	59.3	0.00	5.60	7.60
6			25	24.52	65.2	0.07	5.40	8.30
6			32	23.48	70.6	0.11	5.20	9.20
6			40	22.71	76.0	0.18	5.00	10.30
6			50	21.63	80.9	0.26	4.70	11.50
6			63	19.98	85.3	0.41	4.30	13.00
6			80	17.50	89.1	0.59	3.70	14.80
6			100	14.27	92.3	0.92	3.00	16.80
6			125	10.23	94.9	1.41	1.80	18.80
6			160	4.78	97.0	2.11	0.00	21.10
6			200	1.11	98.4	3.03	0.00	22.80
7	3,980	3,985						
7			20	24.75	59.3	0.00	5.60	7.60
7			25	23.87	65.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			32	22.83	70.6	0.12	5.20	9.20
7			40	22.05	76.0	0.20	5.00	10.30
7			50	20.96	80.9	0.28	4.70	11.50
7			63	19.31	85.3	0.44	4.30	13.00
7			80	16.81	89.1	0.64	3.70	14.80
7			100	13.55	92.3	1.00	3.00	16.80
7			125	9.48	94.9	1.51	1.80	18.80
7			160	3.97	97.0	2.27	0.00	21.10
7			200	0.22	98.4	3.27	0.00	22.80
8	4,505	4,509						
8			20	23.67	59.3	0.00	5.60	7.60
8			25	22.78	65.2	0.09	5.40	8.30
8			32	21.74	70.6	0.14	5.20	9.20
8			40	20.95	76.0	0.23	5.00	10.30
8			50	19.85	80.9	0.32	4.70	11.50
8			63	18.17	85.3	0.50	4.30	13.00
8			80	15.65	89.1	0.72	3.70	14.80
8			100	12.34	92.3	1.13	3.00	16.80
8			125	8.20	94.9	1.71	1.80	18.80
8			160	2.60	97.0	2.57	0.00	21.10
8			200	-1.28	98.4	3.70	0.00	22.80
9	2,952	2,958						
9			20	27.33	59.3	0.00	5.60	7.60
9			25	26.48	65.2	0.06	5.40	8.30
9			32	25.45	70.6	0.09	5.20	9.20
9			40	24.69	76.0	0.15	5.00	10.30
9			50	23.62	80.9	0.21	4.70	11.50
9			63	22.01	85.3	0.33	4.30	13.00
9			80	19.56	89.1	0.47	3.70	14.80
9			100	16.39	92.3	0.74	3.00	16.80
9			125	12.46	94.9	1.12	1.80	18.80
9			160	7.15	97.0	1.69	0.00	21.10
9			200	3.65	98.4	2.43	0.00	22.80
Sum								
Sum			20	38.39				
Sum			25	37.51				
Sum			32	36.47				
Sum			40	35.69				
Sum			50	34.61				
Sum			63	32.95				
Sum			80	30.45				
Sum			100	27.20				
Sum			125	23.14				
Sum			160	17.66				
Sum			200	13.95				

Noise sensitive area: RH Koivuniemi Noise sensitive point: Finnish normal frequency - User defined (330)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,700	6,703						
1			20	20.23	59.3	0.00	5.60	7.60
1			25	19.30	65.2	0.13	5.40	8.30
1			32	18.23	70.6	0.20	5.20	9.20
1			40	17.39	76.0	0.34	5.00	10.30
1			50	16.26	80.9	0.47	4.70	11.50
1			63	14.49	85.3	0.74	4.30	13.00
1			80	11.85	89.1	1.07	3.70	14.80
1			100	8.35	92.3	1.68	3.00	16.80
1			125	3.93	94.9	2.55	1.80	18.80
1			160	-2.09	97.0	3.82	0.00	21.10
1			200	-6.52	98.4	5.50	0.00	22.80
10	4,041	4,047						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			20	24.61	59.3	0.00	5.60	7.60
10			25	23.73	65.2	0.08	5.40	8.30
10			32	22.69	70.6	0.12	5.20	9.20
10			40	21.91	76.0	0.20	5.00	10.30
10			50	20.83	80.9	0.28	4.70	11.50
10			63	19.16	85.3	0.45	4.30	13.00
10			80	16.66	89.1	0.65	3.70	14.80
10			100	13.40	92.3	1.01	3.00	16.80
10			125	9.32	94.9	1.54	1.80	18.80
10			160	3.80	97.0	2.31	0.00	21.10
10			200	0.04	98.4	3.32	0.00	22.80
11	3,440	3,446						
11			20	26.01	59.3	0.00	5.60	7.60
11			25	25.14	65.2	0.07	5.40	8.30
11			32	24.11	70.6	0.10	5.20	9.20
11			40	23.34	76.0	0.17	5.00	10.30
11			50	22.26	80.9	0.24	4.70	11.50
11			63	20.63	85.3	0.38	4.30	13.00
11			80	18.15	89.1	0.55	3.70	14.80
11			100	14.94	92.3	0.86	3.00	16.80
11			125	10.94	94.9	1.31	1.80	18.80
11			160	5.54	97.0	1.96	0.00	21.10
11			200	1.93	98.4	2.83	0.00	22.80
12	3,183	3,190						
12			20	26.68	59.3	0.00	5.60	7.60
12			25	25.82	65.2	0.06	5.40	8.30
12			32	24.78	70.6	0.10	5.20	9.20
12			40	24.02	76.0	0.16	5.00	10.30
12			50	22.95	80.9	0.22	4.70	11.50
12			63	21.33	85.3	0.35	4.30	13.00
12			80	18.87	89.1	0.51	3.70	14.80
12			100	15.68	92.3	0.80	3.00	16.80
12			125	11.71	94.9	1.21	1.80	18.80
12			160	6.36	97.0	1.82	0.00	21.10
12			200	2.81	98.4	2.62	0.00	22.80
13	3,588	3,595						
13			20	25.64	59.3	0.00	5.60	7.60
13			25	24.77	65.2	0.07	5.40	8.30
13			32	23.73	70.6	0.11	5.20	9.20
13			40	22.96	76.0	0.18	5.00	10.30
13			50	21.89	80.9	0.25	4.70	11.50
13			63	20.24	85.3	0.40	4.30	13.00
13			80	17.76	89.1	0.58	3.70	14.80
13			100	14.54	92.3	0.90	3.00	16.80
13			125	10.52	94.9	1.37	1.80	18.80
13			160	5.09	97.0	2.05	0.00	21.10
13			200	1.44	98.4	2.95	0.00	22.80
14	4,086	4,093						
14			20	24.51	59.3	0.00	5.60	7.60
14			25	23.63	65.2	0.08	5.40	8.30
14			32	22.59	70.6	0.12	5.20	9.20
14			40	21.81	76.0	0.20	5.00	10.30
14			50	20.73	80.9	0.29	4.70	11.50
14			63	19.06	85.3	0.45	4.30	13.00
14			80	16.56	89.1	0.65	3.70	14.80
14			100	13.29	92.3	1.02	3.00	16.80
14			125	9.20	94.9	1.56	1.80	18.80
14			160	3.68	97.0	2.33	0.00	21.10
14			200	-0.10	98.4	3.36	0.00	22.80
15	3,834	3,842						
15			20	25.06	59.3	0.00	5.60	7.60
15			25	24.19	65.2	0.08	5.40	8.30
15			32	23.15	70.6	0.12	5.20	9.20
15			40	22.37	76.0	0.19	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			50	21.29	80.9	0.27	4.70	11.50
15			63	19.64	85.3	0.42	4.30	13.00
15			80	17.15	89.1	0.61	3.70	14.80
15			100	13.90	92.3	0.96	3.00	16.80
15			125	9.85	94.9	1.46	1.80	18.80
15			160	4.37	97.0	2.19	0.00	21.10
15			200	0.66	98.4	3.15	0.00	22.80
16	4,179	4,184						
16			20	24.32	59.3	0.00	5.60	7.60
16			25	23.44	65.2	0.08	5.40	8.30
16			32	22.40	70.6	0.13	5.20	9.20
16			40	21.61	76.0	0.21	5.00	10.30
16			50	20.53	80.9	0.29	4.70	11.50
16			63	18.86	85.3	0.46	4.30	13.00
16			80	16.35	89.1	0.67	3.70	14.80
16			100	13.07	92.3	1.05	3.00	16.80
16			125	8.98	94.9	1.59	1.80	18.80
16			160	3.43	97.0	2.39	0.00	21.10
16			200	-0.36	98.4	3.43	0.00	22.80
17	4,819	4,823						
17			20	23.09	59.3	0.00	5.60	7.60
17			25	22.19	65.2	0.10	5.40	8.30
17			32	21.14	70.6	0.14	5.20	9.20
17			40	20.35	76.0	0.24	5.00	10.30
17			50	19.25	80.9	0.34	4.70	11.50
17			63	17.55	85.3	0.53	4.30	13.00
17			80	15.01	89.1	0.77	3.70	14.80
17			100	11.68	92.3	1.21	3.00	16.80
17			125	7.50	94.9	1.83	1.80	18.80
17			160	1.84	97.0	2.75	0.00	21.10
17			200	-2.12	98.4	3.95	0.00	22.80
18	3,138	3,145						
18			20	26.80	59.3	0.00	5.60	7.60
18			25	25.94	65.2	0.06	5.40	8.30
18			32	24.91	70.6	0.09	5.20	9.20
18			40	24.14	76.0	0.16	5.00	10.30
18			50	23.08	80.9	0.22	4.70	11.50
18			63	21.45	85.3	0.35	4.30	13.00
18			80	19.00	89.1	0.50	3.70	14.80
18			100	15.81	92.3	0.79	3.00	16.80
18			125	11.85	94.9	1.20	1.80	18.80
18			160	6.51	97.0	1.79	0.00	21.10
18			200	2.97	98.4	2.58	0.00	22.80
19	3,377	3,386						
19			20	26.16	59.3	0.00	5.60	7.60
19			25	25.29	65.2	0.07	5.40	8.30
19			32	24.26	70.6	0.10	5.20	9.20
19			40	23.49	76.0	0.17	5.00	10.30
19			50	22.42	80.9	0.24	4.70	11.50
19			63	20.79	85.3	0.37	4.30	13.00
19			80	18.32	89.1	0.54	3.70	14.80
19			100	15.11	92.3	0.85	3.00	16.80
19			125	11.12	94.9	1.29	1.80	18.80
19			160	5.73	97.0	1.93	0.00	21.10
19			200	2.13	98.4	2.78	0.00	22.80
2	5,657	5,660						
2			20	21.70	59.3	0.00	5.60	7.60
2			25	20.78	65.2	0.11	5.40	8.30
2			32	19.73	70.6	0.17	5.20	9.20
2			40	18.91	76.0	0.28	5.00	10.30
2			50	17.80	80.9	0.40	4.70	11.50
2			63	16.07	85.3	0.62	4.30	13.00
2			80	13.49	89.1	0.91	3.70	14.80
2			100	10.08	92.3	1.42	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			125	5.79	94.9	2.15	1.80	18.80
2			160	-0.03	97.0	3.23	0.00	21.10
2			200	-4.20	98.4	4.64	0.00	22.80
20	3,765	3,772						
20			20	25.22	59.3	0.00	5.60	7.60
20			25	24.35	65.2	0.08	5.40	8.30
20			32	23.31	70.6	0.11	5.20	9.20
20			40	22.53	76.0	0.19	5.00	10.30
20			50	21.46	80.9	0.26	4.70	11.50
20			63	19.81	85.3	0.41	4.30	13.00
20			80	17.32	89.1	0.60	3.70	14.80
20			100	14.08	92.3	0.94	3.00	16.80
20			125	10.04	94.9	1.43	1.80	18.80
20			160	4.57	97.0	2.15	0.00	21.10
20			200	0.88	98.4	3.09	0.00	22.80
21	4,382	4,387						
21			20	23.91	59.3	0.00	5.60	7.60
21			25	23.02	65.2	0.09	5.40	8.30
21			32	21.98	70.6	0.13	5.20	9.20
21			40	21.19	76.0	0.22	5.00	10.30
21			50	20.10	80.9	0.31	4.70	11.50
21			63	18.43	85.3	0.48	4.30	13.00
21			80	15.91	89.1	0.70	3.70	14.80
21			100	12.61	92.3	1.10	3.00	16.80
21			125	8.49	94.9	1.67	1.80	18.80
21			160	2.91	97.0	2.50	0.00	21.10
21			200	-0.94	98.4	3.60	0.00	22.80
22	5,027	5,032						
22			20	22.72	59.3	0.00	5.60	7.60
22			25	21.82	65.2	0.10	5.40	8.30
22			32	20.77	70.6	0.15	5.20	9.20
22			40	19.97	76.0	0.25	5.00	10.30
22			50	18.86	80.9	0.35	4.70	11.50
22			63	17.16	85.3	0.55	4.30	13.00
22			80	14.61	89.1	0.81	3.70	14.80
22			100	11.26	92.3	1.26	3.00	16.80
22			125	7.05	94.9	1.91	1.80	18.80
22			160	1.35	97.0	2.87	0.00	21.10
22			200	-2.66	98.4	4.13	0.00	22.80
23	5,569	5,573						
23			20	21.83	59.3	0.00	5.60	7.60
23			25	20.92	65.2	0.11	5.40	8.30
23			32	19.87	70.6	0.17	5.20	9.20
23			40	19.05	76.0	0.28	5.00	10.30
23			50	17.94	80.9	0.39	4.70	11.50
23			63	16.22	85.3	0.61	4.30	13.00
23			80	13.64	89.1	0.89	3.70	14.80
23			100	10.24	92.3	1.39	3.00	16.80
23			125	5.96	94.9	2.12	1.80	18.80
23			160	0.15	97.0	3.18	0.00	21.10
23			200	-3.99	98.4	4.57	0.00	22.80
24	5,486	5,489						
24			20	21.96	59.3	0.00	5.60	7.60
24			25	21.05	65.2	0.11	5.40	8.30
24			32	20.00	70.6	0.16	5.20	9.20
24			40	19.19	76.0	0.27	5.00	10.30
24			50	18.08	80.9	0.38	4.70	11.50
24			63	16.36	85.3	0.60	4.30	13.00
24			80	13.78	89.1	0.88	3.70	14.80
24			100	10.39	92.3	1.37	3.00	16.80
24			125	6.12	94.9	2.09	1.80	18.80
24			160	0.33	97.0	3.13	0.00	21.10
24			200	-3.79	98.4	4.50	0.00	22.80
3	6,169	6,172						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			20	20.95	59.3	0.00	5.60	7.60
3			25	20.02	65.2	0.12	5.40	8.30
3			32	18.96	70.6	0.19	5.20	9.20
3			40	18.14	76.0	0.31	5.00	10.30
3			50	17.01	80.9	0.43	4.70	11.50
3			63	15.26	85.3	0.68	4.30	13.00
3			80	12.65	89.1	0.99	3.70	14.80
3			100	9.20	92.3	1.54	3.00	16.80
3			125	4.85	94.9	2.35	1.80	18.80
3			160	-1.08	97.0	3.52	0.00	21.10
3			200	-5.37	98.4	5.06	0.00	22.80
4	5,663	5,666						
4			20	21.69	59.3	0.00	5.60	7.60
4			25	20.78	65.2	0.11	5.40	8.30
4			32	19.72	70.6	0.17	5.20	9.20
4			40	18.91	76.0	0.28	5.00	10.30
4			50	17.79	80.9	0.40	4.70	11.50
4			63	16.06	85.3	0.62	4.30	13.00
4			80	13.48	89.1	0.91	3.70	14.80
4			100	10.07	92.3	1.42	3.00	16.80
4			125	5.78	94.9	2.15	1.80	18.80
4			160	-0.04	97.0	3.23	0.00	21.10
4			200	-4.21	98.4	4.65	0.00	22.80
5	5,498	5,501						
5			20	21.95	59.3	0.00	5.60	7.60
5			25	21.04	65.2	0.11	5.40	8.30
5			32	19.98	70.6	0.17	5.20	9.20
5			40	19.17	76.0	0.28	5.00	10.30
5			50	18.06	80.9	0.39	4.70	11.50
5			63	16.34	85.3	0.61	4.30	13.00
5			80	13.76	89.1	0.88	3.70	14.80
5			100	10.37	92.3	1.38	3.00	16.80
5			125	6.10	94.9	2.09	1.80	18.80
5			160	0.31	97.0	3.14	0.00	21.10
5			200	-3.82	98.4	4.51	0.00	22.80
6	4,588	4,592						
6			20	23.51	59.3	0.00	5.60	7.60
6			25	22.62	65.2	0.09	5.40	8.30
6			32	21.58	70.6	0.14	5.20	9.20
6			40	20.78	76.0	0.23	5.00	10.30
6			50	19.69	80.9	0.32	4.70	11.50
6			63	18.01	85.3	0.51	4.30	13.00
6			80	15.48	89.1	0.73	3.70	14.80
6			100	12.16	92.3	1.15	3.00	16.80
6			125	8.01	94.9	1.75	1.80	18.80
6			160	2.39	97.0	2.62	0.00	21.10
6			200	-1.51	98.4	3.77	0.00	22.80
7	4,619	4,624						
7			20	23.46	59.3	0.00	5.60	7.60
7			25	22.56	65.2	0.09	5.40	8.30
7			32	21.52	70.6	0.14	5.20	9.20
7			40	20.72	76.0	0.23	5.00	10.30
7			50	19.63	80.9	0.32	4.70	11.50
7			63	17.94	85.3	0.51	4.30	13.00
7			80	15.41	89.1	0.74	3.70	14.80
7			100	12.10	92.3	1.16	3.00	16.80
7			125	7.94	94.9	1.76	1.80	18.80
7			160	2.32	97.0	2.64	0.00	21.10
7			200	-1.59	98.4	3.79	0.00	22.80
8	5,026	5,031						
8			20	22.72	59.3	0.00	5.60	7.60
8			25	21.82	65.2	0.10	5.40	8.30
8			32	20.77	70.6	0.15	5.20	9.20
8			40	19.97	76.0	0.25	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	18.87	80.9	0.35	4.70	11.50
8			63	17.17	85.3	0.55	4.30	13.00
8			80	14.61	89.1	0.80	3.70	14.80
8			100	11.26	92.3	1.26	3.00	16.80
8			125	7.06	94.9	1.91	1.80	18.80
8			160	1.35	97.0	2.87	0.00	21.10
8			200	-2.66	98.4	4.13	0.00	22.80
9	3,904	3,909						
9			20	24.91	59.3	0.00	5.60	7.60
9			25	24.04	65.2	0.08	5.40	8.30
9			32	23.00	70.6	0.12	5.20	9.20
9			40	22.22	76.0	0.20	5.00	10.30
9			50	21.14	80.9	0.27	4.70	11.50
9			63	19.48	85.3	0.43	4.30	13.00
9			80	16.99	89.1	0.63	3.70	14.80
9			100	13.73	92.3	0.98	3.00	16.80
9			125	9.67	94.9	1.49	1.80	18.80
9			160	4.18	97.0	2.23	0.00	21.10
9			200	0.45	98.4	3.21	0.00	22.80
Sum								
Sum			20	37.92				
Sum			25	37.03				
Sum			32	35.99				
Sum			40	35.21				
Sum			50	34.12				
Sum			63	32.45				
Sum			80	29.95				
Sum			100	26.67				
Sum			125	22.58				
Sum			160	17.05				
Sum			200	13.28				

Noise sensitive area: RH Kotiranta Noise sensitive point: Finnish normal frequency - User defined (312)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,094	2,105						
1			20	30.29	59.3	0.00	5.60	7.60
1			25	29.45	65.2	0.04	5.40	8.30
1			32	28.43	70.6	0.06	5.20	9.20
1			40	27.68	76.0	0.11	5.00	10.30
1			50	26.64	80.9	0.15	4.70	11.50
1			63	25.05	85.3	0.23	4.30	13.00
1			80	22.65	89.1	0.34	3.70	14.80
1			100	19.56	92.3	0.53	3.00	16.80
1			125	15.73	94.9	0.80	1.80	18.80
1			160	10.59	97.0	1.20	0.00	21.10
1			200	7.31	98.4	1.73	0.00	22.80
10	3,551	3,558						
10			20	25.73	59.3	0.00	5.60	7.60
10			25	24.86	65.2	0.07	5.40	8.30
10			32	23.82	70.6	0.11	5.20	9.20
10			40	23.05	76.0	0.18	5.00	10.30
10			50	21.98	80.9	0.25	4.70	11.50
10			63	20.34	85.3	0.39	4.30	13.00
10			80	17.86	89.1	0.57	3.70	14.80
10			100	14.64	92.3	0.89	3.00	16.80
10			125	10.62	94.9	1.35	1.80	18.80
10			160	5.20	97.0	2.03	0.00	21.10
10			200	1.56	98.4	2.92	0.00	22.80
11	4,047	4,053						
11			20	24.60	59.3	0.00	5.60	7.60
11			25	23.72	65.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			32	22.68	70.6	0.12	5.20	9.20
11			40	21.90	76.0	0.20	5.00	10.30
11			50	20.81	80.9	0.28	4.70	11.50
11			63	19.15	85.3	0.45	4.30	13.00
11			80	16.65	89.1	0.65	3.70	14.80
11			100	13.38	92.3	1.01	3.00	16.80
11			125	9.30	94.9	1.54	1.80	18.80
11			160	3.79	97.0	2.31	0.00	21.10
11			200	0.02	98.4	3.32	0.00	22.80
12	4,050	4,056						
12			20	24.59	59.3	0.00	5.60	7.60
12			25	23.71	65.2	0.08	5.40	8.30
12			32	22.67	70.6	0.12	5.20	9.20
12			40	21.89	76.0	0.20	5.00	10.30
12			50	20.81	80.9	0.28	4.70	11.50
12			63	19.14	85.3	0.45	4.30	13.00
12			80	16.64	89.1	0.65	3.70	14.80
12			100	13.38	92.3	1.01	3.00	16.80
12			125	9.30	94.9	1.54	1.80	18.80
12			160	3.78	97.0	2.31	0.00	21.10
12			200	0.01	98.4	3.33	0.00	22.80
13	3,551	3,559						
13			20	25.73	59.3	0.00	5.60	7.60
13			25	24.86	65.2	0.07	5.40	8.30
13			32	23.82	70.6	0.11	5.20	9.20
13			40	23.05	76.0	0.18	5.00	10.30
13			50	21.97	80.9	0.25	4.70	11.50
13			63	20.33	85.3	0.39	4.30	13.00
13			80	17.85	89.1	0.57	3.70	14.80
13			100	14.63	92.3	0.89	3.00	16.80
13			125	10.62	94.9	1.35	1.80	18.80
13			160	5.20	97.0	2.03	0.00	21.10
13			200	1.55	98.4	2.92	0.00	22.80
14	3,063	3,073						
14			20	27.00	59.3	0.00	5.60	7.60
14			25	26.14	65.2	0.06	5.40	8.30
14			32	25.11	70.6	0.09	5.20	9.20
14			40	24.35	76.0	0.15	5.00	10.30
14			50	23.29	80.9	0.22	4.70	11.50
14			63	21.66	85.3	0.34	4.30	13.00
14			80	19.21	89.1	0.49	3.70	14.80
14			100	16.03	92.3	0.77	3.00	16.80
14			125	12.08	94.9	1.17	1.80	18.80
14			160	6.75	97.0	1.75	0.00	21.10
14			200	3.23	98.4	2.52	0.00	22.80
15	3,369	3,380						
15			20	26.18	59.3	0.00	5.60	7.60
15			25	25.31	65.2	0.07	5.40	8.30
15			32	24.28	70.6	0.10	5.20	9.20
15			40	23.51	76.0	0.17	5.00	10.30
15			50	22.44	80.9	0.24	4.70	11.50
15			63	20.80	85.3	0.37	4.30	13.00
15			80	18.33	89.1	0.54	3.70	14.80
15			100	15.13	92.3	0.84	3.00	16.80
15			125	11.14	94.9	1.28	1.80	18.80
15			160	5.75	97.0	1.93	0.00	21.10
15			200	2.15	98.4	2.77	0.00	22.80
16	3,244	3,252						
16			20	26.51	59.3	0.00	5.60	7.60
16			25	25.65	65.2	0.07	5.40	8.30
16			32	24.61	70.6	0.10	5.20	9.20
16			40	23.85	76.0	0.16	5.00	10.30
16			50	22.78	80.9	0.23	4.70	11.50
16			63	21.15	85.3	0.36	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			80	18.69	89.1	0.52	3.70	14.80
16			100	15.49	92.3	0.81	3.00	16.80
16			125	11.52	94.9	1.24	1.80	18.80
16			160	6.15	97.0	1.85	0.00	21.10
16			200	2.59	98.4	2.67	0.00	22.80
17	2,749	2,758						
17			20	27.94	59.3	0.00	5.60	7.60
17			25	27.09	65.2	0.06	5.40	8.30
17			32	26.06	70.6	0.08	5.20	9.20
17			40	25.31	76.0	0.14	5.00	10.30
17			50	24.25	80.9	0.19	4.70	11.50
17			63	22.64	85.3	0.30	4.30	13.00
17			80	20.20	89.1	0.44	3.70	14.80
17			100	17.05	92.3	0.69	3.00	16.80
17			125	13.14	94.9	1.05	1.80	18.80
17			160	7.87	97.0	1.57	0.00	21.10
17			200	4.43	98.4	2.26	0.00	22.80
18	4,022	4,029						
18			20	24.65	59.3	0.00	5.60	7.60
18			25	23.77	65.2	0.08	5.40	8.30
18			32	22.73	70.6	0.12	5.20	9.20
18			40	21.95	76.0	0.20	5.00	10.30
18			50	20.87	80.9	0.28	4.70	11.50
18			63	19.20	85.3	0.44	4.30	13.00
18			80	16.70	89.1	0.64	3.70	14.80
18			100	13.44	92.3	1.01	3.00	16.80
18			125	9.36	94.9	1.53	1.80	18.80
18			160	3.85	97.0	2.30	0.00	21.10
18			200	0.09	98.4	3.30	0.00	22.80
19	3,944	3,953						
19			20	24.82	59.3	0.00	5.60	7.60
19			25	23.94	65.2	0.08	5.40	8.30
19			32	22.90	70.6	0.12	5.20	9.20
19			40	22.12	76.0	0.20	5.00	10.30
19			50	21.04	80.9	0.28	4.70	11.50
19			63	19.38	85.3	0.43	4.30	13.00
19			80	16.88	89.1	0.63	3.70	14.80
19			100	13.62	92.3	0.99	3.00	16.80
19			125	9.56	94.9	1.50	1.80	18.80
19			160	4.06	97.0	2.25	0.00	21.10
19			200	0.32	98.4	3.24	0.00	22.80
2	2,533	2,543						
2			20	28.65	59.3	0.00	5.60	7.60
2			25	27.80	65.2	0.05	5.40	8.30
2			32	26.77	70.6	0.08	5.20	9.20
2			40	26.02	76.0	0.13	5.00	10.30
2			50	24.97	80.9	0.18	4.70	11.50
2			63	23.37	85.3	0.28	4.30	13.00
2			80	20.94	89.1	0.41	3.70	14.80
2			100	17.81	92.3	0.64	3.00	16.80
2			125	13.93	94.9	0.97	1.80	18.80
2			160	8.70	97.0	1.45	0.00	21.10
2			200	5.31	98.4	2.08	0.00	22.80
20	3,783	3,791						
20			20	25.18	59.3	0.00	5.60	7.60
20			25	24.30	65.2	0.08	5.40	8.30
20			32	23.27	70.6	0.11	5.20	9.20
20			40	22.49	76.0	0.19	5.00	10.30
20			50	21.41	80.9	0.27	4.70	11.50
20			63	19.76	85.3	0.42	4.30	13.00
20			80	17.27	89.1	0.61	3.70	14.80
20			100	14.03	92.3	0.95	3.00	16.80
20			125	9.98	94.9	1.44	1.80	18.80
20			160	4.52	97.0	2.16	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			200	0.82	98.4	3.11	0.00	22.80
21	3,442	3,450						
21			20	26.00	59.3	0.00	5.60	7.60
21			25	25.13	65.2	0.07	5.40	8.30
21			32	24.09	70.6	0.10	5.20	9.20
21			40	23.32	76.0	0.17	5.00	10.30
21			50	22.25	80.9	0.24	4.70	11.50
21			63	20.61	85.3	0.38	4.30	13.00
21			80	18.14	89.1	0.55	3.70	14.80
21			100	14.93	92.3	0.86	3.00	16.80
21			125	10.93	94.9	1.31	1.80	18.80
21			160	5.53	97.0	1.97	0.00	21.10
21			200	1.91	98.4	2.83	0.00	22.80
22	3,184	3,193						
22			20	26.67	59.3	0.00	5.60	7.60
22			25	25.81	65.2	0.06	5.40	8.30
22			32	24.77	70.6	0.10	5.20	9.20
22			40	24.01	76.0	0.16	5.00	10.30
22			50	22.94	80.9	0.22	4.70	11.50
22			63	21.32	85.3	0.35	4.30	13.00
22			80	18.86	89.1	0.51	3.70	14.80
22			100	15.67	92.3	0.80	3.00	16.80
22			125	11.70	94.9	1.21	1.80	18.80
22			160	6.35	97.0	1.82	0.00	21.10
22			200	2.80	98.4	2.62	0.00	22.80
23	2,599	2,608						
23			20	28.43	59.3	0.00	5.60	7.60
23			25	27.58	65.2	0.05	5.40	8.30
23			32	26.55	70.6	0.08	5.20	9.20
23			40	25.80	76.0	0.13	5.00	10.30
23			50	24.74	80.9	0.18	4.70	11.50
23			63	23.14	85.3	0.29	4.30	13.00
23			80	20.71	89.1	0.42	3.70	14.80
23			100	17.57	92.3	0.65	3.00	16.80
23			125	13.68	94.9	0.99	1.80	18.80
23			160	8.44	97.0	1.49	0.00	21.10
23			200	5.04	98.4	2.14	0.00	22.80
24	3,240	3,248						
24			20	26.52	59.3	0.00	5.60	7.60
24			25	25.66	65.2	0.06	5.40	8.30
24			32	24.63	70.6	0.10	5.20	9.20
24			40	23.86	76.0	0.16	5.00	10.30
24			50	22.79	80.9	0.23	4.70	11.50
24			63	21.16	85.3	0.36	4.30	13.00
24			80	18.70	89.1	0.52	3.70	14.80
24			100	15.51	92.3	0.81	3.00	16.80
24			125	11.53	94.9	1.23	1.80	18.80
24			160	6.17	97.0	1.85	0.00	21.10
24			200	2.61	98.4	2.66	0.00	22.80
3	1,990	2,003						
3			20	30.72	59.3	0.00	5.60	7.60
3			25	29.88	65.2	0.04	5.40	8.30
3			32	28.86	70.6	0.06	5.20	9.20
3			40	28.12	76.0	0.10	5.00	10.30
3			50	27.08	80.9	0.14	4.70	11.50
3			63	25.50	85.3	0.22	4.30	13.00
3			80	23.10	89.1	0.32	3.70	14.80
3			100	20.02	92.3	0.50	3.00	16.80
3			125	16.21	94.9	0.76	1.80	18.80
3			160	11.08	97.0	1.14	0.00	21.10
3			200	7.83	98.4	1.64	0.00	22.80
4	2,038	2,051						
4			20	30.52	59.3	0.00	5.60	7.60
4			25	29.67	65.2	0.04	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	28.65	70.6	0.06	5.20	9.20
4			40	27.91	76.0	0.10	5.00	10.30
4			50	26.87	80.9	0.14	4.70	11.50
4			63	25.29	85.3	0.23	4.30	13.00
4			80	22.88	89.1	0.33	3.70	14.80
4			100	19.80	92.3	0.51	3.00	16.80
4			125	15.98	94.9	0.78	1.80	18.80
4			160	10.84	97.0	1.17	0.00	21.10
4			200	7.58	98.4	1.68	0.00	22.80
5	1,820	1,834						
5			20	31.49	59.3	0.00	5.60	7.60
5			25	30.65	65.2	0.04	5.40	8.30
5			32	29.63	70.6	0.06	5.20	9.20
5			40	28.90	76.0	0.09	5.00	10.30
5			50	27.86	80.9	0.13	4.70	11.50
5			63	26.28	85.3	0.20	4.30	13.00
5			80	23.89	89.1	0.29	3.70	14.80
5			100	20.83	92.3	0.46	3.00	16.80
5			125	17.04	94.9	0.70	1.80	18.80
5			160	11.94	97.0	1.05	0.00	21.10
5			200	8.73	98.4	1.50	0.00	22.80
6	3,452	3,459						
6			20	25.97	59.3	0.00	5.60	7.60
6			25	25.11	65.2	0.07	5.40	8.30
6			32	24.07	70.6	0.10	5.20	9.20
6			40	23.30	76.0	0.17	5.00	10.30
6			50	22.23	80.9	0.24	4.70	11.50
6			63	20.59	85.3	0.38	4.30	13.00
6			80	18.12	89.1	0.55	3.70	14.80
6			100	14.91	92.3	0.86	3.00	16.80
6			125	10.91	94.9	1.31	1.80	18.80
6			160	5.50	97.0	1.97	0.00	21.10
6			200	1.88	98.4	2.84	0.00	22.80
7	2,946	2,955						
7			20	27.34	59.3	0.00	5.60	7.60
7			25	26.49	65.2	0.06	5.40	8.30
7			32	25.46	70.6	0.09	5.20	9.20
7			40	24.70	76.0	0.15	5.00	10.30
7			50	23.63	80.9	0.21	4.70	11.50
7			63	22.02	85.3	0.33	4.30	13.00
7			80	19.57	89.1	0.47	3.70	14.80
7			100	16.40	92.3	0.74	3.00	16.80
7			125	12.47	94.9	1.12	1.80	18.80
7			160	7.16	97.0	1.68	0.00	21.10
7			200	3.67	98.4	2.42	0.00	22.80
8	2,388	2,398						
8			20	29.16	59.3	0.00	5.60	7.60
8			25	28.31	65.2	0.05	5.40	8.30
8			32	27.28	70.6	0.07	5.20	9.20
8			40	26.54	76.0	0.12	5.00	10.30
8			50	25.49	80.9	0.17	4.70	11.50
8			63	23.89	85.3	0.26	4.30	13.00
8			80	21.47	89.1	0.38	3.70	14.80
8			100	18.35	92.3	0.60	3.00	16.80
8			125	14.49	94.9	0.91	1.80	18.80
8			160	9.29	97.0	1.37	0.00	21.10
8			200	5.94	98.4	1.97	0.00	22.80
9	4,085	4,091						
9			20	24.52	59.3	0.00	5.60	7.60
9			25	23.64	65.2	0.08	5.40	8.30
9			32	22.60	70.6	0.12	5.20	9.20
9			40	21.81	76.0	0.20	5.00	10.30
9			50	20.73	80.9	0.29	4.70	11.50
9			63	19.07	85.3	0.45	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	16.56	89.1	0.65	3.70	14.80
9			100	13.29	92.3	1.02	3.00	16.80
9			125	9.21	94.9	1.55	1.80	18.80
9			160	3.68	97.0	2.33	0.00	21.10
9			200	-0.09	98.4	3.35	0.00	22.80
Sum								
Sum			20	41.40				
Sum			25	40.55				
Sum			32	39.52				
Sum			40	38.76				
Sum			50	37.70				
Sum			63	36.09				
Sum			80	33.65				
Sum			100	30.51				
Sum			125	26.60				
Sum			160	21.33				
Sum			200	17.91				

Noise sensitive area: RH Leväniemi Noise sensitive point: Finnish normal frequency - User defined (325)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,016	6,020						
1			20	21.16	59.3	0.00	5.60	7.60
1			25	20.24	65.2	0.12	5.40	8.30
1			32	19.18	70.6	0.18	5.20	9.20
1			40	18.36	76.0	0.30	5.00	10.30
1			50	17.24	80.9	0.42	4.70	11.50
1			63	15.50	85.3	0.66	4.30	13.00
1			80	12.90	89.1	0.96	3.70	14.80
1			100	9.45	92.3	1.51	3.00	16.80
1			125	5.12	94.9	2.29	1.80	18.80
1			160	-0.77	97.0	3.43	0.00	21.10
1			200	-5.03	98.4	4.94	0.00	22.80
10	6,071	6,076						
10			20	21.08	59.3	0.00	5.60	7.60
10			25	20.16	65.2	0.12	5.40	8.30
10			32	19.10	70.6	0.18	5.20	9.20
10			40	18.28	76.0	0.30	5.00	10.30
10			50	17.15	80.9	0.43	4.70	11.50
10			63	15.41	85.3	0.67	4.30	13.00
10			80	12.81	89.1	0.97	3.70	14.80
10			100	9.36	92.3	1.52	3.00	16.80
10			125	5.02	94.9	2.31	1.80	18.80
10			160	-0.88	97.0	3.46	0.00	21.10
10			200	-5.15	98.4	4.98	0.00	22.80
11	6,231	6,236						
11			20	20.86	59.3	0.00	5.60	7.60
11			25	19.93	65.2	0.12	5.40	8.30
11			32	18.87	70.6	0.19	5.20	9.20
11			40	18.05	76.0	0.31	5.00	10.30
11			50	16.92	80.9	0.44	4.70	11.50
11			63	15.17	85.3	0.69	4.30	13.00
11			80	12.56	89.1	1.00	3.70	14.80
11			100	9.10	92.3	1.56	3.00	16.80
11			125	4.73	94.9	2.37	1.80	18.80
11			160	-1.20	97.0	3.55	0.00	21.10
11			200	-5.51	98.4	5.11	0.00	22.80
12	5,862	5,866						
12			20	21.39	59.3	0.00	5.60	7.60
12			25	20.47	65.2	0.12	5.40	8.30
12			32	19.41	70.6	0.18	5.20	9.20
12			40	18.59	76.0	0.29	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	17.47	80.9	0.41	4.70	11.50
12			63	15.74	85.3	0.65	4.30	13.00
12			80	13.15	89.1	0.94	3.70	14.80
12			100	9.72	92.3	1.47	3.00	16.80
12			125	5.40	94.9	2.23	1.80	18.80
12			160	-0.46	97.0	3.34	0.00	21.10
12			200	-4.68	98.4	4.81	0.00	22.80
13	5,190	5,197						
13			20	22.44	59.3	0.00	5.60	7.60
13			25	21.54	65.2	0.10	5.40	8.30
13			32	20.48	70.6	0.16	5.20	9.20
13			40	19.68	76.0	0.26	5.00	10.30
13			50	18.57	80.9	0.36	4.70	11.50
13			63	16.87	85.3	0.57	4.30	13.00
13			80	14.31	89.1	0.83	3.70	14.80
13			100	10.94	92.3	1.30	3.00	16.80
13			125	6.71	94.9	1.97	1.80	18.80
13			160	0.97	97.0	2.96	0.00	21.10
13			200	-3.08	98.4	4.26	0.00	22.80
14	5,008	5,015						
14			20	22.75	59.3	0.00	5.60	7.60
14			25	21.85	65.2	0.10	5.40	8.30
14			32	20.80	70.6	0.15	5.20	9.20
14			40	20.00	76.0	0.25	5.00	10.30
14			50	18.89	80.9	0.35	4.70	11.50
14			63	17.19	85.3	0.55	4.30	13.00
14			80	14.64	89.1	0.80	3.70	14.80
14			100	11.29	92.3	1.25	3.00	16.80
14			125	7.09	94.9	1.91	1.80	18.80
14			160	1.39	97.0	2.86	0.00	21.10
14			200	-2.62	98.4	4.11	0.00	22.80
15	4,602	4,611						
15			20	23.48	59.3	0.00	5.60	7.60
15			25	22.59	65.2	0.09	5.40	8.30
15			32	21.54	70.6	0.14	5.20	9.20
15			40	20.75	76.0	0.23	5.00	10.30
15			50	19.65	80.9	0.32	4.70	11.50
15			63	17.97	85.3	0.51	4.30	13.00
15			80	15.44	89.1	0.74	3.70	14.80
15			100	12.12	92.3	1.15	3.00	16.80
15			125	7.97	94.9	1.75	1.80	18.80
15			160	2.35	97.0	2.63	0.00	21.10
15			200	-1.56	98.4	3.78	0.00	22.80
16	4,040	4,048						
16			20	24.61	59.3	0.00	5.60	7.60
16			25	23.73	65.2	0.08	5.40	8.30
16			32	22.69	70.6	0.12	5.20	9.20
16			40	21.91	76.0	0.20	5.00	10.30
16			50	20.82	80.9	0.28	4.70	11.50
16			63	19.16	85.3	0.45	4.30	13.00
16			80	16.66	89.1	0.65	3.70	14.80
16			100	13.40	92.3	1.01	3.00	16.80
16			125	9.32	94.9	1.54	1.80	18.80
16			160	3.80	97.0	2.31	0.00	21.10
16			200	0.04	98.4	3.32	0.00	22.80
17	3,507	3,515						
17			20	25.84	59.3	0.00	5.60	7.60
17			25	24.97	65.2	0.07	5.40	8.30
17			32	23.93	70.6	0.11	5.20	9.20
17			40	23.16	76.0	0.18	5.00	10.30
17			50	22.09	80.9	0.25	4.70	11.50
17			63	20.45	85.3	0.39	4.30	13.00
17			80	17.97	89.1	0.56	3.70	14.80
17			100	14.75	92.3	0.88	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	10.75	94.9	1.34	1.80	18.80
17			160	5.33	97.0	2.00	0.00	21.10
17			200	1.70	98.4	2.88	0.00	22.80
18	5,201	5,207						
18			20	22.42	59.3	0.00	5.60	7.60
18			25	21.52	65.2	0.10	5.40	8.30
18			32	20.47	70.6	0.16	5.20	9.20
18			40	19.66	76.0	0.26	5.00	10.30
18			50	18.55	80.9	0.36	4.70	11.50
18			63	16.85	85.3	0.57	4.30	13.00
18			80	14.29	89.1	0.83	3.70	14.80
18			100	10.92	92.3	1.30	3.00	16.80
18			125	6.69	94.9	1.98	1.80	18.80
18			160	0.95	97.0	2.97	0.00	21.10
18			200	-3.10	98.4	4.27	0.00	22.80
19	4,722	4,730						
19			20	23.26	59.3	0.00	5.60	7.60
19			25	22.36	65.2	0.09	5.40	8.30
19			32	21.32	70.6	0.14	5.20	9.20
19			40	20.52	76.0	0.24	5.00	10.30
19			50	19.42	80.9	0.33	4.70	11.50
19			63	17.73	85.3	0.52	4.30	13.00
19			80	15.20	89.1	0.76	3.70	14.80
19			100	11.87	92.3	1.18	3.00	16.80
19			125	7.71	94.9	1.80	1.80	18.80
19			160	2.06	97.0	2.70	0.00	21.10
19			200	-1.88	98.4	3.88	0.00	22.80
2	6,008	6,012						
2			20	21.17	59.3	0.00	5.60	7.60
2			25	20.25	65.2	0.12	5.40	8.30
2			32	19.19	70.6	0.18	5.20	9.20
2			40	18.37	76.0	0.30	5.00	10.30
2			50	17.25	80.9	0.42	4.70	11.50
2			63	15.51	85.3	0.66	4.30	13.00
2			80	12.91	89.1	0.96	3.70	14.80
2			100	9.47	92.3	1.50	3.00	16.80
2			125	5.13	94.9	2.28	1.80	18.80
2			160	-0.76	97.0	3.43	0.00	21.10
2			200	-5.01	98.4	4.93	0.00	22.80
20	4,235	4,244						
20			20	24.20	59.3	0.00	5.60	7.60
20			25	23.32	65.2	0.08	5.40	8.30
20			32	22.27	70.6	0.13	5.20	9.20
20			40	21.49	76.0	0.21	5.00	10.30
20			50	20.40	80.9	0.30	4.70	11.50
20			63	18.73	85.3	0.47	4.30	13.00
20			80	16.22	89.1	0.68	3.70	14.80
20			100	12.94	92.3	1.06	3.00	16.80
20			125	8.83	94.9	1.61	1.80	18.80
20			160	3.28	97.0	2.42	0.00	21.10
20			200	-0.53	98.4	3.48	0.00	22.80
21	3,605	3,614						
21			20	25.60	59.3	0.00	5.60	7.60
21			25	24.72	65.2	0.07	5.40	8.30
21			32	23.69	70.6	0.11	5.20	9.20
21			40	22.92	76.0	0.18	5.00	10.30
21			50	21.84	80.9	0.25	4.70	11.50
21			63	20.20	85.3	0.40	4.30	13.00
21			80	17.71	89.1	0.58	3.70	14.80
21			100	14.49	92.3	0.90	3.00	16.80
21			125	10.47	94.9	1.37	1.80	18.80
21			160	5.03	97.0	2.06	0.00	21.10
21			200	1.38	98.4	2.96	0.00	22.80
22	2,954	2,966						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	27.31	59.3	0.00	5.60	7.60
22			25	26.45	65.2	0.06	5.40	8.30
22			32	25.42	70.6	0.09	5.20	9.20
22			40	24.66	76.0	0.15	5.00	10.30
22			50	23.60	80.9	0.21	4.70	11.50
22			63	21.98	85.3	0.33	4.30	13.00
22			80	19.53	89.1	0.47	3.70	14.80
22			100	16.37	92.3	0.74	3.00	16.80
22			125	12.43	94.9	1.13	1.80	18.80
22			160	7.12	97.0	1.69	0.00	21.10
22			200	3.63	98.4	2.43	0.00	22.80
23	2,669	2,680						
23			20	28.19	59.3	0.00	5.60	7.60
23			25	27.34	65.2	0.05	5.40	8.30
23			32	26.31	70.6	0.08	5.20	9.20
23			40	25.56	76.0	0.13	5.00	10.30
23			50	24.50	80.9	0.19	4.70	11.50
23			63	22.89	85.3	0.29	4.30	13.00
23			80	20.46	89.1	0.43	3.70	14.80
23			100	17.32	92.3	0.67	3.00	16.80
23			125	13.42	94.9	1.02	1.80	18.80
23			160	8.16	97.0	1.53	0.00	21.10
23			200	4.74	98.4	2.20	0.00	22.80
24	2,436	2,447						
24			20	28.98	59.3	0.00	5.60	7.60
24			25	28.13	65.2	0.05	5.40	8.30
24			32	27.11	70.6	0.07	5.20	9.20
24			40	26.36	76.0	0.12	5.00	10.30
24			50	25.31	80.9	0.17	4.70	11.50
24			63	23.71	85.3	0.27	4.30	13.00
24			80	21.29	89.1	0.39	3.70	14.80
24			100	18.17	92.3	0.61	3.00	16.80
24			125	14.30	94.9	0.93	1.80	18.80
24			160	9.08	97.0	1.39	0.00	21.10
24			200	5.72	98.4	2.01	0.00	22.80
3	5,699	5,705						
3			20	21.63	59.3	0.00	5.60	7.60
3			25	20.72	65.2	0.11	5.40	8.30
3			32	19.66	70.6	0.17	5.20	9.20
3			40	18.84	76.0	0.29	5.00	10.30
3			50	17.73	80.9	0.40	4.70	11.50
3			63	16.00	85.3	0.63	4.30	13.00
3			80	13.41	89.1	0.91	3.70	14.80
3			100	10.00	92.3	1.43	3.00	16.80
3			125	5.71	94.9	2.17	1.80	18.80
3			160	-0.12	97.0	3.25	0.00	21.10
3			200	-4.30	98.4	4.68	0.00	22.80
4	5,426	5,432						
4			20	22.06	59.3	0.00	5.60	7.60
4			25	21.15	65.2	0.11	5.40	8.30
4			32	20.09	70.6	0.16	5.20	9.20
4			40	19.28	76.0	0.27	5.00	10.30
4			50	18.17	80.9	0.38	4.70	11.50
4			63	16.46	85.3	0.60	4.30	13.00
4			80	13.88	89.1	0.87	3.70	14.80
4			100	10.50	92.3	1.36	3.00	16.80
4			125	6.24	94.9	2.06	1.80	18.80
4			160	0.46	97.0	3.10	0.00	21.10
4			200	-3.65	98.4	4.45	0.00	22.80
5	4,906	4,912						
5			20	22.93	59.3	0.00	5.60	7.60
5			25	22.03	65.2	0.10	5.40	8.30
5			32	20.98	70.6	0.15	5.20	9.20
5			40	20.18	76.0	0.25	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			50	19.08	80.9	0.34	4.70	11.50
5			63	17.39	85.3	0.54	4.30	13.00
5			80	14.84	89.1	0.79	3.70	14.80
5			100	11.50	92.3	1.23	3.00	16.80
5			125	7.31	94.9	1.87	1.80	18.80
5			160	1.63	97.0	2.80	0.00	21.10
5			200	-2.35	98.4	4.03	0.00	22.80
6	6,388	6,393						
6			20	20.64	59.3	0.00	5.60	7.60
6			25	19.71	65.2	0.13	5.40	8.30
6			32	18.65	70.6	0.19	5.20	9.20
6			40	17.82	76.0	0.32	5.00	10.30
6			50	16.69	80.9	0.45	4.70	11.50
6			63	14.93	85.3	0.70	4.30	13.00
6			80	12.31	89.1	1.02	3.70	14.80
6			100	8.84	92.3	1.60	3.00	16.80
6			125	4.46	94.9	2.43	1.80	18.80
6			160	-1.51	97.0	3.64	0.00	21.10
6			200	-5.86	98.4	5.24	0.00	22.80
7	5,733	5,738						
7			20	21.58	59.3	0.00	5.60	7.60
7			25	20.66	65.2	0.11	5.40	8.30
7			32	19.61	70.6	0.17	5.20	9.20
7			40	18.79	76.0	0.29	5.00	10.30
7			50	17.67	80.9	0.40	4.70	11.50
7			63	15.94	85.3	0.63	4.30	13.00
7			80	13.36	89.1	0.92	3.70	14.80
7			100	9.94	92.3	1.43	3.00	16.80
7			125	5.64	94.9	2.18	1.80	18.80
7			160	-0.20	97.0	3.27	0.00	21.10
7			200	-4.38	98.4	4.71	0.00	22.80
8	5,289	5,294						
8			20	22.28	59.3	0.00	5.60	7.60
8			25	21.37	65.2	0.11	5.40	8.30
8			32	20.32	70.6	0.16	5.20	9.20
8			40	19.51	76.0	0.26	5.00	10.30
8			50	18.40	80.9	0.37	4.70	11.50
8			63	16.69	85.3	0.58	4.30	13.00
8			80	14.13	89.1	0.85	3.70	14.80
8			100	10.75	92.3	1.32	3.00	16.80
8			125	6.51	94.9	2.01	1.80	18.80
8			160	0.76	97.0	3.02	0.00	21.10
8			200	-3.32	98.4	4.34	0.00	22.80
9	6,685	6,690						
9			20	20.25	59.3	0.00	5.60	7.60
9			25	19.31	65.2	0.13	5.40	8.30
9			32	18.25	70.6	0.20	5.20	9.20
9			40	17.41	76.0	0.33	5.00	10.30
9			50	16.28	80.9	0.47	4.70	11.50
9			63	14.51	85.3	0.74	4.30	13.00
9			80	11.87	89.1	1.07	3.70	14.80
9			100	8.37	92.3	1.67	3.00	16.80
9			125	3.95	94.9	2.54	1.80	18.80
9			160	-2.07	97.0	3.81	0.00	21.10
9			200	-6.49	98.4	5.49	0.00	22.80
Sum								
Sum			20	37.74				
Sum			25	36.86				
Sum			32	35.82				
Sum			40	35.03				
Sum			50	33.95				
Sum			63	32.28				
Sum			80	29.78				
Sum			100	26.51				

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			125	22.43				
Sum			160	16.93				
Sum			200	13.20				

Noise sensitive area: RH Mäkelä Noise sensitive point: Finnish normal frequency - User defined (315)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,778	1,793						
1			20	31.68	59.3	0.00	5.60	7.60
1			25	30.85	65.2	0.04	5.40	8.30
1			32	29.83	70.6	0.05	5.20	9.20
1			40	29.09	76.0	0.09	5.00	10.30
1			50	28.06	80.9	0.13	4.70	11.50
1			63	26.48	85.3	0.20	4.30	13.00
1			80	24.09	89.1	0.29	3.70	14.80
1			100	21.03	92.3	0.45	3.00	16.80
1			125	17.25	94.9	0.68	1.80	18.80
1			160	12.16	97.0	1.02	0.00	21.10
1			200	8.96	98.4	1.47	0.00	22.80
10	3,798	3,806						
10			20	25.15	59.3	0.00	5.60	7.60
10			25	24.27	65.2	0.08	5.40	8.30
10			32	23.23	70.6	0.11	5.20	9.20
10			40	22.46	76.0	0.19	5.00	10.30
10			50	21.38	80.9	0.27	4.70	11.50
10			63	19.72	85.3	0.42	4.30	13.00
10			80	17.23	89.1	0.61	3.70	14.80
10			100	13.99	92.3	0.95	3.00	16.80
10			125	9.95	94.9	1.45	1.80	18.80
10			160	4.47	97.0	2.17	0.00	21.10
10			200	0.77	98.4	3.12	0.00	22.80
11	4,347	4,353						
11			20	23.98	59.3	0.00	5.60	7.60
11			25	23.09	65.2	0.09	5.40	8.30
11			32	22.05	70.6	0.13	5.20	9.20
11			40	21.26	76.0	0.22	5.00	10.30
11			50	20.17	80.9	0.30	4.70	11.50
11			63	18.50	85.3	0.48	4.30	13.00
11			80	15.98	89.1	0.70	3.70	14.80
11			100	12.69	92.3	1.09	3.00	16.80
11			125	8.57	94.9	1.65	1.80	18.80
11			160	2.99	97.0	2.48	0.00	21.10
11			200	-0.85	98.4	3.57	0.00	22.80
12	4,438	4,444						
12			20	23.80	59.3	0.00	5.60	7.60
12			25	22.91	65.2	0.09	5.40	8.30
12			32	21.87	70.6	0.13	5.20	9.20
12			40	21.08	76.0	0.22	5.00	10.30
12			50	19.99	80.9	0.31	4.70	11.50
12			63	18.31	85.3	0.49	4.30	13.00
12			80	15.79	89.1	0.71	3.70	14.80
12			100	12.49	92.3	1.11	3.00	16.80
12			125	8.36	94.9	1.69	1.80	18.80
12			160	2.76	97.0	2.53	0.00	21.10
12			200	-1.10	98.4	3.64	0.00	22.80
13	4,014	4,022						
13			20	24.67	59.3	0.00	5.60	7.60
13			25	23.78	65.2	0.08	5.40	8.30
13			32	22.74	70.6	0.12	5.20	9.20
13			40	21.96	76.0	0.20	5.00	10.30
13			50	20.88	80.9	0.28	4.70	11.50
13			63	19.22	85.3	0.44	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			80	16.72	89.1	0.64	3.70	14.80
13			100	13.46	92.3	1.01	3.00	16.80
13			125	9.38	94.9	1.53	1.80	18.80
13			160	3.87	97.0	2.29	0.00	21.10
13			200	0.11	98.4	3.30	0.00	22.80
14	3,509	3,518						
14			20	25.83	59.3	0.00	5.60	7.60
14			25	24.96	65.2	0.07	5.40	8.30
14			32	23.92	70.6	0.11	5.20	9.20
14			40	23.15	76.0	0.18	5.00	10.30
14			50	22.08	80.9	0.25	4.70	11.50
14			63	20.44	85.3	0.39	4.30	13.00
14			80	17.96	89.1	0.56	3.70	14.80
14			100	14.75	92.3	0.88	3.00	16.80
14			125	10.74	94.9	1.34	1.80	18.80
14			160	5.32	97.0	2.01	0.00	21.10
14			200	1.69	98.4	2.88	0.00	22.80
15	3,922	3,931						
15			20	24.86	59.3	0.00	5.60	7.60
15			25	23.99	65.2	0.08	5.40	8.30
15			32	22.95	70.6	0.12	5.20	9.20
15			40	22.17	76.0	0.20	5.00	10.30
15			50	21.09	80.9	0.28	4.70	11.50
15			63	19.43	85.3	0.43	4.30	13.00
15			80	16.93	89.1	0.63	3.70	14.80
15			100	13.68	92.3	0.98	3.00	16.80
15			125	9.62	94.9	1.49	1.80	18.80
15			160	4.12	97.0	2.24	0.00	21.10
15			200	0.39	98.4	3.22	0.00	22.80
16	3,870	3,878						
16			20	24.98	59.3	0.00	5.60	7.60
16			25	24.11	65.2	0.08	5.40	8.30
16			32	23.07	70.6	0.12	5.20	9.20
16			40	22.29	76.0	0.19	5.00	10.30
16			50	21.21	80.9	0.27	4.70	11.50
16			63	19.55	85.3	0.43	4.30	13.00
16			80	17.06	89.1	0.62	3.70	14.80
16			100	13.81	92.3	0.97	3.00	16.80
16			125	9.75	94.9	1.47	1.80	18.80
16			160	4.27	97.0	2.21	0.00	21.10
16			200	0.55	98.4	3.18	0.00	22.80
17	3,424	3,432						
17			20	26.04	59.3	0.00	5.60	7.60
17			25	25.18	65.2	0.07	5.40	8.30
17			32	24.14	70.6	0.10	5.20	9.20
17			40	23.37	76.0	0.17	5.00	10.30
17			50	22.30	80.9	0.24	4.70	11.50
17			63	20.66	85.3	0.38	4.30	13.00
17			80	18.19	89.1	0.55	3.70	14.80
17			100	14.98	92.3	0.86	3.00	16.80
17			125	10.99	94.9	1.30	1.80	18.80
17			160	5.59	97.0	1.96	0.00	21.10
17			200	1.98	98.4	2.81	0.00	22.80
18	4,533	4,539						
18			20	23.61	59.3	0.00	5.60	7.60
18			25	22.72	65.2	0.09	5.40	8.30
18			32	21.68	70.6	0.14	5.20	9.20
18			40	20.89	76.0	0.23	5.00	10.30
18			50	19.79	80.9	0.32	4.70	11.50
18			63	18.11	85.3	0.50	4.30	13.00
18			80	15.59	89.1	0.73	3.70	14.80
18			100	12.28	92.3	1.13	3.00	16.80
18			125	8.14	94.9	1.72	1.80	18.80
18			160	2.52	97.0	2.59	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			200	-1.36	98.4	3.72	0.00	22.80
19	4,521	4,529						
19			20	23.63	59.3	0.00	5.60	7.60
19			25	22.74	65.2	0.09	5.40	8.30
19			32	21.70	70.6	0.14	5.20	9.20
19			40	20.91	76.0	0.23	5.00	10.30
19			50	19.81	80.9	0.32	4.70	11.50
19			63	18.13	85.3	0.50	4.30	13.00
19			80	15.61	89.1	0.72	3.70	14.80
19			100	12.30	92.3	1.13	3.00	16.80
19			125	8.16	94.9	1.72	1.80	18.80
19			160	2.55	97.0	2.58	0.00	21.10
19			200	-1.33	98.4	3.71	0.00	22.80
2	2,507	2,518						
2			20	28.73	59.3	0.00	5.60	7.60
2			25	27.88	65.2	0.05	5.40	8.30
2			32	26.86	70.6	0.08	5.20	9.20
2			40	26.11	76.0	0.13	5.00	10.30
2			50	25.05	80.9	0.18	4.70	11.50
2			63	23.45	85.3	0.28	4.30	13.00
2			80	21.03	89.1	0.40	3.70	14.80
2			100	17.90	92.3	0.63	3.00	16.80
2			125	14.02	94.9	0.96	1.80	18.80
2			160	8.80	97.0	1.44	0.00	21.10
2			200	5.41	98.4	2.06	0.00	22.80
20	4,411	4,419						
20			20	23.85	59.3	0.00	5.60	7.60
20			25	22.96	65.2	0.09	5.40	8.30
20			32	21.92	70.6	0.13	5.20	9.20
20			40	21.13	76.0	0.22	5.00	10.30
20			50	20.04	80.9	0.31	4.70	11.50
20			63	18.36	85.3	0.49	4.30	13.00
20			80	15.84	89.1	0.71	3.70	14.80
20			100	12.54	92.3	1.10	3.00	16.80
20			125	8.41	94.9	1.68	1.80	18.80
20			160	2.83	97.0	2.52	0.00	21.10
20			200	-1.03	98.4	3.62	0.00	22.80
21	4,122	4,129						
21			20	24.44	59.3	0.00	5.60	7.60
21			25	23.55	65.2	0.08	5.40	8.30
21			32	22.51	70.6	0.12	5.20	9.20
21			40	21.73	76.0	0.21	5.00	10.30
21			50	20.64	80.9	0.29	4.70	11.50
21			63	18.98	85.3	0.45	4.30	13.00
21			80	16.47	89.1	0.66	3.70	14.80
21			100	13.20	92.3	1.03	3.00	16.80
21			125	9.11	94.9	1.57	1.80	18.80
21			160	3.58	97.0	2.35	0.00	21.10
21			200	-0.20	98.4	3.39	0.00	22.80
22	3,907	3,915						
22			20	24.90	59.3	0.00	5.60	7.60
22			25	24.02	65.2	0.08	5.40	8.30
22			32	22.98	70.6	0.12	5.20	9.20
22			40	22.20	76.0	0.20	5.00	10.30
22			50	21.12	80.9	0.27	4.70	11.50
22			63	19.47	85.3	0.43	4.30	13.00
22			80	16.97	89.1	0.63	3.70	14.80
22			100	13.72	92.3	0.98	3.00	16.80
22			125	9.66	94.9	1.49	1.80	18.80
22			160	4.16	97.0	2.23	0.00	21.10
22			200	0.43	98.4	3.21	0.00	22.80
23	3,338	3,346						
23			20	26.27	59.3	0.00	5.60	7.60
23			25	25.40	65.2	0.07	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			32	24.36	70.6	0.10	5.20	9.20
23			40	23.60	76.0	0.17	5.00	10.30
23			50	22.53	80.9	0.23	4.70	11.50
23			63	20.89	85.3	0.37	4.30	13.00
23			80	18.43	89.1	0.54	3.70	14.80
23			100	15.23	92.3	0.84	3.00	16.80
23			125	11.24	94.9	1.27	1.80	18.80
23			160	5.86	97.0	1.91	0.00	21.10
23			200	2.27	98.4	2.74	0.00	22.80
24	3,985	3,991						
24			20	24.73	59.3	0.00	5.60	7.60
24			25	23.85	65.2	0.08	5.40	8.30
24			32	22.81	70.6	0.12	5.20	9.20
24			40	22.03	76.0	0.20	5.00	10.30
24			50	20.95	80.9	0.28	4.70	11.50
24			63	19.29	85.3	0.44	4.30	13.00
24			80	16.79	89.1	0.64	3.70	14.80
24			100	13.53	92.3	1.00	3.00	16.80
24			125	9.46	94.9	1.52	1.80	18.80
24			160	3.95	97.0	2.27	0.00	21.10
24			200	0.21	98.4	3.27	0.00	22.80
3	1,889	1,903						
3			20	31.17	59.3	0.00	5.60	7.60
3			25	30.33	65.2	0.04	5.40	8.30
3			32	29.31	70.6	0.06	5.20	9.20
3			40	28.57	76.0	0.10	5.00	10.30
3			50	27.53	80.9	0.13	4.70	11.50
3			63	25.95	85.3	0.21	4.30	13.00
3			80	23.56	89.1	0.30	3.70	14.80
3			100	20.49	92.3	0.48	3.00	16.80
3			125	16.69	94.9	0.72	1.80	18.80
3			160	11.58	97.0	1.08	0.00	21.10
3			200	8.35	98.4	1.56	0.00	22.80
4	2,138	2,151						
4			20	30.10	59.3	0.00	5.60	7.60
4			25	29.26	65.2	0.04	5.40	8.30
4			32	28.24	70.6	0.06	5.20	9.20
4			40	27.49	76.0	0.11	5.00	10.30
4			50	26.45	80.9	0.15	4.70	11.50
4			63	24.86	85.3	0.24	4.30	13.00
4			80	22.45	89.1	0.34	3.70	14.80
4			100	19.36	92.3	0.54	3.00	16.80
4			125	15.53	94.9	0.82	1.80	18.80
4			160	10.37	97.0	1.23	0.00	21.10
4			200	7.08	98.4	1.76	0.00	22.80
5	2,114	2,127						
5			20	30.20	59.3	0.00	5.60	7.60
5			25	29.36	65.2	0.04	5.40	8.30
5			32	28.34	70.6	0.06	5.20	9.20
5			40	27.59	76.0	0.11	5.00	10.30
5			50	26.55	80.9	0.15	4.70	11.50
5			63	24.96	85.3	0.23	4.30	13.00
5			80	22.56	89.1	0.34	3.70	14.80
5			100	19.46	92.3	0.53	3.00	16.80
5			125	15.64	94.9	0.81	1.80	18.80
5			160	10.48	97.0	1.21	0.00	21.10
5			200	7.20	98.4	1.74	0.00	22.80
6	3,571	3,579						
6			20	25.68	59.3	0.00	5.60	7.60
6			25	24.81	65.2	0.07	5.40	8.30
6			32	23.77	70.6	0.11	5.20	9.20
6			40	23.00	76.0	0.18	5.00	10.30
6			50	21.93	80.9	0.25	4.70	11.50
6			63	20.28	85.3	0.39	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			80	17.80	89.1	0.57	3.70	14.80
6			100	14.58	92.3	0.89	3.00	16.80
6			125	10.57	94.9	1.36	1.80	18.80
6			160	5.14	97.0	2.04	0.00	21.10
6			200	1.49	98.4	2.93	0.00	22.80
7	3,170	3,178						
7			20	26.71	59.3	0.00	5.60	7.60
7			25	25.85	65.2	0.06	5.40	8.30
7			32	24.81	70.6	0.10	5.20	9.20
7			40	24.05	76.0	0.16	5.00	10.30
7			50	22.98	80.9	0.22	4.70	11.50
7			63	21.36	85.3	0.35	4.30	13.00
7			80	18.90	89.1	0.51	3.70	14.80
7			100	15.71	92.3	0.79	3.00	16.80
7			125	11.75	94.9	1.21	1.80	18.80
7			160	6.40	97.0	1.81	0.00	21.10
7			200	2.85	98.4	2.61	0.00	22.80
8	2,647	2,657						
8			20	28.27	59.3	0.00	5.60	7.60
8			25	27.41	65.2	0.05	5.40	8.30
8			32	26.39	70.6	0.08	5.20	9.20
8			40	25.63	76.0	0.13	5.00	10.30
8			50	24.58	80.9	0.19	4.70	11.50
8			63	22.97	85.3	0.29	4.30	13.00
8			80	20.54	89.1	0.43	3.70	14.80
8			100	17.40	92.3	0.66	3.00	16.80
8			125	13.50	94.9	1.01	1.80	18.80
8			160	8.25	97.0	1.51	0.00	21.10
8			200	4.83	98.4	2.18	0.00	22.80
9	4,266	4,272						
9			20	24.14	59.3	0.00	5.60	7.60
9			25	23.26	65.2	0.09	5.40	8.30
9			32	22.21	70.6	0.13	5.20	9.20
9			40	21.43	76.0	0.21	5.00	10.30
9			50	20.34	80.9	0.30	4.70	11.50
9			63	18.67	85.3	0.47	4.30	13.00
9			80	16.15	89.1	0.68	3.70	14.80
9			100	12.87	92.3	1.07	3.00	16.80
9			125	8.76	94.9	1.62	1.80	18.80
9			160	3.20	97.0	2.44	0.00	21.10
9			200	-0.62	98.4	3.50	0.00	22.80
Sum								
Sum			20	40.75				
Sum			25	39.89				
Sum			32	38.87				
Sum			40	38.11				
Sum			50	37.05				
Sum			63	35.43				
Sum			80	32.98				
Sum			100	29.82				
Sum			125	25.90				
Sum			160	20.61				
Sum			200	17.15				

Noise sensitive area: RH Mäntylä Noise sensitive point: Finnish normal frequency - User defined (317)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,973	3,979						
1			20	24.76	59.3	0.00	5.60	7.60
1			25	23.88	65.2	0.08	5.40	8.30
1			32	22.84	70.6	0.12	5.20	9.20
1			40	22.06	76.0	0.20	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			50	20.98	80.9	0.28	4.70	11.50
1			63	19.32	85.3	0.44	4.30	13.00
1			80	16.82	89.1	0.64	3.70	14.80
1			100	13.56	92.3	0.99	3.00	16.80
1			125	9.49	94.9	1.51	1.80	18.80
1			160	3.99	97.0	2.27	0.00	21.10
1			200	0.24	98.4	3.26	0.00	22.80
10	2,433	2,444						
10			20	28.99	59.3	0.00	5.60	7.60
10			25	28.14	65.2	0.05	5.40	8.30
10			32	27.12	70.6	0.07	5.20	9.20
10			40	26.37	76.0	0.12	5.00	10.30
10			50	25.32	80.9	0.17	4.70	11.50
10			63	23.72	85.3	0.27	4.30	13.00
10			80	21.30	89.1	0.39	3.70	14.80
10			100	18.18	92.3	0.61	3.00	16.80
10			125	14.31	94.9	0.93	1.80	18.80
10			160	9.10	97.0	1.39	0.00	21.10
10			200	5.73	98.4	2.00	0.00	22.80
11	2,391	2,402						
11			20	29.14	59.3	0.00	5.60	7.60
11			25	28.30	65.2	0.05	5.40	8.30
11			32	27.27	70.6	0.07	5.20	9.20
11			40	26.52	76.0	0.12	5.00	10.30
11			50	25.47	80.9	0.17	4.70	11.50
11			63	23.88	85.3	0.26	4.30	13.00
11			80	21.46	89.1	0.38	3.70	14.80
11			100	18.34	92.3	0.60	3.00	16.80
11			125	14.48	94.9	0.91	1.80	18.80
11			160	9.27	97.0	1.37	0.00	21.10
11			200	5.92	98.4	1.97	0.00	22.80
12	2,904	2,912						
12			20	27.47	59.3	0.00	5.60	7.60
12			25	26.61	65.2	0.06	5.40	8.30
12			32	25.58	70.6	0.09	5.20	9.20
12			40	24.82	76.0	0.15	5.00	10.30
12			50	23.76	80.9	0.20	4.70	11.50
12			63	22.15	85.3	0.32	4.30	13.00
12			80	19.70	89.1	0.47	3.70	14.80
12			100	16.54	92.3	0.73	3.00	16.80
12			125	12.61	94.9	1.11	1.80	18.80
12			160	7.31	97.0	1.66	0.00	21.10
12			200	3.83	98.4	2.39	0.00	22.80
13	3,479	3,488						
13			20	25.90	59.3	0.00	5.60	7.60
13			25	25.03	65.2	0.07	5.40	8.30
13			32	24.00	70.6	0.10	5.20	9.20
13			40	23.23	76.0	0.17	5.00	10.30
13			50	22.16	80.9	0.24	4.70	11.50
13			63	20.52	85.3	0.38	4.30	13.00
13			80	18.04	89.1	0.56	3.70	14.80
13			100	14.83	92.3	0.87	3.00	16.80
13			125	10.82	94.9	1.33	1.80	18.80
13			160	5.41	97.0	1.99	0.00	21.10
13			200	1.79	98.4	2.86	0.00	22.80
14	3,522	3,531						
14			20	25.80	59.3	0.00	5.60	7.60
14			25	24.93	65.2	0.07	5.40	8.30
14			32	23.89	70.6	0.11	5.20	9.20
14			40	23.12	76.0	0.18	5.00	10.30
14			50	22.05	80.9	0.25	4.70	11.50
14			63	20.41	85.3	0.39	4.30	13.00
14			80	17.93	89.1	0.56	3.70	14.80
14			100	14.71	92.3	0.88	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			125	10.70	94.9	1.34	1.80	18.80
14			160	5.28	97.0	2.01	0.00	21.10
14			200	1.65	98.4	2.90	0.00	22.80
15	4,093	4,102						
15			20	24.50	59.3	0.00	5.60	7.60
15			25	23.61	65.2	0.08	5.40	8.30
15			32	22.57	70.6	0.12	5.20	9.20
15			40	21.79	76.0	0.21	5.00	10.30
15			50	20.70	80.9	0.29	4.70	11.50
15			63	19.04	85.3	0.45	4.30	13.00
15			80	16.54	89.1	0.66	3.70	14.80
15			100	13.27	92.3	1.03	3.00	16.80
15			125	9.18	94.9	1.56	1.80	18.80
15			160	3.65	97.0	2.34	0.00	21.10
15			200	-0.12	98.4	3.36	0.00	22.80
16	4,666	4,672						
16			20	23.36	59.3	0.00	5.60	7.60
16			25	22.47	65.2	0.09	5.40	8.30
16			32	21.42	70.6	0.14	5.20	9.20
16			40	20.63	76.0	0.23	5.00	10.30
16			50	19.53	80.9	0.33	4.70	11.50
16			63	17.85	85.3	0.51	4.30	13.00
16			80	15.31	89.1	0.75	3.70	14.80
16			100	11.99	92.3	1.17	3.00	16.80
16			125	7.83	94.9	1.78	1.80	18.80
16			160	2.20	97.0	2.66	0.00	21.10
16			200	-1.72	98.4	3.83	0.00	22.80
17	5,053	5,058						
17			20	22.68	59.3	0.00	5.60	7.60
17			25	21.77	65.2	0.10	5.40	8.30
17			32	20.72	70.6	0.15	5.20	9.20
17			40	19.92	76.0	0.25	5.00	10.30
17			50	18.82	80.9	0.35	4.70	11.50
17			63	17.12	85.3	0.56	4.30	13.00
17			80	14.56	89.1	0.81	3.70	14.80
17			100	11.21	92.3	1.26	3.00	16.80
17			125	7.00	94.9	1.92	1.80	18.80
17			160	1.29	97.0	2.88	0.00	21.10
17			200	-2.73	98.4	4.15	0.00	22.80
18	3,772	3,779						
18			20	25.21	59.3	0.00	5.60	7.60
18			25	24.33	65.2	0.08	5.40	8.30
18			32	23.29	70.6	0.11	5.20	9.20
18			40	22.52	76.0	0.19	5.00	10.30
18			50	21.44	80.9	0.26	4.70	11.50
18			63	19.79	85.3	0.42	4.30	13.00
18			80	17.30	89.1	0.60	3.70	14.80
18			100	14.06	92.3	0.94	3.00	16.80
18			125	10.02	94.9	1.44	1.80	18.80
18			160	4.55	97.0	2.15	0.00	21.10
18			200	0.85	98.4	3.10	0.00	22.80
19	4,313	4,321						
19			20	24.04	59.3	0.00	5.60	7.60
19			25	23.16	65.2	0.09	5.40	8.30
19			32	22.11	70.6	0.13	5.20	9.20
19			40	21.33	76.0	0.22	5.00	10.30
19			50	20.24	80.9	0.30	4.70	11.50
19			63	18.57	85.3	0.48	4.30	13.00
19			80	16.05	89.1	0.69	3.70	14.80
19			100	12.76	92.3	1.08	3.00	16.80
19			125	8.65	94.9	1.64	1.80	18.80
19			160	3.08	97.0	2.46	0.00	21.10
19			200	-0.75	98.4	3.54	0.00	22.80
2	3,111	3,118						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			20	26.88	59.3	0.00	5.60	7.60
2			25	26.01	65.2	0.06	5.40	8.30
2			32	24.98	70.6	0.09	5.20	9.20
2			40	24.22	76.0	0.16	5.00	10.30
2			50	23.15	80.9	0.22	4.70	11.50
2			63	21.53	85.3	0.34	4.30	13.00
2			80	19.07	89.1	0.50	3.70	14.80
2			100	15.89	92.3	0.78	3.00	16.80
2			125	11.94	94.9	1.19	1.80	18.80
2			160	6.60	97.0	1.78	0.00	21.10
2			200	3.06	98.4	2.56	0.00	22.80
20	4,764	4,770						
20			20	23.18	59.3	0.00	5.60	7.60
20			25	22.29	65.2	0.10	5.40	8.30
20			32	21.24	70.6	0.14	5.20	9.20
20			40	20.44	76.0	0.24	5.00	10.30
20			50	19.35	80.9	0.33	4.70	11.50
20			63	17.66	85.3	0.52	4.30	13.00
20			80	15.12	89.1	0.76	3.70	14.80
20			100	11.79	92.3	1.19	3.00	16.80
20			125	7.62	94.9	1.81	1.80	18.80
20			160	1.96	97.0	2.72	0.00	21.10
20			200	-1.98	98.4	3.91	0.00	22.80
21	5,230	5,235						
21			20	22.38	59.3	0.00	5.60	7.60
21			25	21.47	65.2	0.10	5.40	8.30
21			32	20.42	70.6	0.16	5.20	9.20
21			40	19.61	76.0	0.26	5.00	10.30
21			50	18.51	80.9	0.37	4.70	11.50
21			63	16.80	85.3	0.58	4.30	13.00
21			80	14.23	89.1	0.84	3.70	14.80
21			100	10.86	92.3	1.31	3.00	16.80
21			125	6.63	94.9	1.99	1.80	18.80
21			160	0.89	97.0	2.98	0.00	21.10
21			200	-3.17	98.4	4.29	0.00	22.80
22	5,747	5,752						
22			20	21.56	59.3	0.00	5.60	7.60
22			25	20.64	65.2	0.12	5.40	8.30
22			32	19.59	70.6	0.17	5.20	9.20
22			40	18.77	76.0	0.29	5.00	10.30
22			50	17.65	80.9	0.40	4.70	11.50
22			63	15.92	85.3	0.63	4.30	13.00
22			80	13.34	89.1	0.92	3.70	14.80
22			100	9.92	92.3	1.44	3.00	16.80
22			125	5.62	94.9	2.19	1.80	18.80
22			160	-0.22	97.0	3.28	0.00	21.10
22			200	-4.41	98.4	4.72	0.00	22.80
23	5,849	5,853						
23			20	21.41	59.3	0.00	5.60	7.60
23			25	20.49	65.2	0.12	5.40	8.30
23			32	19.43	70.6	0.18	5.20	9.20
23			40	18.61	76.0	0.29	5.00	10.30
23			50	17.49	80.9	0.41	4.70	11.50
23			63	15.76	85.3	0.64	4.30	13.00
23			80	13.17	89.1	0.94	3.70	14.80
23			100	9.74	92.3	1.46	3.00	16.80
23			125	5.43	94.9	2.22	1.80	18.80
23			160	-0.43	97.0	3.34	0.00	21.10
23			200	-4.65	98.4	4.80	0.00	22.80
24	6,250	6,254						
24			20	20.83	59.3	0.00	5.60	7.60
24			25	19.91	65.2	0.13	5.40	8.30
24			32	18.84	70.6	0.19	5.20	9.20
24			40	18.02	76.0	0.31	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			50	16.89	80.9	0.44	4.70	11.50
24			63	15.14	85.3	0.69	4.30	13.00
24			80	12.53	89.1	1.00	3.70	14.80
24			100	9.06	92.3	1.56	3.00	16.80
24			125	4.70	94.9	2.38	1.80	18.80
24			160	-1.24	97.0	3.56	0.00	21.10
24			200	-5.55	98.4	5.13	0.00	22.80
3	3,727	3,734						
3			20	25.31	59.3	0.00	5.60	7.60
3			25	24.44	65.2	0.07	5.40	8.30
3			32	23.40	70.6	0.11	5.20	9.20
3			40	22.63	76.0	0.19	5.00	10.30
3			50	21.55	80.9	0.26	4.70	11.50
3			63	19.90	85.3	0.41	4.30	13.00
3			80	17.41	89.1	0.60	3.70	14.80
3			100	14.18	92.3	0.93	3.00	16.80
3			125	10.14	94.9	1.42	1.80	18.80
3			160	4.68	97.0	2.13	0.00	21.10
3			200	1.00	98.4	3.06	0.00	22.80
4	3,567	3,574						
4			20	25.69	59.3	0.00	5.60	7.60
4			25	24.82	65.2	0.07	5.40	8.30
4			32	23.78	70.6	0.11	5.20	9.20
4			40	23.01	76.0	0.18	5.00	10.30
4			50	21.94	80.9	0.25	4.70	11.50
4			63	20.29	85.3	0.39	4.30	13.00
4			80	17.82	89.1	0.57	3.70	14.80
4			100	14.59	92.3	0.89	3.00	16.80
4			125	10.58	94.9	1.36	1.80	18.80
4			160	5.15	97.0	2.04	0.00	21.10
4			200	1.50	98.4	2.93	0.00	22.80
5	3,885	3,892						
5			20	24.95	59.3	0.00	5.60	7.60
5			25	24.07	65.2	0.08	5.40	8.30
5			32	23.03	70.6	0.12	5.20	9.20
5			40	22.26	76.0	0.19	5.00	10.30
5			50	21.18	80.9	0.27	4.70	11.50
5			63	19.52	85.3	0.43	4.30	13.00
5			80	17.03	89.1	0.62	3.70	14.80
5			100	13.78	92.3	0.97	3.00	16.80
5			125	9.72	94.9	1.48	1.80	18.80
5			160	4.23	97.0	2.22	0.00	21.10
5			200	0.51	98.4	3.19	0.00	22.80
6	2,205	2,217						
6			20	29.84	59.3	0.00	5.60	7.60
6			25	29.00	65.2	0.04	5.40	8.30
6			32	27.97	70.6	0.07	5.20	9.20
6			40	27.23	76.0	0.11	5.00	10.30
6			50	26.18	80.9	0.16	4.70	11.50
6			63	24.59	85.3	0.24	4.30	13.00
6			80	22.18	89.1	0.35	3.70	14.80
6			100	19.08	92.3	0.55	3.00	16.80
6			125	15.24	94.9	0.84	1.80	18.80
6			160	10.07	97.0	1.26	0.00	21.10
6			200	6.77	98.4	1.82	0.00	22.80
7	2,830	2,838						
7			20	27.69	59.3	0.00	5.60	7.60
7			25	26.84	65.2	0.06	5.40	8.30
7			32	25.81	70.6	0.09	5.20	9.20
7			40	25.05	76.0	0.14	5.00	10.30
7			50	23.99	80.9	0.20	4.70	11.50
7			63	22.38	85.3	0.31	4.30	13.00
7			80	19.94	89.1	0.45	3.70	14.80
7			100	16.78	92.3	0.71	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	12.86	94.9	1.08	1.80	18.80
7			160	7.57	97.0	1.62	0.00	21.10
7			200	4.11	98.4	2.33	0.00	22.80
8	3,359	3,366						
8			20	26.21	59.3	0.00	5.60	7.60
8			25	25.34	65.2	0.07	5.40	8.30
8			32	24.31	70.6	0.10	5.20	9.20
8			40	23.54	76.0	0.17	5.00	10.30
8			50	22.47	80.9	0.24	4.70	11.50
8			63	20.84	85.3	0.37	4.30	13.00
8			80	18.37	89.1	0.54	3.70	14.80
8			100	15.17	92.3	0.84	3.00	16.80
8			125	11.18	94.9	1.28	1.80	18.80
8			160	5.79	97.0	1.92	0.00	21.10
8			200	2.20	98.4	2.76	0.00	22.80
9	1,824	1,838						
9			20	31.47	59.3	0.00	5.60	7.60
9			25	30.63	65.2	0.04	5.40	8.30
9			32	29.61	70.6	0.06	5.20	9.20
9			40	28.88	76.0	0.09	5.00	10.30
9			50	27.84	80.9	0.13	4.70	11.50
9			63	26.26	85.3	0.20	4.30	13.00
9			80	23.87	89.1	0.29	3.70	14.80
9			100	20.81	92.3	0.46	3.00	16.80
9			125	17.02	94.9	0.70	1.80	18.80
9			160	11.92	97.0	1.05	0.00	21.10
9			200	8.71	98.4	1.51	0.00	22.80
Sum								
Sum			20	40.08				
Sum			25	39.21				
Sum			32	38.18				
Sum			40	37.42				
Sum			50	36.35				
Sum			63	34.73				
Sum			80	32.27				
Sum			100	29.09				
Sum			125	25.13				
Sum			160	19.80				
Sum			200	16.30				

Noise sensitive area: RH Mikkola Noise sensitive point: Finnish normal frequency - User defined (328)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,376	5,381						
1			20	22.14	59.3	0.00	5.60	7.60
1			25	21.23	65.2	0.11	5.40	8.30
1			32	20.18	70.6	0.16	5.20	9.20
1			40	19.37	76.0	0.27	5.00	10.30
1			50	18.26	80.9	0.38	4.70	11.50
1			63	16.54	85.3	0.59	4.30	13.00
1			80	13.97	89.1	0.86	3.70	14.80
1			100	10.59	92.3	1.35	3.00	16.80
1			125	6.34	94.9	2.04	1.80	18.80
1			160	0.57	97.0	3.07	0.00	21.10
1			200	-3.53	98.4	4.41	0.00	22.80
10	5,513	5,519						
10			20	21.92	59.3	0.00	5.60	7.60
10			25	21.01	65.2	0.11	5.40	8.30
10			32	19.95	70.6	0.17	5.20	9.20
10			40	19.14	76.0	0.28	5.00	10.30
10			50	18.03	80.9	0.39	4.70	11.50
10			63	16.31	85.3	0.61	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	13.73	89.1	0.88	3.70	14.80
10			100	10.33	92.3	1.38	3.00	16.80
10			125	6.07	94.9	2.10	1.80	18.80
10			160	0.27	97.0	3.15	0.00	21.10
10			200	-3.86	98.4	4.53	0.00	22.80
11	5,707	5,712						
11			20	21.62	59.3	0.00	5.60	7.60
11			25	20.70	65.2	0.11	5.40	8.30
11			32	19.65	70.6	0.17	5.20	9.20
11			40	18.83	76.0	0.29	5.00	10.30
11			50	17.72	80.9	0.40	4.70	11.50
11			63	15.99	85.3	0.63	4.30	13.00
11			80	13.40	89.1	0.91	3.70	14.80
11			100	9.99	92.3	1.43	3.00	16.80
11			125	5.69	94.9	2.17	1.80	18.80
11			160	-0.14	97.0	3.26	0.00	21.10
11			200	-4.32	98.4	4.68	0.00	22.80
12	5,366	5,372						
12			20	22.15	59.3	0.00	5.60	7.60
12			25	21.25	65.2	0.11	5.40	8.30
12			32	20.19	70.6	0.16	5.20	9.20
12			40	19.38	76.0	0.27	5.00	10.30
12			50	18.27	80.9	0.38	4.70	11.50
12			63	16.56	85.3	0.59	4.30	13.00
12			80	13.99	89.1	0.86	3.70	14.80
12			100	10.61	92.3	1.34	3.00	16.80
12			125	6.36	94.9	2.04	1.80	18.80
12			160	0.59	97.0	3.06	0.00	21.10
12			200	-3.51	98.4	4.40	0.00	22.80
13	4,692	4,699						
13			20	23.31	59.3	0.00	5.60	7.60
13			25	22.42	65.2	0.09	5.40	8.30
13			32	21.37	70.6	0.14	5.20	9.20
13			40	20.58	76.0	0.23	5.00	10.30
13			50	19.48	80.9	0.33	4.70	11.50
13			63	17.79	85.3	0.52	4.30	13.00
13			80	15.26	89.1	0.75	3.70	14.80
13			100	11.94	92.3	1.17	3.00	16.80
13			125	7.77	94.9	1.79	1.80	18.80
13			160	2.13	97.0	2.68	0.00	21.10
13			200	-1.79	98.4	3.85	0.00	22.80
14	4,474	4,482						
14			20	23.73	59.3	0.00	5.60	7.60
14			25	22.84	65.2	0.09	5.40	8.30
14			32	21.79	70.6	0.13	5.20	9.20
14			40	21.00	76.0	0.22	5.00	10.30
14			50	19.91	80.9	0.31	4.70	11.50
14			63	18.23	85.3	0.49	4.30	13.00
14			80	15.71	89.1	0.72	3.70	14.80
14			100	12.40	92.3	1.12	3.00	16.80
14			125	8.27	94.9	1.70	1.80	18.80
14			160	2.67	97.0	2.55	0.00	21.10
14			200	-1.20	98.4	3.67	0.00	22.80
15	4,123	4,133						
15			20	24.43	59.3	0.00	5.60	7.60
15			25	23.55	65.2	0.08	5.40	8.30
15			32	22.50	70.6	0.12	5.20	9.20
15			40	21.72	76.0	0.21	5.00	10.30
15			50	20.64	80.9	0.29	4.70	11.50
15			63	18.97	85.3	0.45	4.30	13.00
15			80	16.46	89.1	0.66	3.70	14.80
15			100	13.19	92.3	1.03	3.00	16.80
15			125	9.10	94.9	1.57	1.80	18.80
15			160	3.57	97.0	2.36	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	-0.21	98.4	3.39	0.00	22.80
16	3,580	3,589						
16			20	25.66	59.3	0.00	5.60	7.60
16			25	24.78	65.2	0.07	5.40	8.30
16			32	23.75	70.6	0.11	5.20	9.20
16			40	22.98	76.0	0.18	5.00	10.30
16			50	21.90	80.9	0.25	4.70	11.50
16			63	20.26	85.3	0.39	4.30	13.00
16			80	17.78	89.1	0.57	3.70	14.80
16			100	14.56	92.3	0.90	3.00	16.80
16			125	10.54	94.9	1.36	1.80	18.80
16			160	5.11	97.0	2.05	0.00	21.10
16			200	1.46	98.4	2.94	0.00	22.80
17	3,008	3,017						
17			20	27.16	59.3	0.00	5.60	7.60
17			25	26.30	65.2	0.06	5.40	8.30
17			32	25.27	70.6	0.09	5.20	9.20
17			40	24.51	76.0	0.15	5.00	10.30
17			50	23.45	80.9	0.21	4.70	11.50
17			63	21.83	85.3	0.33	4.30	13.00
17			80	19.38	89.1	0.48	3.70	14.80
17			100	16.20	92.3	0.75	3.00	16.80
17			125	12.26	94.9	1.15	1.80	18.80
17			160	6.94	97.0	1.72	0.00	21.10
17			200	3.43	98.4	2.47	0.00	22.80
18	4,755	4,762						
18			20	23.20	59.3	0.00	5.60	7.60
18			25	22.30	65.2	0.10	5.40	8.30
18			32	21.26	70.6	0.14	5.20	9.20
18			40	20.46	76.0	0.24	5.00	10.30
18			50	19.36	80.9	0.33	4.70	11.50
18			63	17.67	85.3	0.52	4.30	13.00
18			80	15.13	89.1	0.76	3.70	14.80
18			100	11.81	92.3	1.19	3.00	16.80
18			125	7.63	94.9	1.81	1.80	18.80
18			160	1.98	97.0	2.71	0.00	21.10
18			200	-1.96	98.4	3.90	0.00	22.80
19	4,305	4,314						
19			20	24.06	59.3	0.00	5.60	7.60
19			25	23.17	65.2	0.09	5.40	8.30
19			32	22.13	70.6	0.13	5.20	9.20
19			40	21.34	76.0	0.22	5.00	10.30
19			50	20.25	80.9	0.30	4.70	11.50
19			63	18.58	85.3	0.47	4.30	13.00
19			80	16.06	89.1	0.69	3.70	14.80
19			100	12.78	92.3	1.08	3.00	16.80
19			125	8.66	94.9	1.64	1.80	18.80
19			160	3.10	97.0	2.46	0.00	21.10
19			200	-0.74	98.4	3.54	0.00	22.80
2	5,385	5,390						
2			20	22.12	59.3	0.00	5.60	7.60
2			25	21.22	65.2	0.11	5.40	8.30
2			32	20.16	70.6	0.16	5.20	9.20
2			40	19.35	76.0	0.27	5.00	10.30
2			50	18.24	80.9	0.38	4.70	11.50
2			63	16.53	85.3	0.59	4.30	13.00
2			80	13.96	89.1	0.86	3.70	14.80
2			100	10.57	92.3	1.35	3.00	16.80
2			125	6.32	94.9	2.05	1.80	18.80
2			160	0.55	97.0	3.07	0.00	21.10
2			200	-3.55	98.4	4.42	0.00	22.80
20	3,835	3,844						
20			20	25.06	59.3	0.00	5.60	7.60
20			25	24.18	65.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	23.14	70.6	0.12	5.20	9.20
20			40	22.37	76.0	0.19	5.00	10.30
20			50	21.29	80.9	0.27	4.70	11.50
20			63	19.63	85.3	0.42	4.30	13.00
20			80	17.14	89.1	0.62	3.70	14.80
20			100	13.89	92.3	0.96	3.00	16.80
20			125	9.84	94.9	1.46	1.80	18.80
20			160	4.36	97.0	2.19	0.00	21.10
20			200	0.65	98.4	3.15	0.00	22.80
21	3,199	3,208						
21			20	26.63	59.3	0.00	5.60	7.60
21			25	25.76	65.2	0.06	5.40	8.30
21			32	24.73	70.6	0.10	5.20	9.20
21			40	23.97	76.0	0.16	5.00	10.30
21			50	22.90	80.9	0.22	4.70	11.50
21			63	21.27	85.3	0.35	4.30	13.00
21			80	18.81	89.1	0.51	3.70	14.80
21			100	15.62	92.3	0.80	3.00	16.80
21			125	11.65	94.9	1.22	1.80	18.80
21			160	6.30	97.0	1.83	0.00	21.10
21			200	2.74	98.4	2.63	0.00	22.80
22	2,539	2,552						
22			20	28.62	59.3	0.00	5.60	7.60
22			25	27.77	65.2	0.05	5.40	8.30
22			32	26.74	70.6	0.08	5.20	9.20
22			40	25.99	76.0	0.13	5.00	10.30
22			50	24.94	80.9	0.18	4.70	11.50
22			63	23.33	85.3	0.28	4.30	13.00
22			80	20.91	89.1	0.41	3.70	14.80
22			100	17.78	92.3	0.64	3.00	16.80
22			125	13.89	94.9	0.97	1.80	18.80
22			160	8.66	97.0	1.45	0.00	21.10
22			200	5.27	98.4	2.09	0.00	22.80
23	2,157	2,170						
23			20	30.03	59.3	0.00	5.60	7.60
23			25	29.18	65.2	0.04	5.40	8.30
23			32	28.16	70.6	0.07	5.20	9.20
23			40	27.42	76.0	0.11	5.00	10.30
23			50	26.37	80.9	0.15	4.70	11.50
23			63	24.78	85.3	0.24	4.30	13.00
23			80	22.38	89.1	0.35	3.70	14.80
23			100	19.28	92.3	0.54	3.00	16.80
23			125	15.45	94.9	0.82	1.80	18.80
23			160	10.29	97.0	1.24	0.00	21.10
23			200	6.99	98.4	1.78	0.00	22.80
24	2,049	2,062						
24			20	30.47	59.3	0.00	5.60	7.60
24			25	29.63	65.2	0.04	5.40	8.30
24			32	28.61	70.6	0.06	5.20	9.20
24			40	27.87	76.0	0.10	5.00	10.30
24			50	26.82	80.9	0.14	4.70	11.50
24			63	25.24	85.3	0.23	4.30	13.00
24			80	22.84	89.1	0.33	3.70	14.80
24			100	19.75	92.3	0.52	3.00	16.80
24			125	15.93	94.9	0.78	1.80	18.80
24			160	10.79	97.0	1.18	0.00	21.10
24			200	7.52	98.4	1.69	0.00	22.80
3	5,065	5,071						
3			20	22.65	59.3	0.00	5.60	7.60
3			25	21.75	65.2	0.10	5.40	8.30
3			32	20.70	70.6	0.15	5.20	9.20
3			40	19.90	76.0	0.25	5.00	10.30
3			50	18.80	80.9	0.35	4.70	11.50
3			63	17.09	85.3	0.56	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	14.54	89.1	0.81	3.70	14.80
3			100	11.18	92.3	1.27	3.00	16.80
3			125	6.97	94.9	1.93	1.80	18.80
3			160	1.26	97.0	2.89	0.00	21.10
3			200	-2.76	98.4	4.16	0.00	22.80
4	4,802	4,808						
4			20	23.11	59.3	0.00	5.60	7.60
4			25	22.22	65.2	0.10	5.40	8.30
4			32	21.17	70.6	0.14	5.20	9.20
4			40	20.37	76.0	0.24	5.00	10.30
4			50	19.27	80.9	0.34	4.70	11.50
4			63	17.58	85.3	0.53	4.30	13.00
4			80	15.04	89.1	0.77	3.70	14.80
4			100	11.71	92.3	1.20	3.00	16.80
4			125	7.53	94.9	1.83	1.80	18.80
4			160	1.87	97.0	2.74	0.00	21.10
4			200	-2.08	98.4	3.94	0.00	22.80
5	4,289	4,295						
5			20	24.09	59.3	0.00	5.60	7.60
5			25	23.21	65.2	0.09	5.40	8.30
5			32	22.17	70.6	0.13	5.20	9.20
5			40	21.38	76.0	0.21	5.00	10.30
5			50	20.29	80.9	0.30	4.70	11.50
5			63	18.62	85.3	0.47	4.30	13.00
5			80	16.10	89.1	0.69	3.70	14.80
5			100	12.82	92.3	1.07	3.00	16.80
5			125	8.71	94.9	1.63	1.80	18.80
5			160	3.14	97.0	2.45	0.00	21.10
5			200	-0.68	98.4	3.52	0.00	22.80
6	5,803	5,808						
6			20	21.47	59.3	0.00	5.60	7.60
6			25	20.56	65.2	0.12	5.40	8.30
6			32	19.50	70.6	0.17	5.20	9.20
6			40	18.68	76.0	0.29	5.00	10.30
6			50	17.56	80.9	0.41	4.70	11.50
6			63	15.83	85.3	0.64	4.30	13.00
6			80	13.24	89.1	0.93	3.70	14.80
6			100	9.82	92.3	1.45	3.00	16.80
6			125	5.51	94.9	2.21	1.80	18.80
6			160	-0.34	97.0	3.31	0.00	21.10
6			200	-4.54	98.4	4.76	0.00	22.80
7	5,149	5,155						
7			20	22.51	59.3	0.00	5.60	7.60
7			25	21.61	65.2	0.10	5.40	8.30
7			32	20.56	70.6	0.15	5.20	9.20
7			40	19.75	76.0	0.26	5.00	10.30
7			50	18.65	80.9	0.36	4.70	11.50
7			63	16.94	85.3	0.57	4.30	13.00
7			80	14.38	89.1	0.82	3.70	14.80
7			100	11.02	92.3	1.29	3.00	16.80
7			125	6.80	94.9	1.96	1.80	18.80
7			160	1.07	97.0	2.94	0.00	21.10
7			200	-2.97	98.4	4.23	0.00	22.80
8	4,689	4,695						
8			20	23.32	59.3	0.00	5.60	7.60
8			25	22.43	65.2	0.09	5.40	8.30
8			32	21.38	70.6	0.14	5.20	9.20
8			40	20.59	76.0	0.23	5.00	10.30
8			50	19.49	80.9	0.33	4.70	11.50
8			63	17.80	85.3	0.52	4.30	13.00
8			80	15.27	89.1	0.75	3.70	14.80
8			100	11.94	92.3	1.17	3.00	16.80
8			125	7.78	94.9	1.78	1.80	18.80
8			160	2.14	97.0	2.68	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	-1.78	98.4	3.85	0.00	22.80
9	6,131	6,136						
9			20	21.00	59.3	0.00	5.60	7.60
9			25	20.07	65.2	0.12	5.40	8.30
9			32	19.01	70.6	0.18	5.20	9.20
9			40	18.19	76.0	0.31	5.00	10.30
9			50	17.06	80.9	0.43	4.70	11.50
9			63	15.32	85.3	0.67	4.30	13.00
9			80	12.71	89.1	0.98	3.70	14.80
9			100	9.26	92.3	1.53	3.00	16.80
9			125	4.91	94.9	2.33	1.80	18.80
9			160	-1.00	97.0	3.50	0.00	21.10
9			200	-5.29	98.4	5.03	0.00	22.80
Sum								
Sum			20	38.92				
Sum			25	38.05				
Sum			32	37.02				
Sum			40	36.24				
Sum			50	35.17				
Sum			63	33.53				
Sum			80	31.05				
Sum			100	27.83				
Sum			125	23.83				
Sum			160	18.43				
Sum			200	14.84				

Noise sensitive area: RH Niskala Noise sensitive point: Finnish normal frequency - User defined (326)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,872	2,879						
1			20	27.57	59.3	0.00	5.60	7.60
1			25	26.71	65.2	0.06	5.40	8.30
1			32	25.68	70.6	0.09	5.20	9.20
1			40	24.93	76.0	0.14	5.00	10.30
1			50	23.86	80.9	0.20	4.70	11.50
1			63	22.25	85.3	0.32	4.30	13.00
1			80	19.81	89.1	0.46	3.70	14.80
1			100	16.65	92.3	0.72	3.00	16.80
1			125	12.72	94.9	1.09	1.80	18.80
1			160	7.43	97.0	1.64	0.00	21.10
1			200	3.95	98.4	2.36	0.00	22.80
10	2,071	2,082						
10			20	30.39	59.3	0.00	5.60	7.60
10			25	29.54	65.2	0.04	5.40	8.30
10			32	28.52	70.6	0.06	5.20	9.20
10			40	27.78	76.0	0.10	5.00	10.30
10			50	26.74	80.9	0.15	4.70	11.50
10			63	25.15	85.3	0.23	4.30	13.00
10			80	22.75	89.1	0.33	3.70	14.80
10			100	19.66	92.3	0.52	3.00	16.80
10			125	15.84	94.9	0.79	1.80	18.80
10			160	10.70	97.0	1.19	0.00	21.10
10			200	7.42	98.4	1.71	0.00	22.80
11	2,326	2,335						
11			20	29.39	59.3	0.00	5.60	7.60
11			25	28.54	65.2	0.05	5.40	8.30
11			32	27.52	70.6	0.07	5.20	9.20
11			40	26.77	76.0	0.12	5.00	10.30
11			50	25.72	80.9	0.16	4.70	11.50
11			63	24.13	85.3	0.26	4.30	13.00
11			80	21.71	89.1	0.37	3.70	14.80
11			100	18.60	92.3	0.58	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	14.75	94.9	0.89	1.80	18.80
11			160	9.55	97.0	1.33	0.00	21.10
11			200	6.22	98.4	1.91	0.00	22.80
12	2,881	2,888						
12			20	27.54	59.3	0.00	5.60	7.60
12			25	26.68	65.2	0.06	5.40	8.30
12			32	25.66	70.6	0.09	5.20	9.20
12			40	24.90	76.0	0.14	5.00	10.30
12			50	23.84	80.9	0.20	4.70	11.50
12			63	22.22	85.3	0.32	4.30	13.00
12			80	19.78	89.1	0.46	3.70	14.80
12			100	16.62	92.3	0.72	3.00	16.80
12			125	12.69	94.9	1.10	1.80	18.80
12			160	7.39	97.0	1.65	0.00	21.10
12			200	3.92	98.4	2.37	0.00	22.80
13	3,286	3,295						
13			20	26.40	59.3	0.00	5.60	7.60
13			25	25.53	65.2	0.07	5.40	8.30
13			32	24.50	70.6	0.10	5.20	9.20
13			40	23.73	76.0	0.16	5.00	10.30
13			50	22.67	80.9	0.23	4.70	11.50
13			63	21.03	85.3	0.36	4.30	13.00
13			80	18.57	89.1	0.53	3.70	14.80
13			100	15.37	92.3	0.82	3.00	16.80
13			125	11.39	94.9	1.25	1.80	18.80
13			160	6.02	97.0	1.88	0.00	21.10
13			200	2.44	98.4	2.70	0.00	22.80
14	3,157	3,165						
14			20	26.75	59.3	0.00	5.60	7.60
14			25	25.88	65.2	0.06	5.40	8.30
14			32	24.85	70.6	0.09	5.20	9.20
14			40	24.09	76.0	0.16	5.00	10.30
14			50	23.02	80.9	0.22	4.70	11.50
14			63	21.39	85.3	0.35	4.30	13.00
14			80	18.94	89.1	0.51	3.70	14.80
14			100	15.75	92.3	0.79	3.00	16.80
14			125	11.79	94.9	1.20	1.80	18.80
14			160	6.44	97.0	1.80	0.00	21.10
14			200	2.90	98.4	2.60	0.00	22.80
15	3,851	3,859						
15			20	25.03	59.3	0.00	5.60	7.60
15			25	24.15	65.2	0.08	5.40	8.30
15			32	23.11	70.6	0.12	5.20	9.20
15			40	22.33	76.0	0.19	5.00	10.30
15			50	21.25	80.9	0.27	4.70	11.50
15			63	19.60	85.3	0.42	4.30	13.00
15			80	17.10	89.1	0.62	3.70	14.80
15			100	13.86	92.3	0.96	3.00	16.80
15			125	9.80	94.9	1.47	1.80	18.80
15			160	4.32	97.0	2.20	0.00	21.10
15			200	0.61	98.4	3.16	0.00	22.80
16	4,377	4,382						
16			20	23.92	59.3	0.00	5.60	7.60
16			25	23.03	65.2	0.09	5.40	8.30
16			32	21.99	70.6	0.13	5.20	9.20
16			40	21.20	76.0	0.22	5.00	10.30
16			50	20.11	80.9	0.31	4.70	11.50
16			63	18.44	85.3	0.48	4.30	13.00
16			80	15.92	89.1	0.70	3.70	14.80
16			100	12.62	92.3	1.10	3.00	16.80
16			125	8.50	94.9	1.67	1.80	18.80
16			160	2.92	97.0	2.50	0.00	21.10
16			200	-0.93	98.4	3.59	0.00	22.80
17	4,631	4,635						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	23.43	59.3	0.00	5.60	7.60
17			25	22.54	65.2	0.09	5.40	8.30
17			32	21.49	70.6	0.14	5.20	9.20
17			40	20.70	76.0	0.23	5.00	10.30
17			50	19.61	80.9	0.32	4.70	11.50
17			63	17.92	85.3	0.51	4.30	13.00
17			80	15.39	89.1	0.74	3.70	14.80
17			100	12.07	92.3	1.16	3.00	16.80
17			125	7.92	94.9	1.76	1.80	18.80
17			160	2.29	97.0	2.64	0.00	21.10
17			200	-1.62	98.4	3.80	0.00	22.80
18	3,732	3,739						
18			20	25.30	59.3	0.00	5.60	7.60
18			25	24.43	65.2	0.07	5.40	8.30
18			32	23.39	70.6	0.11	5.20	9.20
18			40	22.61	76.0	0.19	5.00	10.30
18			50	21.54	80.9	0.26	4.70	11.50
18			63	19.89	85.3	0.41	4.30	13.00
18			80	17.40	89.1	0.60	3.70	14.80
18			100	14.16	92.3	0.93	3.00	16.80
18			125	10.13	94.9	1.42	1.80	18.80
18			160	4.67	97.0	2.13	0.00	21.10
18			200	0.98	98.4	3.07	0.00	22.80
19	4,224	4,231						
19			20	24.23	59.3	0.00	5.60	7.60
19			25	23.34	65.2	0.08	5.40	8.30
19			32	22.30	70.6	0.13	5.20	9.20
19			40	21.51	76.0	0.21	5.00	10.30
19			50	20.43	80.9	0.30	4.70	11.50
19			63	18.76	85.3	0.47	4.30	13.00
19			80	16.25	89.1	0.68	3.70	14.80
19			100	12.97	92.3	1.06	3.00	16.80
19			125	8.86	94.9	1.61	1.80	18.80
19			160	3.31	97.0	2.41	0.00	21.10
19			200	-0.50	98.4	3.47	0.00	22.80
2	2,135	2,145						
2			20	30.13	59.3	0.00	5.60	7.60
2			25	29.28	65.2	0.04	5.40	8.30
2			32	28.26	70.6	0.06	5.20	9.20
2			40	27.52	76.0	0.11	5.00	10.30
2			50	26.47	80.9	0.15	4.70	11.50
2			63	24.89	85.3	0.24	4.30	13.00
2			80	22.48	89.1	0.34	3.70	14.80
2			100	19.39	92.3	0.54	3.00	16.80
2			125	15.56	94.9	0.81	1.80	18.80
2			160	10.40	97.0	1.22	0.00	21.10
2			200	7.11	98.4	1.76	0.00	22.80
20	4,604	4,610						
20			20	23.48	59.3	0.00	5.60	7.60
20			25	22.59	65.2	0.09	5.40	8.30
20			32	21.54	70.6	0.14	5.20	9.20
20			40	20.75	76.0	0.23	5.00	10.30
20			50	19.66	80.9	0.32	4.70	11.50
20			63	17.97	85.3	0.51	4.30	13.00
20			80	15.44	89.1	0.74	3.70	14.80
20			100	12.13	92.3	1.15	3.00	16.80
20			125	7.97	94.9	1.75	1.80	18.80
20			160	2.35	97.0	2.63	0.00	21.10
20			200	-1.55	98.4	3.78	0.00	22.80
21	4,955	4,960						
21			20	22.84	59.3	0.00	5.60	7.60
21			25	21.95	65.2	0.10	5.40	8.30
21			32	20.90	70.6	0.15	5.20	9.20
21			40	20.10	76.0	0.25	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	18.99	80.9	0.35	4.70	11.50
21			63	17.30	85.3	0.55	4.30	13.00
21			80	14.75	89.1	0.79	3.70	14.80
21			100	11.40	92.3	1.24	3.00	16.80
21			125	7.21	94.9	1.88	1.80	18.80
21			160	1.51	97.0	2.83	0.00	21.10
21			200	-2.48	98.4	4.07	0.00	22.80
22	5,373	5,378						
22			20	22.14	59.3	0.00	5.60	7.60
22			25	21.23	65.2	0.11	5.40	8.30
22			32	20.18	70.6	0.16	5.20	9.20
22			40	19.37	76.0	0.27	5.00	10.30
22			50	18.26	80.9	0.38	4.70	11.50
22			63	16.55	85.3	0.59	4.30	13.00
22			80	13.98	89.1	0.86	3.70	14.80
22			100	10.59	92.3	1.34	3.00	16.80
22			125	6.34	94.9	2.04	1.80	18.80
22			160	0.57	97.0	3.07	0.00	21.10
22			200	-3.52	98.4	4.41	0.00	22.80
23	5,347	5,351						
23			20	22.19	59.3	0.00	5.60	7.60
23			25	21.28	65.2	0.11	5.40	8.30
23			32	20.23	70.6	0.16	5.20	9.20
23			40	19.42	76.0	0.27	5.00	10.30
23			50	18.31	80.9	0.37	4.70	11.50
23			63	16.59	85.3	0.59	4.30	13.00
23			80	14.03	89.1	0.86	3.70	14.80
23			100	10.65	92.3	1.34	3.00	16.80
23			125	6.40	94.9	2.03	1.80	18.80
23			160	0.63	97.0	3.05	0.00	21.10
23			200	-3.46	98.4	4.39	0.00	22.80
24	5,839	5,843						
24			20	21.42	59.3	0.00	5.60	7.60
24			25	20.51	65.2	0.12	5.40	8.30
24			32	19.45	70.6	0.18	5.20	9.20
24			40	18.63	76.0	0.29	5.00	10.30
24			50	17.51	80.9	0.41	4.70	11.50
24			63	15.78	85.3	0.64	4.30	13.00
24			80	13.18	89.1	0.93	3.70	14.80
24			100	9.76	92.3	1.46	3.00	16.80
24			125	5.45	94.9	2.22	1.80	18.80
24			160	-0.41	97.0	3.33	0.00	21.10
24			200	-4.62	98.4	4.79	0.00	22.80
3	2,708	2,716						
3			20	28.08	59.3	0.00	5.60	7.60
3			25	27.22	65.2	0.05	5.40	8.30
3			32	26.19	70.6	0.08	5.20	9.20
3			40	25.44	76.0	0.14	5.00	10.30
3			50	24.38	80.9	0.19	4.70	11.50
3			63	22.77	85.3	0.30	4.30	13.00
3			80	20.34	89.1	0.43	3.70	14.80
3			100	17.19	92.3	0.68	3.00	16.80
3			125	13.29	94.9	1.03	1.80	18.80
3			160	8.02	97.0	1.55	0.00	21.10
3			200	4.59	98.4	2.23	0.00	22.80
4	2,667	2,675						
4			20	28.21	59.3	0.00	5.60	7.60
4			25	27.35	65.2	0.05	5.40	8.30
4			32	26.33	70.6	0.08	5.20	9.20
4			40	25.57	76.0	0.13	5.00	10.30
4			50	24.52	80.9	0.19	4.70	11.50
4			63	22.91	85.3	0.29	4.30	13.00
4			80	20.48	89.1	0.43	3.70	14.80
4			100	17.33	92.3	0.67	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			125	13.44	94.9	1.02	1.80	18.80
4			160	8.18	97.0	1.53	0.00	21.10
4			200	4.76	98.4	2.19	0.00	22.80
5	3,088	3,095						
5			20	26.94	59.3	0.00	5.60	7.60
5			25	26.08	65.2	0.06	5.40	8.30
5			32	25.05	70.6	0.09	5.20	9.20
5			40	24.29	76.0	0.15	5.00	10.30
5			50	23.22	80.9	0.22	4.70	11.50
5			63	21.60	85.3	0.34	4.30	13.00
5			80	19.14	89.1	0.50	3.70	14.80
5			100	15.96	92.3	0.77	3.00	16.80
5			125	12.01	94.9	1.18	1.80	18.80
5			160	6.67	97.0	1.76	0.00	21.10
5			200	3.15	98.4	2.54	0.00	22.80
6	1,565	1,579						
6			20	32.79	59.3	0.00	5.60	7.60
6			25	31.95	65.2	0.03	5.40	8.30
6			32	30.94	70.6	0.05	5.20	9.20
6			40	30.21	76.0	0.08	5.00	10.30
6			50	29.17	80.9	0.11	4.70	11.50
6			63	27.61	85.3	0.17	4.30	13.00
6			80	25.23	89.1	0.25	3.70	14.80
6			100	22.19	92.3	0.39	3.00	16.80
6			125	18.43	94.9	0.60	1.80	18.80
6			160	13.38	97.0	0.90	0.00	21.10
6			200	10.24	98.4	1.29	0.00	22.80
7	2,212	2,222						
7			20	29.82	59.3	0.00	5.60	7.60
7			25	28.98	65.2	0.04	5.40	8.30
7			32	27.95	70.6	0.07	5.20	9.20
7			40	27.21	76.0	0.11	5.00	10.30
7			50	26.16	80.9	0.16	4.70	11.50
7			63	24.57	85.3	0.24	4.30	13.00
7			80	22.16	89.1	0.36	3.70	14.80
7			100	19.06	92.3	0.56	3.00	16.80
7			125	15.22	94.9	0.84	1.80	18.80
7			160	10.05	97.0	1.27	0.00	21.10
7			200	6.74	98.4	1.82	0.00	22.80
8	2,642	2,650						
8			20	28.29	59.3	0.00	5.60	7.60
8			25	27.44	65.2	0.05	5.40	8.30
8			32	26.41	70.6	0.08	5.20	9.20
8			40	25.66	76.0	0.13	5.00	10.30
8			50	24.60	80.9	0.19	4.70	11.50
8			63	23.00	85.3	0.29	4.30	13.00
8			80	20.56	89.1	0.42	3.70	14.80
8			100	17.43	92.3	0.66	3.00	16.80
8			125	13.53	94.9	1.01	1.80	18.80
8			160	8.28	97.0	1.51	0.00	21.10
8			200	4.86	98.4	2.17	0.00	22.80
9	1,626	1,639						
9			20	32.46	59.3	0.00	5.60	7.60
9			25	31.63	65.2	0.03	5.40	8.30
9			32	30.61	70.6	0.05	5.20	9.20
9			40	29.88	76.0	0.08	5.00	10.30
9			50	28.84	80.9	0.11	4.70	11.50
9			63	27.28	85.3	0.18	4.30	13.00
9			80	24.90	89.1	0.26	3.70	14.80
9			100	21.85	92.3	0.41	3.00	16.80
9			125	18.08	94.9	0.62	1.80	18.80
9			160	13.02	97.0	0.93	0.00	21.10
9			200	9.86	98.4	1.34	0.00	22.80
Sum								

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			20	41.59				
Sum			25	40.73				
Sum			32	39.71				
Sum			40	38.95				
Sum			50	37.90				
Sum			63	36.29				
Sum			80	33.86				
Sum			100	30.73				
Sum			125	26.85				
Sum			160	21.62				
Sum			200	18.25				

Noise sensitive area: RH Pajaniemi Noise sensitive point: Finnish normal frequency - User defined (316)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	2,249	2,259						
1			20	29.68	59.3	0.00	5.60	7.60
1			25	28.83	65.2	0.05	5.40	8.30
1			32	27.81	70.6	0.07	5.20	9.20
1			40	27.06	76.0	0.11	5.00	10.30
1			50	26.01	80.9	0.16	4.70	11.50
1			63	24.42	85.3	0.25	4.30	13.00
1			80	22.01	89.1	0.36	3.70	14.80
1			100	18.91	92.3	0.56	3.00	16.80
1			125	15.06	94.9	0.86	1.80	18.80
1			160	9.89	97.0	1.29	0.00	21.10
1			200	6.57	98.4	1.85	0.00	22.80
10	3,780	3,787						
10			20	25.19	59.3	0.00	5.60	7.60
10			25	24.31	65.2	0.08	5.40	8.30
10			32	23.28	70.6	0.11	5.20	9.20
10			40	22.50	76.0	0.19	5.00	10.30
10			50	21.42	80.9	0.27	4.70	11.50
10			63	19.77	85.3	0.42	4.30	13.00
10			80	17.28	89.1	0.61	3.70	14.80
10			100	14.04	92.3	0.95	3.00	16.80
10			125	10.00	94.9	1.44	1.80	18.80
10			160	4.53	97.0	2.16	0.00	21.10
10			200	0.83	98.4	3.11	0.00	22.80
11	4,276	4,282						
11			20	24.12	59.3	0.00	5.60	7.60
11			25	23.24	65.2	0.09	5.40	8.30
11			32	22.19	70.6	0.13	5.20	9.20
11			40	21.41	76.0	0.21	5.00	10.30
11			50	20.32	80.9	0.30	4.70	11.50
11			63	18.65	85.3	0.47	4.30	13.00
11			80	16.13	89.1	0.69	3.70	14.80
11			100	12.85	92.3	1.07	3.00	16.80
11			125	8.74	94.9	1.63	1.80	18.80
11			160	3.18	97.0	2.44	0.00	21.10
11			200	-0.64	98.4	3.51	0.00	22.80
12	4,275	4,281						
12			20	24.12	59.3	0.00	5.60	7.60
12			25	23.24	65.2	0.09	5.40	8.30
12			32	22.20	70.6	0.13	5.20	9.20
12			40	21.41	76.0	0.21	5.00	10.30
12			50	20.32	80.9	0.30	4.70	11.50
12			63	18.65	85.3	0.47	4.30	13.00
12			80	16.14	89.1	0.68	3.70	14.80
12			100	12.85	92.3	1.07	3.00	16.80
12			125	8.74	94.9	1.63	1.80	18.80
12			160	3.18	97.0	2.44	0.00	21.10

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			200	-0.64	98.4	3.51	0.00	22.80
13	3,769	3,777						
13			20	25.21	59.3	0.00	5.60	7.60
13			25	24.34	65.2	0.08	5.40	8.30
13			32	23.30	70.6	0.11	5.20	9.20
13			40	22.52	76.0	0.19	5.00	10.30
13			50	21.44	80.9	0.26	4.70	11.50
13			63	19.79	85.3	0.42	4.30	13.00
13			80	17.30	89.1	0.60	3.70	14.80
13			100	14.06	92.3	0.94	3.00	16.80
13			125	10.02	94.9	1.44	1.80	18.80
13			160	4.55	97.0	2.15	0.00	21.10
13			200	0.86	98.4	3.10	0.00	22.80
14	3,284	3,293						
14			20	26.40	59.3	0.00	5.60	7.60
14			25	25.54	65.2	0.07	5.40	8.30
14			32	24.50	70.6	0.10	5.20	9.20
14			40	23.74	76.0	0.16	5.00	10.30
14			50	22.67	80.9	0.23	4.70	11.50
14			63	21.04	85.3	0.36	4.30	13.00
14			80	18.57	89.1	0.53	3.70	14.80
14			100	15.38	92.3	0.82	3.00	16.80
14			125	11.40	94.9	1.25	1.80	18.80
14			160	6.02	97.0	1.88	0.00	21.10
14			200	2.45	98.4	2.70	0.00	22.80
15	3,573	3,583						
15			20	25.67	59.3	0.00	5.60	7.60
15			25	24.80	65.2	0.07	5.40	8.30
15			32	23.76	70.6	0.11	5.20	9.20
15			40	22.99	76.0	0.18	5.00	10.30
15			50	21.92	80.9	0.25	4.70	11.50
15			63	20.27	85.3	0.39	4.30	13.00
15			80	17.79	89.1	0.57	3.70	14.80
15			100	14.57	92.3	0.90	3.00	16.80
15			125	10.55	94.9	1.36	1.80	18.80
15			160	5.12	97.0	2.04	0.00	21.10
15			200	1.48	98.4	2.94	0.00	22.80
16	3,427	3,436						
16			20	26.03	59.3	0.00	5.60	7.60
16			25	25.17	65.2	0.07	5.40	8.30
16			32	24.13	70.6	0.10	5.20	9.20
16			40	23.36	76.0	0.17	5.00	10.30
16			50	22.29	80.9	0.24	4.70	11.50
16			63	20.65	85.3	0.38	4.30	13.00
16			80	18.18	89.1	0.55	3.70	14.80
16			100	14.97	92.3	0.86	3.00	16.80
16			125	10.97	94.9	1.31	1.80	18.80
16			160	5.57	97.0	1.96	0.00	21.10
16			200	1.96	98.4	2.82	0.00	22.80
17	2,913	2,922						
17			20	27.44	59.3	0.00	5.60	7.60
17			25	26.58	65.2	0.06	5.40	8.30
17			32	25.55	70.6	0.09	5.20	9.20
17			40	24.80	76.0	0.15	5.00	10.30
17			50	23.73	80.9	0.20	4.70	11.50
17			63	22.12	85.3	0.32	4.30	13.00
17			80	19.67	89.1	0.47	3.70	14.80
17			100	16.51	92.3	0.73	3.00	16.80
17			125	12.58	94.9	1.11	1.80	18.80
17			160	7.27	97.0	1.67	0.00	21.10
17			200	3.79	98.4	2.40	0.00	22.80
18	4,233	4,239						
18			20	24.21	59.3	0.00	5.60	7.60
18			25	23.32	65.2	0.08	5.40	8.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			32	22.28	70.6	0.13	5.20	9.20
18			40	21.50	76.0	0.21	5.00	10.30
18			50	20.41	80.9	0.30	4.70	11.50
18			63	18.74	85.3	0.47	4.30	13.00
18			80	16.23	89.1	0.68	3.70	14.80
18			100	12.95	92.3	1.06	3.00	16.80
18			125	8.84	94.9	1.61	1.80	18.80
18			160	3.29	97.0	2.42	0.00	21.10
18			200	-0.52	98.4	3.48	0.00	22.80
19	4,141	4,149						
19			20	24.39	59.3	0.00	5.60	7.60
19			25	23.51	65.2	0.08	5.40	8.30
19			32	22.47	70.6	0.12	5.20	9.20
19			40	21.69	76.0	0.21	5.00	10.30
19			50	20.60	80.9	0.29	4.70	11.50
19			63	18.94	85.3	0.46	4.30	13.00
19			80	16.43	89.1	0.66	3.70	14.80
19			100	13.15	92.3	1.04	3.00	16.80
19			125	9.06	94.9	1.58	1.80	18.80
19			160	3.53	97.0	2.37	0.00	21.10
19			200	-0.26	98.4	3.40	0.00	22.80
2	2,742	2,750						
2			20	27.97	59.3	0.00	5.60	7.60
2			25	27.11	65.2	0.06	5.40	8.30
2			32	26.08	70.6	0.08	5.20	9.20
2			40	25.33	76.0	0.14	5.00	10.30
2			50	24.27	80.9	0.19	4.70	11.50
2			63	22.66	85.3	0.30	4.30	13.00
2			80	20.22	89.1	0.44	3.70	14.80
2			100	17.08	92.3	0.69	3.00	16.80
2			125	13.17	94.9	1.05	1.80	18.80
2			160	7.90	97.0	1.57	0.00	21.10
2			200	4.46	98.4	2.26	0.00	22.80
20	3,964	3,972						
20			20	24.77	59.3	0.00	5.60	7.60
20			25	23.89	65.2	0.08	5.40	8.30
20			32	22.86	70.6	0.12	5.20	9.20
20			40	22.08	76.0	0.20	5.00	10.30
20			50	20.99	80.9	0.28	4.70	11.50
20			63	19.33	85.3	0.44	4.30	13.00
20			80	16.84	89.1	0.64	3.70	14.80
20			100	13.58	92.3	0.99	3.00	16.80
20			125	9.51	94.9	1.51	1.80	18.80
20			160	4.01	97.0	2.26	0.00	21.10
20			200	0.26	98.4	3.26	0.00	22.80
21	3,602	3,609						
21			20	25.61	59.3	0.00	5.60	7.60
21			25	24.73	65.2	0.07	5.40	8.30
21			32	23.70	70.6	0.11	5.20	9.20
21			40	22.93	76.0	0.18	5.00	10.30
21			50	21.85	80.9	0.25	4.70	11.50
21			63	20.21	85.3	0.40	4.30	13.00
21			80	17.73	89.1	0.58	3.70	14.80
21			100	14.50	92.3	0.90	3.00	16.80
21			125	10.48	94.9	1.37	1.80	18.80
21			160	5.05	97.0	2.06	0.00	21.10
21			200	1.39	98.4	2.96	0.00	22.80
22	3,312	3,321						
22			20	26.33	59.3	0.00	5.60	7.60
22			25	25.46	65.2	0.07	5.40	8.30
22			32	24.43	70.6	0.10	5.20	9.20
22			40	23.66	76.0	0.17	5.00	10.30
22			50	22.59	80.9	0.23	4.70	11.50
22			63	20.96	85.3	0.37	4.30	13.00

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			80	18.50	89.1	0.53	3.70	14.80
22			100	15.30	92.3	0.83	3.00	16.80
22			125	11.31	94.9	1.26	1.80	18.80
22			160	5.93	97.0	1.89	0.00	21.10
22			200	2.35	98.4	2.72	0.00	22.80
23	2,708	2,716						
23			20	28.07	59.3	0.00	5.60	7.60
23			25	27.22	65.2	0.05	5.40	8.30
23			32	26.19	70.6	0.08	5.20	9.20
23			40	25.44	76.0	0.14	5.00	10.30
23			50	24.38	80.9	0.19	4.70	11.50
23			63	22.77	85.3	0.30	4.30	13.00
23			80	20.34	89.1	0.43	3.70	14.80
23			100	17.19	92.3	0.68	3.00	16.80
23			125	13.29	94.9	1.03	1.80	18.80
23			160	8.02	97.0	1.55	0.00	21.10
23			200	4.59	98.4	2.23	0.00	22.80
24	3,336	3,343						
24			20	26.27	59.3	0.00	5.60	7.60
24			25	25.40	65.2	0.07	5.40	8.30
24			32	24.37	70.6	0.10	5.20	9.20
24			40	23.60	76.0	0.17	5.00	10.30
24			50	22.53	80.9	0.23	4.70	11.50
24			63	20.90	85.3	0.37	4.30	13.00
24			80	18.43	89.1	0.53	3.70	14.80
24			100	15.23	92.3	0.84	3.00	16.80
24			125	11.25	94.9	1.27	1.80	18.80
24			160	5.86	97.0	1.91	0.00	21.10
24			200	2.28	98.4	2.74	0.00	22.80
3	2,184	2,196						
3			20	29.92	59.3	0.00	5.60	7.60
3			25	29.08	65.2	0.04	5.40	8.30
3			32	28.06	70.6	0.07	5.20	9.20
3			40	27.31	76.0	0.11	5.00	10.30
3			50	26.27	80.9	0.15	4.70	11.50
3			63	24.68	85.3	0.24	4.30	13.00
3			80	22.27	89.1	0.35	3.70	14.80
3			100	19.17	92.3	0.55	3.00	16.80
3			125	15.33	94.9	0.83	1.80	18.80
3			160	10.17	97.0	1.25	0.00	21.10
3			200	6.87	98.4	1.80	0.00	22.80
4	2,258	2,269						
4			20	29.64	59.3	0.00	5.60	7.60
4			25	28.79	65.2	0.05	5.40	8.30
4			32	27.77	70.6	0.07	5.20	9.20
4			40	27.02	76.0	0.11	5.00	10.30
4			50	25.98	80.9	0.16	4.70	11.50
4			63	24.38	85.3	0.25	4.30	13.00
4			80	21.97	89.1	0.36	3.70	14.80
4			100	18.87	92.3	0.57	3.00	16.80
4			125	15.02	94.9	0.86	1.80	18.80
4			160	9.84	97.0	1.29	0.00	21.10
4			200	6.52	98.4	1.86	0.00	22.80
5	2,049	2,061						
5			20	30.47	59.3	0.00	5.60	7.60
5			25	29.63	65.2	0.04	5.40	8.30
5			32	28.61	70.6	0.06	5.20	9.20
5			40	27.87	76.0	0.10	5.00	10.30
5			50	26.82	80.9	0.14	4.70	11.50
5			63	25.24	85.3	0.23	4.30	13.00
5			80	22.84	89.1	0.33	3.70	14.80
5			100	19.75	92.3	0.52	3.00	16.80
5			125	15.93	94.9	0.78	1.80	18.80
5			160	10.79	97.0	1.17	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			200	7.53	98.4	1.69	0.00	22.80
6	3,676	3,683						
6			20	25.43	59.3	0.00	5.60	7.60
6			25	24.56	65.2	0.07	5.40	8.30
6			32	23.52	70.6	0.11	5.20	9.20
6			40	22.75	76.0	0.18	5.00	10.30
6			50	21.67	80.9	0.26	4.70	11.50
6			63	20.02	85.3	0.41	4.30	13.00
6			80	17.54	89.1	0.59	3.70	14.80
6			100	14.31	92.3	0.92	3.00	16.80
6			125	10.28	94.9	1.40	1.80	18.80
6			160	4.83	97.0	2.10	0.00	21.10
6			200	1.15	98.4	3.02	0.00	22.80
7	3,175	3,183						
7			20	26.70	59.3	0.00	5.60	7.60
7			25	25.84	65.2	0.06	5.40	8.30
7			32	24.80	70.6	0.10	5.20	9.20
7			40	24.04	76.0	0.16	5.00	10.30
7			50	22.97	80.9	0.22	4.70	11.50
7			63	21.35	85.3	0.35	4.30	13.00
7			80	18.89	89.1	0.51	3.70	14.80
7			100	15.70	92.3	0.80	3.00	16.80
7			125	11.73	94.9	1.21	1.80	18.80
7			160	6.38	97.0	1.81	0.00	21.10
7			200	2.83	98.4	2.61	0.00	22.80
8	2,617	2,626						
8			20	28.37	59.3	0.00	5.60	7.60
8			25	27.52	65.2	0.05	5.40	8.30
8			32	26.49	70.6	0.08	5.20	9.20
8			40	25.74	76.0	0.13	5.00	10.30
8			50	24.68	80.9	0.18	4.70	11.50
8			63	23.08	85.3	0.29	4.30	13.00
8			80	20.64	89.1	0.42	3.70	14.80
8			100	17.51	92.3	0.66	3.00	16.80
8			125	13.61	94.9	1.00	1.80	18.80
8			160	8.37	97.0	1.50	0.00	21.10
8			200	4.96	98.4	2.15	0.00	22.80
9	4,313	4,318						
9			20	24.05	59.3	0.00	5.60	7.60
9			25	23.16	65.2	0.09	5.40	8.30
9			32	22.12	70.6	0.13	5.20	9.20
9			40	21.33	76.0	0.22	5.00	10.30
9			50	20.24	80.9	0.30	4.70	11.50
9			63	18.57	85.3	0.48	4.30	13.00
9			80	16.05	89.1	0.69	3.70	14.80
9			100	12.77	92.3	1.08	3.00	16.80
9			125	8.65	94.9	1.64	1.80	18.80
9			160	3.08	97.0	2.46	0.00	21.10
9			200	-0.75	98.4	3.54	0.00	22.80
Sum								
Sum			20	40.78				
Sum			25	39.92				
Sum			32	38.89				
Sum			40	38.13				
Sum			50	37.07				
Sum			63	35.45				
Sum			80	33.00				
Sum			100	29.83				
Sum			125	25.90				
Sum			160	20.59				
Sum			200	17.11				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: RH Purola Noise sensitive point: Finnish normal frequency - User defined (319)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,556	1,569						
1			20	32.84	59.3	0.00	5.60	7.60
1			25	32.01	65.2	0.03	5.40	8.30
1			32	31.00	70.6	0.05	5.20	9.20
1			40	30.27	76.0	0.08	5.00	10.30
1			50	29.23	80.9	0.11	4.70	11.50
1			63	27.67	85.3	0.17	4.30	13.00
1			80	25.29	89.1	0.25	3.70	14.80
1			100	22.25	92.3	0.39	3.00	16.80
1			125	18.49	94.9	0.60	1.80	18.80
1			160	13.45	97.0	0.89	0.00	21.10
1			200	10.30	98.4	1.29	0.00	22.80
10	4,102	4,108						
10			20	24.48	59.3	0.00	5.60	7.60
10			25	23.60	65.2	0.08	5.40	8.30
10			32	22.56	70.6	0.12	5.20	9.20
10			40	21.78	76.0	0.21	5.00	10.30
10			50	20.69	80.9	0.29	4.70	11.50
10			63	19.03	85.3	0.45	4.30	13.00
10			80	16.52	89.1	0.66	3.70	14.80
10			100	13.25	92.3	1.03	3.00	16.80
10			125	9.17	94.9	1.56	1.80	18.80
10			160	3.64	97.0	2.34	0.00	21.10
10			200	-0.14	98.4	3.37	0.00	22.80
11	4,698	4,702						
11			20	23.31	59.3	0.00	5.60	7.60
11			25	22.41	65.2	0.09	5.40	8.30
11			32	21.37	70.6	0.14	5.20	9.20
11			40	20.57	76.0	0.24	5.00	10.30
11			50	19.48	80.9	0.33	4.70	11.50
11			63	17.79	85.3	0.52	4.30	13.00
11			80	15.25	89.1	0.75	3.70	14.80
11			100	11.93	92.3	1.18	3.00	16.80
11			125	7.77	94.9	1.79	1.80	18.80
11			160	2.12	97.0	2.68	0.00	21.10
11			200	-1.80	98.4	3.86	0.00	22.80
12	5,046	5,050						
12			20	22.69	59.3	0.00	5.60	7.60
12			25	21.79	65.2	0.10	5.40	8.30
12			32	20.74	70.6	0.15	5.20	9.20
12			40	19.94	76.0	0.25	5.00	10.30
12			50	18.83	80.9	0.35	4.70	11.50
12			63	17.13	85.3	0.56	4.30	13.00
12			80	14.58	89.1	0.81	3.70	14.80
12			100	11.22	92.3	1.26	3.00	16.80
12			125	7.01	94.9	1.92	1.80	18.80
12			160	1.31	97.0	2.88	0.00	21.10
12			200	-2.71	98.4	4.14	0.00	22.80
13	4,927	4,933						
13			20	22.89	59.3	0.00	5.60	7.60
13			25	21.99	65.2	0.10	5.40	8.30
13			32	20.95	70.6	0.15	5.20	9.20
13			40	20.15	76.0	0.25	5.00	10.30
13			50	19.04	80.9	0.35	4.70	11.50
13			63	17.35	85.3	0.54	4.30	13.00
13			80	14.80	89.1	0.79	3.70	14.80
13			100	11.46	92.3	1.23	3.00	16.80
13			125	7.26	94.9	1.87	1.80	18.80
13			160	1.58	97.0	2.81	0.00	21.10
13			200	-2.41	98.4	4.04	0.00	22.80
14	4,463	4,469						
14			20	23.75	59.3	0.00	5.60	7.60
14			25	22.86	65.2	0.09	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	21.82	70.6	0.13	5.20	9.20
14			40	21.03	76.0	0.22	5.00	10.30
14			50	19.94	80.9	0.31	4.70	11.50
14			63	18.26	85.3	0.49	4.30	13.00
14			80	15.73	89.1	0.71	3.70	14.80
14			100	12.43	92.3	1.12	3.00	16.80
14			125	8.30	94.9	1.70	1.80	18.80
14			160	2.70	97.0	2.55	0.00	21.10
14			200	-1.17	98.4	3.66	0.00	22.80
15	5,131	5,137						
15			20	22.54	59.3	0.00	5.60	7.60
15			25	21.64	65.2	0.10	5.40	8.30
15			32	20.59	70.6	0.15	5.20	9.20
15			40	19.78	76.0	0.26	5.00	10.30
15			50	18.68	80.9	0.36	4.70	11.50
15			63	16.97	85.3	0.57	4.30	13.00
15			80	14.42	89.1	0.82	3.70	14.80
15			100	11.05	92.3	1.28	3.00	16.80
15			125	6.83	94.9	1.95	1.80	18.80
15			160	1.11	97.0	2.93	0.00	21.10
15			200	-2.93	98.4	4.21	0.00	22.80
16	5,334	5,338						
16			20	22.21	59.3	0.00	5.60	7.60
16			25	21.30	65.2	0.11	5.40	8.30
16			32	20.25	70.6	0.16	5.20	9.20
16			40	19.44	76.0	0.27	5.00	10.30
16			50	18.33	80.9	0.37	4.70	11.50
16			63	16.62	85.3	0.59	4.30	13.00
16			80	14.05	89.1	0.85	3.70	14.80
16			100	10.67	92.3	1.33	3.00	16.80
16			125	6.42	94.9	2.03	1.80	18.80
16			160	0.66	97.0	3.04	0.00	21.10
16			200	-3.43	98.4	4.38	0.00	22.80
17	5,113	5,117						
17			20	22.57	59.3	0.00	5.60	7.60
17			25	21.67	65.2	0.10	5.40	8.30
17			32	20.62	70.6	0.15	5.20	9.20
17			40	19.82	76.0	0.26	5.00	10.30
17			50	18.71	80.9	0.36	4.70	11.50
17			63	17.01	85.3	0.56	4.30	13.00
17			80	14.45	89.1	0.82	3.70	14.80
17			100	11.09	92.3	1.28	3.00	16.80
17			125	6.88	94.9	1.94	1.80	18.80
17			160	1.16	97.0	2.92	0.00	21.10
17			200	-2.88	98.4	4.20	0.00	22.80
18	5,525	5,529						
18			20	21.90	59.3	0.00	5.60	7.60
18			25	20.99	65.2	0.11	5.40	8.30
18			32	19.94	70.6	0.17	5.20	9.20
18			40	19.13	76.0	0.28	5.00	10.30
18			50	18.01	80.9	0.39	4.70	11.50
18			63	16.29	85.3	0.61	4.30	13.00
18			80	13.71	89.1	0.88	3.70	14.80
18			100	10.32	92.3	1.38	3.00	16.80
18			125	6.05	94.9	2.10	1.80	18.80
18			160	0.25	97.0	3.15	0.00	21.10
18			200	-3.89	98.4	4.53	0.00	22.80
19	5,740	5,745						
19			20	21.57	59.3	0.00	5.60	7.60
19			25	20.65	65.2	0.11	5.40	8.30
19			32	19.60	70.6	0.17	5.20	9.20
19			40	18.78	76.0	0.29	5.00	10.30
19			50	17.66	80.9	0.40	4.70	11.50
19			63	15.93	85.3	0.63	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	13.35	89.1	0.92	3.70	14.80
19			100	9.93	92.3	1.44	3.00	16.80
19			125	5.63	94.9	2.18	1.80	18.80
19			160	-0.21	97.0	3.27	0.00	21.10
19			200	-4.40	98.4	4.71	0.00	22.80
2	2,503	2,511						
2			20	28.76	59.3	0.00	5.60	7.60
2			25	27.91	65.2	0.05	5.40	8.30
2			32	26.88	70.6	0.08	5.20	9.20
2			40	26.13	76.0	0.13	5.00	10.30
2			50	25.08	80.9	0.18	4.70	11.50
2			63	23.48	85.3	0.28	4.30	13.00
2			80	21.05	89.1	0.40	3.70	14.80
2			100	17.93	92.3	0.63	3.00	16.80
2			125	14.05	94.9	0.95	1.80	18.80
2			160	8.82	97.0	1.43	0.00	21.10
2			200	5.44	98.4	2.06	0.00	22.80
20	5,828	5,832						
20			20	21.44	59.3	0.00	5.60	7.60
20			25	20.52	65.2	0.12	5.40	8.30
20			32	19.46	70.6	0.17	5.20	9.20
20			40	18.65	76.0	0.29	5.00	10.30
20			50	17.53	80.9	0.41	4.70	11.50
20			63	15.79	85.3	0.64	4.30	13.00
20			80	13.20	89.1	0.93	3.70	14.80
20			100	9.78	92.3	1.46	3.00	16.80
20			125	5.47	94.9	2.22	1.80	18.80
20			160	-0.39	97.0	3.32	0.00	21.10
20			200	-4.60	98.4	4.78	0.00	22.80
21	5,765	5,770						
21			20	21.53	59.3	0.00	5.60	7.60
21			25	20.62	65.2	0.12	5.40	8.30
21			32	19.56	70.6	0.17	5.20	9.20
21			40	18.74	76.0	0.29	5.00	10.30
21			50	17.62	80.9	0.40	4.70	11.50
21			63	15.89	85.3	0.63	4.30	13.00
21			80	13.31	89.1	0.92	3.70	14.80
21			100	9.89	92.3	1.44	3.00	16.80
21			125	5.58	94.9	2.19	1.80	18.80
21			160	-0.26	97.0	3.29	0.00	21.10
21			200	-4.45	98.4	4.73	0.00	22.80
22	5,772	5,776						
22			20	21.52	59.3	0.00	5.60	7.60
22			25	20.61	65.2	0.12	5.40	8.30
22			32	19.55	70.6	0.17	5.20	9.20
22			40	18.73	76.0	0.29	5.00	10.30
22			50	17.61	80.9	0.40	4.70	11.50
22			63	15.88	85.3	0.64	4.30	13.00
22			80	13.29	89.1	0.92	3.70	14.80
22			100	9.87	92.3	1.44	3.00	16.80
22			125	5.57	94.9	2.20	1.80	18.80
22			160	-0.27	97.0	3.29	0.00	21.10
22			200	-4.47	98.4	4.74	0.00	22.80
23	5,335	5,339						
23			20	22.21	59.3	0.00	5.60	7.60
23			25	21.30	65.2	0.11	5.40	8.30
23			32	20.25	70.6	0.16	5.20	9.20
23			40	19.44	76.0	0.27	5.00	10.30
23			50	18.33	80.9	0.37	4.70	11.50
23			63	16.62	85.3	0.59	4.30	13.00
23			80	14.05	89.1	0.85	3.70	14.80
23			100	10.67	92.3	1.33	3.00	16.80
23			125	6.42	94.9	2.03	1.80	18.80
23			160	0.66	97.0	3.04	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-3.43	98.4	4.38	0.00	22.80
24	5,997	6,000						
24			20	21.19	59.3	0.00	5.60	7.60
24			25	20.27	65.2	0.12	5.40	8.30
24			32	19.21	70.6	0.18	5.20	9.20
24			40	18.39	76.0	0.30	5.00	10.30
24			50	17.27	80.9	0.42	4.70	11.50
24			63	15.53	85.3	0.66	4.30	13.00
24			80	12.93	89.1	0.96	3.70	14.80
24			100	9.49	92.3	1.50	3.00	16.80
24			125	5.16	94.9	2.28	1.80	18.80
24			160	-0.73	97.0	3.42	0.00	21.10
24			200	-4.98	98.4	4.92	0.00	22.80
3	2,130	2,141						
3			20	30.14	59.3	0.00	5.60	7.60
3			25	29.30	65.2	0.04	5.40	8.30
3			32	28.28	70.6	0.06	5.20	9.20
3			40	27.54	76.0	0.11	5.00	10.30
3			50	26.49	80.9	0.15	4.70	11.50
3			63	24.91	85.3	0.24	4.30	13.00
3			80	22.50	89.1	0.34	3.70	14.80
3			100	19.41	92.3	0.54	3.00	16.80
3			125	15.58	94.9	0.81	1.80	18.80
3			160	10.42	97.0	1.22	0.00	21.10
3			200	7.13	98.4	1.76	0.00	22.80
4	2,691	2,699						
4			20	28.13	59.3	0.00	5.60	7.60
4			25	27.28	65.2	0.05	5.40	8.30
4			32	26.25	70.6	0.08	5.20	9.20
4			40	25.50	76.0	0.13	5.00	10.30
4			50	24.44	80.9	0.19	4.70	11.50
4			63	22.83	85.3	0.30	4.30	13.00
4			80	20.40	89.1	0.43	3.70	14.80
4			100	17.25	92.3	0.67	3.00	16.80
4			125	13.35	94.9	1.03	1.80	18.80
4			160	8.09	97.0	1.54	0.00	21.10
4			200	4.66	98.4	2.21	0.00	22.80
5	3,129	3,136						
5			20	26.83	59.3	0.00	5.60	7.60
5			25	25.96	65.2	0.06	5.40	8.30
5			32	24.93	70.6	0.09	5.20	9.20
5			40	24.17	76.0	0.16	5.00	10.30
5			50	23.10	80.9	0.22	4.70	11.50
5			63	21.48	85.3	0.34	4.30	13.00
5			80	19.02	89.1	0.50	3.70	14.80
5			100	15.84	92.3	0.78	3.00	16.80
5			125	11.88	94.9	1.19	1.80	18.80
5			160	6.54	97.0	1.79	0.00	21.10
5			200	3.00	98.4	2.57	0.00	22.80
6	3,549	3,555						
6			20	25.74	59.3	0.00	5.60	7.60
6			25	24.87	65.2	0.07	5.40	8.30
6			32	23.83	70.6	0.11	5.20	9.20
6			40	23.06	76.0	0.18	5.00	10.30
6			50	21.99	80.9	0.25	4.70	11.50
6			63	20.34	85.3	0.39	4.30	13.00
6			80	17.87	89.1	0.57	3.70	14.80
6			100	14.65	92.3	0.89	3.00	16.80
6			125	10.63	94.9	1.35	1.80	18.80
6			160	5.21	97.0	2.03	0.00	21.10
6			200	1.57	98.4	2.91	0.00	22.80
7	3,579	3,585						
7			20	25.66	59.3	0.00	5.60	7.60
7			25	24.79	65.2	0.07	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			32	23.76	70.6	0.11	5.20	9.20
7			40	22.99	76.0	0.18	5.00	10.30
7			50	21.91	80.9	0.25	4.70	11.50
7			63	20.27	85.3	0.39	4.30	13.00
7			80	17.79	89.1	0.57	3.70	14.80
7			100	14.57	92.3	0.90	3.00	16.80
7			125	10.55	94.9	1.36	1.80	18.80
7			160	5.12	97.0	2.04	0.00	21.10
7			200	1.47	98.4	2.94	0.00	22.80
8	3,341	3,347						
8			20	26.26	59.3	0.00	5.60	7.60
8			25	25.39	65.2	0.07	5.40	8.30
8			32	24.36	70.6	0.10	5.20	9.20
8			40	23.59	76.0	0.17	5.00	10.30
8			50	22.52	80.9	0.23	4.70	11.50
8			63	20.89	85.3	0.37	4.30	13.00
8			80	18.42	89.1	0.54	3.70	14.80
8			100	15.22	92.3	0.84	3.00	16.80
8			125	11.24	94.9	1.27	1.80	18.80
8			160	5.85	97.0	1.91	0.00	21.10
8			200	2.26	98.4	2.74	0.00	22.80
9	4,264	4,269						
9			20	24.15	59.3	0.00	5.60	7.60
9			25	23.26	65.2	0.09	5.40	8.30
9			32	22.22	70.6	0.13	5.20	9.20
9			40	21.44	76.0	0.21	5.00	10.30
9			50	20.35	80.9	0.30	4.70	11.50
9			63	18.68	85.3	0.47	4.30	13.00
9			80	16.16	89.1	0.68	3.70	14.80
9			100	12.88	92.3	1.07	3.00	16.80
9			125	8.77	94.9	1.62	1.80	18.80
9			160	3.21	97.0	2.43	0.00	21.10
9			200	-0.61	98.4	3.50	0.00	22.80
Sum								
Sum			20	39.51				
Sum			25	38.64				
Sum			32	37.61				
Sum			40	36.84				
Sum			50	35.78				
Sum			63	34.15				
Sum			80	31.69				
Sum			100	28.50				
Sum			125	24.54				
Sum			160	19.21				
Sum			200	15.72				

Noise sensitive area: RH Rinne 1 Noise sensitive point: Finnish normal frequency - User defined (314)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,757	1,770						
1			20	31.80	59.3	0.00	5.60	7.60
1			25	30.96	65.2	0.04	5.40	8.30
1			32	29.94	70.6	0.05	5.20	9.20
1			40	29.21	76.0	0.09	5.00	10.30
1			50	28.17	80.9	0.12	4.70	11.50
1			63	26.60	85.3	0.19	4.30	13.00
1			80	24.21	89.1	0.28	3.70	14.80
1			100	21.15	92.3	0.44	3.00	16.80
1			125	17.37	94.9	0.67	1.80	18.80
1			160	12.29	97.0	1.01	0.00	21.10
1			200	9.09	98.4	1.45	0.00	22.80
10	3,235	3,243						

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			20	26.54	59.3	0.00	5.60	7.60
10			25	25.67	65.2	0.06	5.40	8.30
10			32	24.64	70.6	0.10	5.20	9.20
10			40	23.87	76.0	0.16	5.00	10.30
10			50	22.81	80.9	0.23	4.70	11.50
10			63	21.18	85.3	0.36	4.30	13.00
10			80	18.71	89.1	0.52	3.70	14.80
10			100	15.52	92.3	0.81	3.00	16.80
10			125	11.55	94.9	1.23	1.80	18.80
10			160	6.18	97.0	1.85	0.00	21.10
10			200	2.62	98.4	2.66	0.00	22.80
11	3,749	3,755						
11			20	25.26	59.3	0.00	5.60	7.60
11			25	24.39	65.2	0.08	5.40	8.30
11			32	23.35	70.6	0.11	5.20	9.20
11			40	22.57	76.0	0.19	5.00	10.30
11			50	21.50	80.9	0.26	4.70	11.50
11			63	19.85	85.3	0.41	4.30	13.00
11			80	17.36	89.1	0.60	3.70	14.80
11			100	14.12	92.3	0.94	3.00	16.80
11			125	10.08	94.9	1.43	1.80	18.80
11			160	4.62	97.0	2.14	0.00	21.10
11			200	0.93	98.4	3.08	0.00	22.80
12	3,784	3,791						
12			20	25.18	59.3	0.00	5.60	7.60
12			25	24.30	65.2	0.08	5.40	8.30
12			32	23.27	70.6	0.11	5.20	9.20
12			40	22.49	76.0	0.19	5.00	10.30
12			50	21.41	80.9	0.27	4.70	11.50
12			63	19.76	85.3	0.42	4.30	13.00
12			80	17.27	89.1	0.61	3.70	14.80
12			100	14.03	92.3	0.95	3.00	16.80
12			125	9.99	94.9	1.44	1.80	18.80
12			160	4.52	97.0	2.16	0.00	21.10
12			200	0.82	98.4	3.11	0.00	22.80
13	3,319	3,328						
13			20	26.31	59.3	0.00	5.60	7.60
13			25	25.44	65.2	0.07	5.40	8.30
13			32	24.41	70.6	0.10	5.20	9.20
13			40	23.64	76.0	0.17	5.00	10.30
13			50	22.57	80.9	0.23	4.70	11.50
13			63	20.94	85.3	0.37	4.30	13.00
13			80	18.48	89.1	0.53	3.70	14.80
13			100	15.28	92.3	0.83	3.00	16.80
13			125	11.29	94.9	1.26	1.80	18.80
13			160	5.91	97.0	1.90	0.00	21.10
13			200	2.33	98.4	2.73	0.00	22.80
14	2,820	2,831						
14			20	27.72	59.3	0.00	5.60	7.60
14			25	26.86	65.2	0.06	5.40	8.30
14			32	25.83	70.6	0.08	5.20	9.20
14			40	25.07	76.0	0.14	5.00	10.30
14			50	24.01	80.9	0.20	4.70	11.50
14			63	22.40	85.3	0.31	4.30	13.00
14			80	19.96	89.1	0.45	3.70	14.80
14			100	16.81	92.3	0.71	3.00	16.80
14			125	12.89	94.9	1.08	1.80	18.80
14			160	7.60	97.0	1.61	0.00	21.10
14			200	4.14	98.4	2.32	0.00	22.80
15	3,191	3,202						
15			20	26.65	59.3	0.00	5.60	7.60
15			25	25.78	65.2	0.06	5.40	8.30
15			32	24.75	70.6	0.10	5.20	9.20
15			40	23.99	76.0	0.16	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			50	22.92	80.9	0.22	4.70	11.50
15			63	21.29	85.3	0.35	4.30	13.00
15			80	18.83	89.1	0.51	3.70	14.80
15			100	15.64	92.3	0.80	3.00	16.80
15			125	11.68	94.9	1.22	1.80	18.80
15			160	6.32	97.0	1.82	0.00	21.10
15			200	2.77	98.4	2.63	0.00	22.80
16	3,124	3,133						
16			20	26.84	59.3	0.00	5.60	7.60
16			25	25.97	65.2	0.06	5.40	8.30
16			32	24.94	70.6	0.09	5.20	9.20
16			40	24.18	76.0	0.16	5.00	10.30
16			50	23.11	80.9	0.22	4.70	11.50
16			63	21.49	85.3	0.34	4.30	13.00
16			80	19.03	89.1	0.50	3.70	14.80
16			100	15.85	92.3	0.78	3.00	16.80
16			125	11.89	94.9	1.19	1.80	18.80
16			160	6.55	97.0	1.79	0.00	21.10
16			200	3.01	98.4	2.57	0.00	22.80
17	2,681	2,690						
17			20	28.16	59.3	0.00	5.60	7.60
17			25	27.31	65.2	0.05	5.40	8.30
17			32	26.28	70.6	0.08	5.20	9.20
17			40	25.52	76.0	0.13	5.00	10.30
17			50	24.47	80.9	0.19	4.70	11.50
17			63	22.86	85.3	0.30	4.30	13.00
17			80	20.43	89.1	0.43	3.70	14.80
17			100	17.28	92.3	0.67	3.00	16.80
17			125	13.38	94.9	1.02	1.80	18.80
17			160	8.12	97.0	1.53	0.00	21.10
17			200	4.70	98.4	2.21	0.00	22.80
18	3,818	3,825						
18			20	25.10	59.3	0.00	5.60	7.60
18			25	24.23	65.2	0.08	5.40	8.30
18			32	23.19	70.6	0.11	5.20	9.20
18			40	22.41	76.0	0.19	5.00	10.30
18			50	21.33	80.9	0.27	4.70	11.50
18			63	19.68	85.3	0.42	4.30	13.00
18			80	17.19	89.1	0.61	3.70	14.80
18			100	13.94	92.3	0.96	3.00	16.80
18			125	9.89	94.9	1.45	1.80	18.80
18			160	4.42	97.0	2.18	0.00	21.10
18			200	0.71	98.4	3.14	0.00	22.80
19	3,784	3,793						
19			20	25.17	59.3	0.00	5.60	7.60
19			25	24.30	65.2	0.08	5.40	8.30
19			32	23.26	70.6	0.11	5.20	9.20
19			40	22.48	76.0	0.19	5.00	10.30
19			50	21.41	80.9	0.27	4.70	11.50
19			63	19.75	85.3	0.42	4.30	13.00
19			80	17.26	89.1	0.61	3.70	14.80
19			100	14.02	92.3	0.95	3.00	16.80
19			125	9.98	94.9	1.44	1.80	18.80
19			160	4.51	97.0	2.16	0.00	21.10
19			200	0.81	98.4	3.11	0.00	22.80
2	2,171	2,181						
2			20	29.98	59.3	0.00	5.60	7.60
2			25	29.14	65.2	0.04	5.40	8.30
2			32	28.11	70.6	0.07	5.20	9.20
2			40	27.37	76.0	0.11	5.00	10.30
2			50	26.32	80.9	0.15	4.70	11.50
2			63	24.74	85.3	0.24	4.30	13.00
2			80	22.33	89.1	0.35	3.70	14.80
2			100	19.23	92.3	0.55	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			125	15.40	94.9	0.83	1.80	18.80
2			160	10.23	97.0	1.24	0.00	21.10
2			200	6.94	98.4	1.79	0.00	22.80
20	3,665	3,674						
20			20	25.45	59.3	0.00	5.60	7.60
20			25	24.58	65.2	0.07	5.40	8.30
20			32	23.54	70.6	0.11	5.20	9.20
20			40	22.77	76.0	0.18	5.00	10.30
20			50	21.69	80.9	0.26	4.70	11.50
20			63	20.05	85.3	0.40	4.30	13.00
20			80	17.56	89.1	0.59	3.70	14.80
20			100	14.33	92.3	0.92	3.00	16.80
20			125	10.30	94.9	1.40	1.80	18.80
20			160	4.86	97.0	2.09	0.00	21.10
20			200	1.19	98.4	3.01	0.00	22.80
21	3,380	3,388						
21			20	26.16	59.3	0.00	5.60	7.60
21			25	25.29	65.2	0.07	5.40	8.30
21			32	24.26	70.6	0.10	5.20	9.20
21			40	23.49	76.0	0.17	5.00	10.30
21			50	22.42	80.9	0.24	4.70	11.50
21			63	20.78	85.3	0.37	4.30	13.00
21			80	18.31	89.1	0.54	3.70	14.80
21			100	15.11	92.3	0.85	3.00	16.80
21			125	11.12	94.9	1.29	1.80	18.80
21			160	5.72	97.0	1.93	0.00	21.10
21			200	2.12	98.4	2.78	0.00	22.80
22	3,189	3,198						
22			20	26.66	59.3	0.00	5.60	7.60
22			25	25.79	65.2	0.06	5.40	8.30
22			32	24.76	70.6	0.10	5.20	9.20
22			40	24.00	76.0	0.16	5.00	10.30
22			50	22.93	80.9	0.22	4.70	11.50
22			63	21.30	85.3	0.35	4.30	13.00
22			80	18.84	89.1	0.51	3.70	14.80
22			100	15.65	92.3	0.80	3.00	16.80
22			125	11.69	94.9	1.22	1.80	18.80
22			160	6.33	97.0	1.82	0.00	21.10
22			200	2.78	98.4	2.62	0.00	22.80
23	2,646	2,655						
23			20	28.27	59.3	0.00	5.60	7.60
23			25	27.42	65.2	0.05	5.40	8.30
23			32	26.39	70.6	0.08	5.20	9.20
23			40	25.64	76.0	0.13	5.00	10.30
23			50	24.58	80.9	0.19	4.70	11.50
23			63	22.98	85.3	0.29	4.30	13.00
23			80	20.54	89.1	0.42	3.70	14.80
23			100	17.41	92.3	0.66	3.00	16.80
23			125	13.51	94.9	1.01	1.80	18.80
23			160	8.26	97.0	1.51	0.00	21.10
23			200	4.84	98.4	2.18	0.00	22.80
24	3,304	3,311						
24			20	26.36	59.3	0.00	5.60	7.60
24			25	25.49	65.2	0.07	5.40	8.30
24			32	24.46	70.6	0.10	5.20	9.20
24			40	23.69	76.0	0.17	5.00	10.30
24			50	22.62	80.9	0.23	4.70	11.50
24			63	20.99	85.3	0.36	4.30	13.00
24			80	18.52	89.1	0.53	3.70	14.80
24			100	15.33	92.3	0.83	3.00	16.80
24			125	11.34	94.9	1.26	1.80	18.80
24			160	5.97	97.0	1.89	0.00	21.10
24			200	2.39	98.4	2.71	0.00	22.80
3	1,627	1,643						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			20	32.44	59.3	0.00	5.60	7.60
3			25	31.61	65.2	0.03	5.40	8.30
3			32	30.59	70.6	0.05	5.20	9.20
3			40	29.86	76.0	0.08	5.00	10.30
3			50	28.83	80.9	0.11	4.70	11.50
3			63	27.26	85.3	0.18	4.30	13.00
3			80	24.88	89.1	0.26	3.70	14.80
3			100	21.83	92.3	0.41	3.00	16.80
3			125	18.07	94.9	0.62	1.80	18.80
3			160	13.00	97.0	0.94	0.00	21.10
3			200	9.84	98.4	1.35	0.00	22.80
4	1,684	1,699						
4			20	32.15	59.3	0.00	5.60	7.60
4			25	31.32	65.2	0.03	5.40	8.30
4			32	30.30	70.6	0.05	5.20	9.20
4			40	29.57	76.0	0.08	5.00	10.30
4			50	28.53	80.9	0.12	4.70	11.50
4			63	26.96	85.3	0.19	4.30	13.00
4			80	24.58	89.1	0.27	3.70	14.80
4			100	21.52	92.3	0.42	3.00	16.80
4			125	17.75	94.9	0.65	1.80	18.80
4			160	12.68	97.0	0.97	0.00	21.10
4			200	9.50	98.4	1.39	0.00	22.80
5	1,506	1,522						
5			20	33.11	59.3	0.00	5.60	7.60
5			25	32.28	65.2	0.03	5.40	8.30
5			32	31.26	70.6	0.05	5.20	9.20
5			40	30.53	76.0	0.08	5.00	10.30
5			50	29.50	80.9	0.11	4.70	11.50
5			63	27.94	85.3	0.17	4.30	13.00
5			80	25.56	89.1	0.24	3.70	14.80
5			100	22.52	92.3	0.38	3.00	16.80
5			125	18.77	94.9	0.58	1.80	18.80
5			160	13.74	97.0	0.87	0.00	21.10
5			200	10.61	98.4	1.25	0.00	22.80
6	3,107	3,115						
6			20	26.88	59.3	0.00	5.60	7.60
6			25	26.02	65.2	0.06	5.40	8.30
6			32	24.99	70.6	0.09	5.20	9.20
6			40	24.23	76.0	0.16	5.00	10.30
6			50	23.16	80.9	0.22	4.70	11.50
6			63	21.54	85.3	0.34	4.30	13.00
6			80	19.08	89.1	0.50	3.70	14.80
6			100	15.90	92.3	0.78	3.00	16.80
6			125	11.95	94.9	1.18	1.80	18.80
6			160	6.61	97.0	1.78	0.00	21.10
6			200	3.08	98.4	2.55	0.00	22.80
7	2,622	2,631						
7			20	28.35	59.3	0.00	5.60	7.60
7			25	27.50	65.2	0.05	5.40	8.30
7			32	26.47	70.6	0.08	5.20	9.20
7			40	25.72	76.0	0.13	5.00	10.30
7			50	24.67	80.9	0.18	4.70	11.50
7			63	23.06	85.3	0.29	4.30	13.00
7			80	20.63	89.1	0.42	3.70	14.80
7			100	17.49	92.3	0.66	3.00	16.80
7			125	13.60	94.9	1.00	1.80	18.80
7			160	8.35	97.0	1.50	0.00	21.10
7			200	4.94	98.4	2.16	0.00	22.80
8	2,069	2,081						
8			20	30.39	59.3	0.00	5.60	7.60
8			25	29.55	65.2	0.04	5.40	8.30
8			32	28.53	70.6	0.06	5.20	9.20
8			40	27.79	76.0	0.10	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	26.74	80.9	0.15	4.70	11.50
8			63	25.16	85.3	0.23	4.30	13.00
8			80	22.75	89.1	0.33	3.70	14.80
8			100	19.67	92.3	0.52	3.00	16.80
8			125	15.85	94.9	0.79	1.80	18.80
8			160	10.70	97.0	1.19	0.00	21.10
8			200	7.43	98.4	1.71	0.00	22.80
9	3,754	3,760						
9			20	25.25	59.3	0.00	5.60	7.60
9			25	24.37	65.2	0.08	5.40	8.30
9			32	23.34	70.6	0.11	5.20	9.20
9			40	22.56	76.0	0.19	5.00	10.30
9			50	21.48	80.9	0.26	4.70	11.50
9			63	19.83	85.3	0.41	4.30	13.00
9			80	17.35	89.1	0.60	3.70	14.80
9			100	14.11	92.3	0.94	3.00	16.80
9			125	10.07	94.9	1.43	1.80	18.80
9			160	4.60	97.0	2.14	0.00	21.10
9			200	0.91	98.4	3.08	0.00	22.80
Sum								
Sum			20	42.37				
Sum			25	41.52				
Sum			32	40.50				
Sum			40	39.75				
Sum			50	38.70				
Sum			63	37.10				
Sum			80	34.68				
Sum			100	31.56				
Sum			125	27.70				
Sum			160	22.50				
Sum			200	19.16				

Noise sensitive area: RH Rinne 2 Noise sensitive point: Finnish normal frequency - User defined (313)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,807	1,820						
1			20	31.55	59.3	0.00	5.60	7.60
1			25	30.72	65.2	0.04	5.40	8.30
1			32	29.70	70.6	0.05	5.20	9.20
1			40	28.96	76.0	0.09	5.00	10.30
1			50	27.92	80.9	0.13	4.70	11.50
1			63	26.35	85.3	0.20	4.30	13.00
1			80	23.96	89.1	0.29	3.70	14.80
1			100	20.90	92.3	0.45	3.00	16.80
1			125	17.11	94.9	0.69	1.80	18.80
1			160	12.01	97.0	1.04	0.00	21.10
1			200	8.81	98.4	1.49	0.00	22.80
10	3,387	3,394						
10			20	26.14	59.3	0.00	5.60	7.60
10			25	25.27	65.2	0.07	5.40	8.30
10			32	24.24	70.6	0.10	5.20	9.20
10			40	23.47	76.0	0.17	5.00	10.30
10			50	22.40	80.9	0.24	4.70	11.50
10			63	20.76	85.3	0.37	4.30	13.00
10			80	18.29	89.1	0.54	3.70	14.80
10			100	15.09	92.3	0.85	3.00	16.80
10			125	11.10	94.9	1.29	1.80	18.80
10			160	5.70	97.0	1.93	0.00	21.10
10			200	2.10	98.4	2.78	0.00	22.80
11	3,904	3,911						
11			20	24.91	59.3	0.00	5.60	7.60
11			25	24.03	65.2	0.08	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			32	22.99	70.6	0.12	5.20	9.20
11			40	22.21	76.0	0.20	5.00	10.30
11			50	21.13	80.9	0.27	4.70	11.50
11			63	19.48	85.3	0.43	4.30	13.00
11			80	16.98	89.1	0.63	3.70	14.80
11			100	13.73	92.3	0.98	3.00	16.80
11			125	9.67	94.9	1.49	1.80	18.80
11			160	4.18	97.0	2.23	0.00	21.10
11			200	0.45	98.4	3.21	0.00	22.80
12	3,943	3,949						
12			20	24.82	59.3	0.00	5.60	7.60
12			25	23.95	65.2	0.08	5.40	8.30
12			32	22.91	70.6	0.12	5.20	9.20
12			40	22.13	76.0	0.20	5.00	10.30
12			50	21.04	80.9	0.28	4.70	11.50
12			63	19.39	85.3	0.43	4.30	13.00
12			80	16.89	89.1	0.63	3.70	14.80
12			100	13.63	92.3	0.99	3.00	16.80
12			125	9.57	94.9	1.50	1.80	18.80
12			160	4.07	97.0	2.25	0.00	21.10
12			200	0.33	98.4	3.24	0.00	22.80
13	3,479	3,487						
13			20	25.91	59.3	0.00	5.60	7.60
13			25	25.04	65.2	0.07	5.40	8.30
13			32	24.00	70.6	0.10	5.20	9.20
13			40	23.23	76.0	0.17	5.00	10.30
13			50	22.16	80.9	0.24	4.70	11.50
13			63	20.52	85.3	0.38	4.30	13.00
13			80	18.04	89.1	0.56	3.70	14.80
13			100	14.83	92.3	0.87	3.00	16.80
13			125	10.83	94.9	1.33	1.80	18.80
13			160	5.41	97.0	1.99	0.00	21.10
13			200	1.79	98.4	2.86	0.00	22.80
14	2,980	2,990						
14			20	27.24	59.3	0.00	5.60	7.60
14			25	26.38	65.2	0.06	5.40	8.30
14			32	25.35	70.6	0.09	5.20	9.20
14			40	24.59	76.0	0.15	5.00	10.30
14			50	23.53	80.9	0.21	4.70	11.50
14			63	21.91	85.3	0.33	4.30	13.00
14			80	19.46	89.1	0.48	3.70	14.80
14			100	16.29	92.3	0.75	3.00	16.80
14			125	12.35	94.9	1.14	1.80	18.80
14			160	7.03	97.0	1.70	0.00	21.10
14			200	3.53	98.4	2.45	0.00	22.80
15	3,346	3,357						
15			20	26.24	59.3	0.00	5.60	7.60
15			25	25.37	65.2	0.07	5.40	8.30
15			32	24.34	70.6	0.10	5.20	9.20
15			40	23.57	76.0	0.17	5.00	10.30
15			50	22.50	80.9	0.23	4.70	11.50
15			63	20.86	85.3	0.37	4.30	13.00
15			80	18.40	89.1	0.54	3.70	14.80
15			100	15.19	92.3	0.84	3.00	16.80
15			125	11.21	94.9	1.28	1.80	18.80
15			160	5.82	97.0	1.91	0.00	21.10
15			200	2.23	98.4	2.75	0.00	22.80
16	3,271	3,279						
16			20	26.44	59.3	0.00	5.60	7.60
16			25	25.57	65.2	0.07	5.40	8.30
16			32	24.54	70.6	0.10	5.20	9.20
16			40	23.78	76.0	0.16	5.00	10.30
16			50	22.71	80.9	0.23	4.70	11.50
16			63	21.08	85.3	0.36	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
16			80	18.61	89.1	0.52	3.70	14.80
16			100	15.42	92.3	0.82	3.00	16.80
16			125	11.44	94.9	1.25	1.80	18.80
16			160	6.07	97.0	1.87	0.00	21.10
16			200	2.50	98.4	2.69	0.00	22.80
17	2,816	2,825						
17			20	27.73	59.3	0.00	5.60	7.60
17			25	26.88	65.2	0.06	5.40	8.30
17			32	25.85	70.6	0.08	5.20	9.20
17			40	25.09	76.0	0.14	5.00	10.30
17			50	24.03	80.9	0.20	4.70	11.50
17			63	22.42	85.3	0.31	4.30	13.00
17			80	19.98	89.1	0.45	3.70	14.80
17			100	16.83	92.3	0.71	3.00	16.80
17			125	12.91	94.9	1.07	1.80	18.80
17			160	7.62	97.0	1.61	0.00	21.10
17			200	4.16	98.4	2.32	0.00	22.80
18	3,976	3,983						
18			20	24.75	59.3	0.00	5.60	7.60
18			25	23.87	65.2	0.08	5.40	8.30
18			32	22.83	70.6	0.12	5.20	9.20
18			40	22.05	76.0	0.20	5.00	10.30
18			50	20.97	80.9	0.28	4.70	11.50
18			63	19.31	85.3	0.44	4.30	13.00
18			80	16.81	89.1	0.64	3.70	14.80
18			100	13.55	92.3	1.00	3.00	16.80
18			125	9.48	94.9	1.51	1.80	18.80
18			160	3.98	97.0	2.27	0.00	21.10
18			200	0.23	98.4	3.27	0.00	22.80
19	3,938	3,946						
19			20	24.83	59.3	0.00	5.60	7.60
19			25	23.95	65.2	0.08	5.40	8.30
19			32	22.91	70.6	0.12	5.20	9.20
19			40	22.13	76.0	0.20	5.00	10.30
19			50	21.05	80.9	0.28	4.70	11.50
19			63	19.39	85.3	0.43	4.30	13.00
19			80	16.90	89.1	0.63	3.70	14.80
19			100	13.64	92.3	0.99	3.00	16.80
19			125	9.58	94.9	1.50	1.80	18.80
19			160	4.08	97.0	2.25	0.00	21.10
19			200	0.34	98.4	3.24	0.00	22.80
2	2,286	2,296						
2			20	29.53	59.3	0.00	5.60	7.60
2			25	28.69	65.2	0.05	5.40	8.30
2			32	27.67	70.6	0.07	5.20	9.20
2			40	26.92	76.0	0.11	5.00	10.30
2			50	25.87	80.9	0.16	4.70	11.50
2			63	24.28	85.3	0.25	4.30	13.00
2			80	21.86	89.1	0.37	3.70	14.80
2			100	18.76	92.3	0.57	3.00	16.80
2			125	14.91	94.9	0.87	1.80	18.80
2			160	9.72	97.0	1.31	0.00	21.10
2			200	6.40	98.4	1.88	0.00	22.80
20	3,812	3,820						
20			20	25.11	59.3	0.00	5.60	7.60
20			25	24.24	65.2	0.08	5.40	8.30
20			32	23.20	70.6	0.11	5.20	9.20
20			40	22.42	76.0	0.19	5.00	10.30
20			50	21.34	80.9	0.27	4.70	11.50
20			63	19.69	85.3	0.42	4.30	13.00
20			80	17.20	89.1	0.61	3.70	14.80
20			100	13.96	92.3	0.96	3.00	16.80
20			125	9.91	94.9	1.45	1.80	18.80
20			160	4.43	97.0	2.18	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			200	0.73	98.4	3.13	0.00	22.80
21	3,515	3,522						
21			20	25.82	59.3	0.00	5.60	7.60
21			25	24.95	65.2	0.07	5.40	8.30
21			32	23.91	70.6	0.11	5.20	9.20
21			40	23.14	76.0	0.18	5.00	10.30
21			50	22.07	80.9	0.25	4.70	11.50
21			63	20.43	85.3	0.39	4.30	13.00
21			80	17.95	89.1	0.56	3.70	14.80
21			100	14.73	92.3	0.88	3.00	16.80
21			125	10.73	94.9	1.34	1.80	18.80
21			160	5.31	97.0	2.01	0.00	21.10
21			200	1.68	98.4	2.89	0.00	22.80
22	3,306	3,315						
22			20	26.35	59.3	0.00	5.60	7.60
22			25	25.48	65.2	0.07	5.40	8.30
22			32	24.45	70.6	0.10	5.20	9.20
22			40	23.68	76.0	0.17	5.00	10.30
22			50	22.61	80.9	0.23	4.70	11.50
22			63	20.98	85.3	0.36	4.30	13.00
22			80	18.51	89.1	0.53	3.70	14.80
22			100	15.31	92.3	0.83	3.00	16.80
22			125	11.33	94.9	1.26	1.80	18.80
22			160	5.95	97.0	1.89	0.00	21.10
22			200	2.37	98.4	2.72	0.00	22.80
23	2,749	2,757						
23			20	27.95	59.3	0.00	5.60	7.60
23			25	27.09	65.2	0.06	5.40	8.30
23			32	26.06	70.6	0.08	5.20	9.20
23			40	25.31	76.0	0.14	5.00	10.30
23			50	24.25	80.9	0.19	4.70	11.50
23			63	22.64	85.3	0.30	4.30	13.00
23			80	20.20	89.1	0.44	3.70	14.80
23			100	17.05	92.3	0.69	3.00	16.80
23			125	13.14	94.9	1.05	1.80	18.80
23			160	7.87	97.0	1.57	0.00	21.10
23			200	4.43	98.4	2.26	0.00	22.80
24	3,402	3,409						
24			20	26.10	59.3	0.00	5.60	7.60
24			25	25.23	65.2	0.07	5.40	8.30
24			32	24.20	70.6	0.10	5.20	9.20
24			40	23.43	76.0	0.17	5.00	10.30
24			50	22.36	80.9	0.24	4.70	11.50
24			63	20.73	85.3	0.37	4.30	13.00
24			80	18.25	89.1	0.55	3.70	14.80
24			100	15.05	92.3	0.85	3.00	16.80
24			125	11.05	94.9	1.30	1.80	18.80
24			160	5.66	97.0	1.94	0.00	21.10
24			200	2.05	98.4	2.80	0.00	22.80
3	1,724	1,738						
3			20	31.95	59.3	0.00	5.60	7.60
3			25	31.12	65.2	0.03	5.40	8.30
3			32	30.10	70.6	0.05	5.20	9.20
3			40	29.36	76.0	0.09	5.00	10.30
3			50	28.33	80.9	0.12	4.70	11.50
3			63	26.76	85.3	0.19	4.30	13.00
3			80	24.37	89.1	0.28	3.70	14.80
3			100	21.31	92.3	0.43	3.00	16.80
3			125	17.54	94.9	0.66	1.80	18.80
3			160	12.46	97.0	0.99	0.00	21.10
3			200	9.27	98.4	1.43	0.00	22.80
4	1,817	1,830						
4			20	31.50	59.3	0.00	5.60	7.60
4			25	30.67	65.2	0.04	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			32	29.65	70.6	0.05	5.20	9.20
4			40	28.91	76.0	0.09	5.00	10.30
4			50	27.87	80.9	0.13	4.70	11.50
4			63	26.30	85.3	0.20	4.30	13.00
4			80	23.91	89.1	0.29	3.70	14.80
4			100	20.84	92.3	0.46	3.00	16.80
4			125	17.05	94.9	0.70	1.80	18.80
4			160	11.96	97.0	1.04	0.00	21.10
4			200	8.75	98.4	1.50	0.00	22.80
5	1,660	1,674						
5			20	32.28	59.3	0.00	5.60	7.60
5			25	31.45	65.2	0.03	5.40	8.30
5			32	30.43	70.6	0.05	5.20	9.20
5			40	29.70	76.0	0.08	5.00	10.30
5			50	28.66	80.9	0.12	4.70	11.50
5			63	27.09	85.3	0.18	4.30	13.00
5			80	24.71	89.1	0.27	3.70	14.80
5			100	21.66	92.3	0.42	3.00	16.80
5			125	17.89	94.9	0.64	1.80	18.80
5			160	12.82	97.0	0.95	0.00	21.10
5			200	9.65	98.4	1.37	0.00	22.80
6	3,246	3,254						
6			20	26.51	59.3	0.00	5.60	7.60
6			25	25.64	65.2	0.07	5.40	8.30
6			32	24.61	70.6	0.10	5.20	9.20
6			40	23.84	76.0	0.16	5.00	10.30
6			50	22.78	80.9	0.23	4.70	11.50
6			63	21.15	85.3	0.36	4.30	13.00
6			80	18.68	89.1	0.52	3.70	14.80
6			100	15.49	92.3	0.81	3.00	16.80
6			125	11.52	94.9	1.24	1.80	18.80
6			160	6.15	97.0	1.85	0.00	21.10
6			200	2.58	98.4	2.67	0.00	22.80
7	2,771	2,779						
7			20	27.88	59.3	0.00	5.60	7.60
7			25	27.02	65.2	0.06	5.40	8.30
7			32	25.99	70.6	0.08	5.20	9.20
7			40	25.24	76.0	0.14	5.00	10.30
7			50	24.18	80.9	0.19	4.70	11.50
7			63	22.57	85.3	0.31	4.30	13.00
7			80	20.13	89.1	0.44	3.70	14.80
7			100	16.98	92.3	0.69	3.00	16.80
7			125	13.06	94.9	1.06	1.80	18.80
7			160	7.79	97.0	1.58	0.00	21.10
7			200	4.34	98.4	2.28	0.00	22.80
8	2,221	2,232						
8			20	29.78	59.3	0.00	5.60	7.60
8			25	28.94	65.2	0.04	5.40	8.30
8			32	27.92	70.6	0.07	5.20	9.20
8			40	27.17	76.0	0.11	5.00	10.30
8			50	26.12	80.9	0.16	4.70	11.50
8			63	24.53	85.3	0.25	4.30	13.00
8			80	22.12	89.1	0.36	3.70	14.80
8			100	19.02	92.3	0.56	3.00	16.80
8			125	15.18	94.9	0.85	1.80	18.80
8			160	10.01	97.0	1.27	0.00	21.10
8			200	6.70	98.4	1.83	0.00	22.80
9	3,900	3,906						
9			20	24.92	59.3	0.00	5.60	7.60
9			25	24.04	65.2	0.08	5.40	8.30
9			32	23.00	70.6	0.12	5.20	9.20
9			40	22.22	76.0	0.20	5.00	10.30
9			50	21.14	80.9	0.27	4.70	11.50
9			63	19.49	85.3	0.43	4.30	13.00

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
9			80	16.99	89.1	0.63	3.70	14.80
9			100	13.74	92.3	0.98	3.00	16.80
9			125	9.68	94.9	1.48	1.80	18.80
9			160	4.19	97.0	2.23	0.00	21.10
9			200	0.46	98.4	3.20	0.00	22.80
Sum								
Sum			20	41.90				
Sum			25	41.05				
Sum			32	40.02				
Sum			40	39.27				
Sum			50	38.22				
Sum			63	36.61				
Sum			80	34.19				
Sum			100	31.06				
Sum			125	27.17				
Sum			160	21.95				
Sum			200	18.57				

Noise sensitive area: RH Riuttalantie 2 Noise sensitive point: Finnish normal frequency - User defined (323)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	7,125	7,127						
1			20	19.70	59.3	0.00	5.60	7.60
1			25	18.75	65.2	0.14	5.40	8.30
1			32	17.68	70.6	0.21	5.20	9.20
1			40	16.84	76.0	0.36	5.00	10.30
1			50	15.69	80.9	0.50	4.70	11.50
1			63	13.91	85.3	0.78	4.30	13.00
1			80	11.25	89.1	1.14	3.70	14.80
1			100	7.71	92.3	1.78	3.00	16.80
1			125	3.23	94.9	2.71	1.80	18.80
1			160	-2.87	97.0	4.06	0.00	21.10
1			200	-7.40	98.4	5.84	0.00	22.80
10	4,462	4,466						
10			20	23.76	59.3	0.00	5.60	7.60
10			25	22.87	65.2	0.09	5.40	8.30
10			32	21.82	70.6	0.13	5.20	9.20
10			40	21.03	76.0	0.22	5.00	10.30
10			50	19.94	80.9	0.31	4.70	11.50
10			63	18.26	85.3	0.49	4.30	13.00
10			80	15.74	89.1	0.71	3.70	14.80
10			100	12.44	92.3	1.12	3.00	16.80
10			125	8.30	94.9	1.70	1.80	18.80
10			160	2.71	97.0	2.55	0.00	21.10
10			200	-1.16	98.4	3.66	0.00	22.80
11	3,860	3,865						
11			20	25.01	59.3	0.00	5.60	7.60
11			25	24.13	65.2	0.08	5.40	8.30
11			32	23.09	70.6	0.12	5.20	9.20
11			40	22.32	76.0	0.19	5.00	10.30
11			50	21.24	80.9	0.27	4.70	11.50
11			63	19.58	85.3	0.43	4.30	13.00
11			80	17.09	89.1	0.62	3.70	14.80
11			100	13.84	92.3	0.97	3.00	16.80
11			125	9.79	94.9	1.47	1.80	18.80
11			160	4.30	97.0	2.20	0.00	21.10
11			200	0.59	98.4	3.17	0.00	22.80
12	3,655	3,660						
12			20	25.49	59.3	0.00	5.60	7.60
12			25	24.61	65.2	0.07	5.40	8.30
12			32	23.58	70.6	0.11	5.20	9.20
12			40	22.80	76.0	0.18	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			50	21.73	80.9	0.26	4.70	11.50
12			63	20.08	85.3	0.40	4.30	13.00
12			80	17.60	89.1	0.59	3.70	14.80
12			100	14.37	92.3	0.91	3.00	16.80
12			125	10.34	94.9	1.39	1.80	18.80
12			160	4.90	97.0	2.09	0.00	21.10
12			200	1.23	98.4	3.00	0.00	22.80
13	4,101	4,107						
13			20	24.48	59.3	0.00	5.60	7.60
13			25	23.60	65.2	0.08	5.40	8.30
13			32	22.56	70.6	0.12	5.20	9.20
13			40	21.78	76.0	0.21	5.00	10.30
13			50	20.69	80.9	0.29	4.70	11.50
13			63	19.03	85.3	0.45	4.30	13.00
13			80	16.52	89.1	0.66	3.70	14.80
13			100	13.25	92.3	1.03	3.00	16.80
13			125	9.17	94.9	1.56	1.80	18.80
13			160	3.64	97.0	2.34	0.00	21.10
13			200	-0.14	98.4	3.37	0.00	22.80
14	4,592	4,597						
14			20	23.50	59.3	0.00	5.60	7.60
14			25	22.61	65.2	0.09	5.40	8.30
14			32	21.57	70.6	0.14	5.20	9.20
14			40	20.77	76.0	0.23	5.00	10.30
14			50	19.68	80.9	0.32	4.70	11.50
14			63	18.00	85.3	0.51	4.30	13.00
14			80	15.47	89.1	0.74	3.70	14.80
14			100	12.15	92.3	1.15	3.00	16.80
14			125	8.00	94.9	1.75	1.80	18.80
14			160	2.38	97.0	2.62	0.00	21.10
14			200	-1.52	98.4	3.77	0.00	22.80
15	4,378	4,384						
15			20	23.92	59.3	0.00	5.60	7.60
15			25	23.03	65.2	0.09	5.40	8.30
15			32	21.99	70.6	0.13	5.20	9.20
15			40	21.20	76.0	0.22	5.00	10.30
15			50	20.11	80.9	0.31	4.70	11.50
15			63	18.43	85.3	0.48	4.30	13.00
15			80	15.91	89.1	0.70	3.70	14.80
15			100	12.62	92.3	1.10	3.00	16.80
15			125	8.50	94.9	1.67	1.80	18.80
15			160	2.91	97.0	2.50	0.00	21.10
15			200	-0.93	98.4	3.60	0.00	22.80
16	4,739	4,743						
16			20	23.23	59.3	0.00	5.60	7.60
16			25	22.34	65.2	0.09	5.40	8.30
16			32	21.29	70.6	0.14	5.20	9.20
16			40	20.50	76.0	0.24	5.00	10.30
16			50	19.40	80.9	0.33	4.70	11.50
16			63	17.71	85.3	0.52	4.30	13.00
16			80	15.17	89.1	0.76	3.70	14.80
16			100	11.84	92.3	1.19	3.00	16.80
16			125	7.68	94.9	1.80	1.80	18.80
16			160	2.03	97.0	2.70	0.00	21.10
16			200	-1.91	98.4	3.89	0.00	22.80
17	5,379	5,383						
17			20	22.13	59.3	0.00	5.60	7.60
17			25	21.23	65.2	0.11	5.40	8.30
17			32	20.17	70.6	0.16	5.20	9.20
17			40	19.37	76.0	0.27	5.00	10.30
17			50	18.25	80.9	0.38	4.70	11.50
17			63	16.54	85.3	0.59	4.30	13.00
17			80	13.97	89.1	0.86	3.70	14.80
17			100	10.59	92.3	1.35	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			125	6.33	94.9	2.05	1.80	18.80
17			160	0.56	97.0	3.07	0.00	21.10
17			200	-3.53	98.4	4.41	0.00	22.80
18	3,676	3,682						
18			20	25.43	59.3	0.00	5.60	7.60
18			25	24.56	65.2	0.07	5.40	8.30
18			32	23.52	70.6	0.11	5.20	9.20
18			40	22.75	76.0	0.18	5.00	10.30
18			50	21.67	80.9	0.26	4.70	11.50
18			63	20.02	85.3	0.41	4.30	13.00
18			80	17.54	89.1	0.59	3.70	14.80
18			100	14.31	92.3	0.92	3.00	16.80
18			125	10.28	94.9	1.40	1.80	18.80
18			160	4.83	97.0	2.10	0.00	21.10
18			200	1.16	98.4	3.02	0.00	22.80
19	3,937	3,944						
19			20	24.84	59.3	0.00	5.60	7.60
19			25	23.96	65.2	0.08	5.40	8.30
19			32	22.92	70.6	0.12	5.20	9.20
19			40	22.14	76.0	0.20	5.00	10.30
19			50	21.06	80.9	0.28	4.70	11.50
19			63	19.40	85.3	0.43	4.30	13.00
19			80	16.90	89.1	0.63	3.70	14.80
19			100	13.65	92.3	0.99	3.00	16.80
19			125	9.58	94.9	1.50	1.80	18.80
19			160	4.08	97.0	2.25	0.00	21.10
19			200	0.35	98.4	3.23	0.00	22.80
2	6,073	6,076						
2			20	21.08	59.3	0.00	5.60	7.60
2			25	20.16	65.2	0.12	5.40	8.30
2			32	19.10	70.6	0.18	5.20	9.20
2			40	18.28	76.0	0.30	5.00	10.30
2			50	17.15	80.9	0.43	4.70	11.50
2			63	15.41	85.3	0.67	4.30	13.00
2			80	12.81	89.1	0.97	3.70	14.80
2			100	9.36	92.3	1.52	3.00	16.80
2			125	5.02	94.9	2.31	1.80	18.80
2			160	-0.88	97.0	3.46	0.00	21.10
2			200	-5.15	98.4	4.98	0.00	22.80
20	4,333	4,338						
20			20	24.01	59.3	0.00	5.60	7.60
20			25	23.12	65.2	0.09	5.40	8.30
20			32	22.08	70.6	0.13	5.20	9.20
20			40	21.29	76.0	0.22	5.00	10.30
20			50	20.20	80.9	0.30	4.70	11.50
20			63	18.53	85.3	0.48	4.30	13.00
20			80	16.01	89.1	0.69	3.70	14.80
20			100	12.72	92.3	1.08	3.00	16.80
20			125	8.60	94.9	1.65	1.80	18.80
20			160	3.03	97.0	2.47	0.00	21.10
20			200	-0.80	98.4	3.56	0.00	22.80
21	4,951	4,956						
21			20	22.85	59.3	0.00	5.60	7.60
21			25	21.95	65.2	0.10	5.40	8.30
21			32	20.90	70.6	0.15	5.20	9.20
21			40	20.10	76.0	0.25	5.00	10.30
21			50	19.00	80.9	0.35	4.70	11.50
21			63	17.30	85.3	0.55	4.30	13.00
21			80	14.76	89.1	0.79	3.70	14.80
21			100	11.41	92.3	1.24	3.00	16.80
21			125	7.21	94.9	1.88	1.80	18.80
21			160	1.52	97.0	2.82	0.00	21.10
21			200	-2.47	98.4	4.06	0.00	22.80
22	5,598	5,602						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			20	21.79	59.3	0.00	5.60	7.60
22			25	20.88	65.2	0.11	5.40	8.30
22			32	19.82	70.6	0.17	5.20	9.20
22			40	19.01	76.0	0.28	5.00	10.30
22			50	17.89	80.9	0.39	4.70	11.50
22			63	16.17	85.3	0.62	4.30	13.00
22			80	13.59	89.1	0.90	3.70	14.80
22			100	10.18	92.3	1.40	3.00	16.80
22			125	5.90	94.9	2.13	1.80	18.80
22			160	0.09	97.0	3.19	0.00	21.10
22			200	-4.06	98.4	4.59	0.00	22.80
23	6,137	6,140						
23			20	20.99	59.3	0.00	5.60	7.60
23			25	20.07	65.2	0.12	5.40	8.30
23			32	19.01	70.6	0.18	5.20	9.20
23			40	18.18	76.0	0.31	5.00	10.30
23			50	17.06	80.9	0.43	4.70	11.50
23			63	15.31	85.3	0.68	4.30	13.00
23			80	12.71	89.1	0.98	3.70	14.80
23			100	9.25	92.3	1.53	3.00	16.80
23			125	4.90	94.9	2.33	1.80	18.80
23			160	-1.01	97.0	3.50	0.00	21.10
23			200	-5.30	98.4	5.03	0.00	22.80
24	6,058	6,061						
24			20	21.10	59.3	0.00	5.60	7.60
24			25	20.18	65.2	0.12	5.40	8.30
24			32	19.12	70.6	0.18	5.20	9.20
24			40	18.30	76.0	0.30	5.00	10.30
24			50	17.18	80.9	0.42	4.70	11.50
24			63	15.43	85.3	0.67	4.30	13.00
24			80	12.83	89.1	0.97	3.70	14.80
24			100	9.39	92.3	1.52	3.00	16.80
24			125	5.05	94.9	2.30	1.80	18.80
24			160	-0.85	97.0	3.45	0.00	21.10
24			200	-5.12	98.4	4.97	0.00	22.80
3	6,607	6,610						
3			20	20.35	59.3	0.00	5.60	7.60
3			25	19.42	65.2	0.13	5.40	8.30
3			32	18.35	70.6	0.20	5.20	9.20
3			40	17.52	76.0	0.33	5.00	10.30
3			50	16.39	80.9	0.46	4.70	11.50
3			63	14.62	85.3	0.73	4.30	13.00
3			80	11.99	89.1	1.06	3.70	14.80
3			100	8.50	92.3	1.65	3.00	16.80
3			125	4.08	94.9	2.51	1.80	18.80
3			160	-1.92	97.0	3.77	0.00	21.10
3			200	-6.32	98.4	5.42	0.00	22.80
4	6,115	6,119						
4			20	21.02	59.3	0.00	5.60	7.60
4			25	20.10	65.2	0.12	5.40	8.30
4			32	19.04	70.6	0.18	5.20	9.20
4			40	18.22	76.0	0.31	5.00	10.30
4			50	17.09	80.9	0.43	4.70	11.50
4			63	15.35	85.3	0.67	4.30	13.00
4			80	12.74	89.1	0.98	3.70	14.80
4			100	9.29	92.3	1.53	3.00	16.80
4			125	4.94	94.9	2.33	1.80	18.80
4			160	-0.97	97.0	3.49	0.00	21.10
4			200	-5.25	98.4	5.02	0.00	22.80
5	5,981	5,984						
5			20	21.21	59.3	0.00	5.60	7.60
5			25	20.30	65.2	0.12	5.40	8.30
5			32	19.24	70.6	0.18	5.20	9.20
5			40	18.42	76.0	0.30	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			50	17.29	80.9	0.42	4.70	11.50
5			63	15.55	85.3	0.66	4.30	13.00
5			80	12.95	89.1	0.96	3.70	14.80
5			100	9.52	92.3	1.50	3.00	16.80
5			125	5.19	94.9	2.27	1.80	18.80
5			160	-0.70	97.0	3.41	0.00	21.10
5			200	-4.95	98.4	4.91	0.00	22.80
6	4,973	4,977						
6			20	22.81	59.3	0.00	5.60	7.60
6			25	21.91	65.2	0.10	5.40	8.30
6			32	20.87	70.6	0.15	5.20	9.20
6			40	20.07	76.0	0.25	5.00	10.30
6			50	18.96	80.9	0.35	4.70	11.50
6			63	17.26	85.3	0.55	4.30	13.00
6			80	14.72	89.1	0.80	3.70	14.80
6			100	11.37	92.3	1.24	3.00	16.80
6			125	7.17	94.9	1.89	1.80	18.80
6			160	1.47	97.0	2.84	0.00	21.10
6			200	-2.52	98.4	4.08	0.00	22.80
7	5,059	5,062						
7			20	22.67	59.3	0.00	5.60	7.60
7			25	21.77	65.2	0.10	5.40	8.30
7			32	20.72	70.6	0.15	5.20	9.20
7			40	19.91	76.0	0.25	5.00	10.30
7			50	18.81	80.9	0.35	4.70	11.50
7			63	17.11	85.3	0.56	4.30	13.00
7			80	14.55	89.1	0.81	3.70	14.80
7			100	11.20	92.3	1.27	3.00	16.80
7			125	6.99	94.9	1.92	1.80	18.80
7			160	1.28	97.0	2.89	0.00	21.10
7			200	-2.74	98.4	4.15	0.00	22.80
8	5,492	5,495						
8			20	21.95	59.3	0.00	5.60	7.60
8			25	21.04	65.2	0.11	5.40	8.30
8			32	19.99	70.6	0.16	5.20	9.20
8			40	19.18	76.0	0.27	5.00	10.30
8			50	18.07	80.9	0.38	4.70	11.50
8			63	16.35	85.3	0.60	4.30	13.00
8			80	13.77	89.1	0.88	3.70	14.80
8			100	10.38	92.3	1.37	3.00	16.80
8			125	6.11	94.9	2.09	1.80	18.80
8			160	0.32	97.0	3.13	0.00	21.10
8			200	-3.81	98.4	4.51	0.00	22.80
9	4,264	4,269						
9			20	24.15	59.3	0.00	5.60	7.60
9			25	23.26	65.2	0.09	5.40	8.30
9			32	22.22	70.6	0.13	5.20	9.20
9			40	21.43	76.0	0.21	5.00	10.30
9			50	20.35	80.9	0.30	4.70	11.50
9			63	18.68	85.3	0.47	4.30	13.00
9			80	16.16	89.1	0.68	3.70	14.80
9			100	12.88	92.3	1.07	3.00	16.80
9			125	8.77	94.9	1.62	1.80	18.80
9			160	3.21	97.0	2.43	0.00	21.10
9			200	-0.61	98.4	3.50	0.00	22.80
Sum								
Sum			20	36.92				
Sum			25	36.02				
Sum			32	34.98				
Sum			40	34.18				
Sum			50	33.09				
Sum			63	31.40				
Sum			80	28.86				
Sum			100	25.54				

To be continued on next page...

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wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			125	21.38				
Sum			160	15.75				
Sum			200	11.85				

Noise sensitive area: RH Riuttasjärvi Noise sensitive point: Finnish normal frequency - User defined (308)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	6,239	6,242						
1			20	20.85	59.3	0.00	5.60	7.60
1			25	19.92	65.2	0.12	5.40	8.30
1			32	18.86	70.6	0.19	5.20	9.20
1			40	18.04	76.0	0.31	5.00	10.30
1			50	16.91	80.9	0.44	4.70	11.50
1			63	15.16	85.3	0.69	4.30	13.00
1			80	12.55	89.1	1.00	3.70	14.80
1			100	9.09	92.3	1.56	3.00	16.80
1			125	4.72	94.9	2.37	1.80	18.80
1			160	-1.21	97.0	3.56	0.00	21.10
1			200	-5.52	98.4	5.12	0.00	22.80
10	3,578	3,583						
10			20	25.67	59.3	0.00	5.60	7.60
10			25	24.80	65.2	0.07	5.40	8.30
10			32	23.76	70.6	0.11	5.20	9.20
10			40	22.99	76.0	0.18	5.00	10.30
10			50	21.92	80.9	0.25	4.70	11.50
10			63	20.27	85.3	0.39	4.30	13.00
10			80	17.79	89.1	0.57	3.70	14.80
10			100	14.57	92.3	0.90	3.00	16.80
10			125	10.55	94.9	1.36	1.80	18.80
10			160	5.12	97.0	2.04	0.00	21.10
10			200	1.48	98.4	2.94	0.00	22.80
11	2,976	2,982						
11			20	27.26	59.3	0.00	5.60	7.60
11			25	26.40	65.2	0.06	5.40	8.30
11			32	25.37	70.6	0.09	5.20	9.20
11			40	24.61	76.0	0.15	5.00	10.30
11			50	23.55	80.9	0.21	4.70	11.50
11			63	21.93	85.3	0.33	4.30	13.00
11			80	19.48	89.1	0.48	3.70	14.80
11			100	16.32	92.3	0.75	3.00	16.80
11			125	12.38	94.9	1.13	1.80	18.80
11			160	7.06	97.0	1.70	0.00	21.10
11			200	3.56	98.4	2.45	0.00	22.80
12	2,737	2,743						
12			20	27.99	59.3	0.00	5.60	7.60
12			25	27.13	65.2	0.05	5.40	8.30
12			32	26.11	70.6	0.08	5.20	9.20
12			40	25.35	76.0	0.14	5.00	10.30
12			50	24.29	80.9	0.19	4.70	11.50
12			63	22.68	85.3	0.30	4.30	13.00
12			80	20.25	89.1	0.44	3.70	14.80
12			100	17.10	92.3	0.69	3.00	16.80
12			125	13.19	94.9	1.04	1.80	18.80
12			160	7.92	97.0	1.56	0.00	21.10
12			200	4.49	98.4	2.25	0.00	22.80
13	3,172	3,179						
13			20	26.71	59.3	0.00	5.60	7.60
13			25	25.85	65.2	0.06	5.40	8.30
13			32	24.81	70.6	0.10	5.20	9.20
13			40	24.05	76.0	0.16	5.00	10.30
13			50	22.98	80.9	0.22	4.70	11.50
13			63	21.36	85.3	0.35	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
13			80	18.90	89.1	0.51	3.70	14.80
13			100	15.71	92.3	0.79	3.00	16.80
13			125	11.75	94.9	1.21	1.80	18.80
13			160	6.39	97.0	1.81	0.00	21.10
13			200	2.85	98.4	2.61	0.00	22.80
14	3,663	3,670						
14			20	25.46	59.3	0.00	5.60	7.60
14			25	24.59	65.2	0.07	5.40	8.30
14			32	23.55	70.6	0.11	5.20	9.20
14			40	22.78	76.0	0.18	5.00	10.30
14			50	21.70	80.9	0.26	4.70	11.50
14			63	20.06	85.3	0.40	4.30	13.00
14			80	17.57	89.1	0.59	3.70	14.80
14			100	14.34	92.3	0.92	3.00	16.80
14			125	10.31	94.9	1.39	1.80	18.80
14			160	4.87	97.0	2.09	0.00	21.10
14			200	1.20	98.4	3.01	0.00	22.80
15	3,457	3,465						
15			20	25.96	59.3	0.00	5.60	7.60
15			25	25.09	65.2	0.07	5.40	8.30
15			32	24.06	70.6	0.10	5.20	9.20
15			40	23.29	76.0	0.17	5.00	10.30
15			50	22.21	80.9	0.24	4.70	11.50
15			63	20.58	85.3	0.38	4.30	13.00
15			80	18.10	89.1	0.55	3.70	14.80
15			100	14.89	92.3	0.87	3.00	16.80
15			125	10.89	94.9	1.32	1.80	18.80
15			160	5.48	97.0	1.98	0.00	21.10
15			200	1.86	98.4	2.84	0.00	22.80
16	3,838	3,843						
16			20	25.06	59.3	0.00	5.60	7.60
16			25	24.18	65.2	0.08	5.40	8.30
16			32	23.15	70.6	0.12	5.20	9.20
16			40	22.37	76.0	0.19	5.00	10.30
16			50	21.29	80.9	0.27	4.70	11.50
16			63	19.63	85.3	0.42	4.30	13.00
16			80	17.14	89.1	0.61	3.70	14.80
16			100	13.90	92.3	0.96	3.00	16.80
16			125	9.85	94.9	1.46	1.80	18.80
16			160	4.37	97.0	2.19	0.00	21.10
16			200	0.65	98.4	3.15	0.00	22.80
17	4,479	4,483						
17			20	23.72	59.3	0.00	5.60	7.60
17			25	22.83	65.2	0.09	5.40	8.30
17			32	21.79	70.6	0.13	5.20	9.20
17			40	21.00	76.0	0.22	5.00	10.30
17			50	19.91	80.9	0.31	4.70	11.50
17			63	18.23	85.3	0.49	4.30	13.00
17			80	15.70	89.1	0.72	3.70	14.80
17			100	12.40	92.3	1.12	3.00	16.80
17			125	8.27	94.9	1.70	1.80	18.80
17			160	2.67	97.0	2.56	0.00	21.10
17			200	-1.21	98.4	3.68	0.00	22.80
18	2,753	2,761						
18			20	27.93	59.3	0.00	5.60	7.60
18			25	27.08	65.2	0.06	5.40	8.30
18			32	26.05	70.6	0.08	5.20	9.20
18			40	25.30	76.0	0.14	5.00	10.30
18			50	24.24	80.9	0.19	4.70	11.50
18			63	22.63	85.3	0.30	4.30	13.00
18			80	20.19	89.1	0.44	3.70	14.80
18			100	17.04	92.3	0.69	3.00	16.80
18			125	13.13	94.9	1.05	1.80	18.80
18			160	7.86	97.0	1.57	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			200	4.42	98.4	2.26	0.00	22.80
19	3,039	3,048						
19			20	27.07	59.3	0.00	5.60	7.60
19			25	26.21	65.2	0.06	5.40	8.30
19			32	25.18	70.6	0.09	5.20	9.20
19			40	24.42	76.0	0.15	5.00	10.30
19			50	23.36	80.9	0.21	4.70	11.50
19			63	21.74	85.3	0.34	4.30	13.00
19			80	19.28	89.1	0.49	3.70	14.80
19			100	16.11	92.3	0.76	3.00	16.80
19			125	12.16	94.9	1.16	1.80	18.80
19			160	6.83	97.0	1.74	0.00	21.10
19			200	3.32	98.4	2.50	0.00	22.80
2	5,193	5,197						
2			20	22.44	59.3	0.00	5.60	7.60
2			25	21.54	65.2	0.10	5.40	8.30
2			32	20.48	70.6	0.16	5.20	9.20
2			40	19.68	76.0	0.26	5.00	10.30
2			50	18.57	80.9	0.36	4.70	11.50
2			63	16.87	85.3	0.57	4.30	13.00
2			80	14.31	89.1	0.83	3.70	14.80
2			100	10.94	92.3	1.30	3.00	16.80
2			125	6.71	94.9	1.97	1.80	18.80
2			160	0.97	97.0	2.96	0.00	21.10
2			200	-3.08	98.4	4.26	0.00	22.80
20	3,457	3,464						
20			20	25.96	59.3	0.00	5.60	7.60
20			25	25.10	65.2	0.07	5.40	8.30
20			32	24.06	70.6	0.10	5.20	9.20
20			40	23.29	76.0	0.17	5.00	10.30
20			50	22.22	80.9	0.24	4.70	11.50
20			63	20.58	85.3	0.38	4.30	13.00
20			80	18.11	89.1	0.55	3.70	14.80
20			100	14.90	92.3	0.87	3.00	16.80
20			125	10.89	94.9	1.32	1.80	18.80
20			160	5.49	97.0	1.97	0.00	21.10
20			200	1.87	98.4	2.84	0.00	22.80
21	4,085	4,090						
21			20	24.52	59.3	0.00	5.60	7.60
21			25	23.64	65.2	0.08	5.40	8.30
21			32	22.60	70.6	0.12	5.20	9.20
21			40	21.82	76.0	0.20	5.00	10.30
21			50	20.73	80.9	0.29	4.70	11.50
21			63	19.07	85.3	0.45	4.30	13.00
21			80	16.56	89.1	0.65	3.70	14.80
21			100	13.29	92.3	1.02	3.00	16.80
21			125	9.21	94.9	1.55	1.80	18.80
21			160	3.69	97.0	2.33	0.00	21.10
21			200	-0.09	98.4	3.35	0.00	22.80
22	4,740	4,744						
22			20	23.23	59.3	0.00	5.60	7.60
22			25	22.34	65.2	0.09	5.40	8.30
22			32	21.29	70.6	0.14	5.20	9.20
22			40	20.49	76.0	0.24	5.00	10.30
22			50	19.40	80.9	0.33	4.70	11.50
22			63	17.71	85.3	0.52	4.30	13.00
22			80	15.17	89.1	0.76	3.70	14.80
22			100	11.84	92.3	1.19	3.00	16.80
22			125	7.67	94.9	1.80	1.80	18.80
22			160	2.02	97.0	2.70	0.00	21.10
22			200	-1.91	98.4	3.89	0.00	22.80
23	5,255	5,258						
23			20	22.34	59.3	0.00	5.60	7.60
23			25	21.43	65.2	0.11	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			32	20.38	70.6	0.16	5.20	9.20
23			40	19.58	76.0	0.26	5.00	10.30
23			50	18.47	80.9	0.37	4.70	11.50
23			63	16.76	85.3	0.58	4.30	13.00
23			80	14.19	89.1	0.84	3.70	14.80
23			100	10.82	92.3	1.31	3.00	16.80
23			125	6.59	94.9	2.00	1.80	18.80
23			160	0.84	97.0	3.00	0.00	21.10
23			200	-3.23	98.4	4.31	0.00	22.80
24	5,216	5,219						
24			20	22.40	59.3	0.00	5.60	7.60
24			25	21.50	65.2	0.10	5.40	8.30
24			32	20.45	70.6	0.16	5.20	9.20
24			40	19.64	76.0	0.26	5.00	10.30
24			50	18.53	80.9	0.37	4.70	11.50
24			63	16.83	85.3	0.57	4.30	13.00
24			80	14.26	89.1	0.84	3.70	14.80
24			100	10.89	92.3	1.30	3.00	16.80
24			125	6.66	94.9	1.98	1.80	18.80
24			160	0.92	97.0	2.98	0.00	21.10
24			200	-3.13	98.4	4.28	0.00	22.80
3	5,711	5,714						
3			20	21.62	59.3	0.00	5.60	7.60
3			25	20.70	65.2	0.11	5.40	8.30
3			32	19.64	70.6	0.17	5.20	9.20
3			40	18.83	76.0	0.29	5.00	10.30
3			50	17.71	80.9	0.40	4.70	11.50
3			63	15.98	85.3	0.63	4.30	13.00
3			80	13.40	89.1	0.91	3.70	14.80
3			100	9.98	92.3	1.43	3.00	16.80
3			125	5.69	94.9	2.17	1.80	18.80
3			160	-0.15	97.0	3.26	0.00	21.10
3			200	-4.33	98.4	4.69	0.00	22.80
4	5,210	5,213						
4			20	22.41	59.3	0.00	5.60	7.60
4			25	21.51	65.2	0.10	5.40	8.30
4			32	20.46	70.6	0.16	5.20	9.20
4			40	19.65	76.0	0.26	5.00	10.30
4			50	18.54	80.9	0.36	4.70	11.50
4			63	16.84	85.3	0.57	4.30	13.00
4			80	14.28	89.1	0.83	3.70	14.80
4			100	10.91	92.3	1.30	3.00	16.80
4			125	6.68	94.9	1.98	1.80	18.80
4			160	0.94	97.0	2.97	0.00	21.10
4			200	-3.12	98.4	4.27	0.00	22.80
5	5,059	5,063						
5			20	22.67	59.3	0.00	5.60	7.60
5			25	21.77	65.2	0.10	5.40	8.30
5			32	20.72	70.6	0.15	5.20	9.20
5			40	19.91	76.0	0.25	5.00	10.30
5			50	18.81	80.9	0.35	4.70	11.50
5			63	17.11	85.3	0.56	4.30	13.00
5			80	14.55	89.1	0.81	3.70	14.80
5			100	11.20	92.3	1.27	3.00	16.80
5			125	6.99	94.9	1.92	1.80	18.80
5			160	1.28	97.0	2.89	0.00	21.10
5			200	-2.74	98.4	4.15	0.00	22.80
6	4,120	4,124						
6			20	24.45	59.3	0.00	5.60	7.60
6			25	23.57	65.2	0.08	5.40	8.30
6			32	22.52	70.6	0.12	5.20	9.20
6			40	21.74	76.0	0.21	5.00	10.30
6			50	20.66	80.9	0.29	4.70	11.50
6			63	18.99	85.3	0.45	4.30	13.00

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
6			80	16.48	89.1	0.66	3.70	14.80
6			100	13.21	92.3	1.03	3.00	16.80
6			125	9.13	94.9	1.57	1.80	18.80
6			160	3.59	97.0	2.35	0.00	21.10
6			200	-0.19	98.4	3.38	0.00	22.80
7	4,161	4,165						
7			20	24.36	59.3	0.00	5.60	7.60
7			25	23.48	65.2	0.08	5.40	8.30
7			32	22.44	70.6	0.12	5.20	9.20
7			40	21.65	76.0	0.21	5.00	10.30
7			50	20.57	80.9	0.29	4.70	11.50
7			63	18.90	85.3	0.46	4.30	13.00
7			80	16.39	89.1	0.67	3.70	14.80
7			100	13.12	92.3	1.04	3.00	16.80
7			125	9.02	94.9	1.58	1.80	18.80
7			160	3.48	97.0	2.37	0.00	21.10
7			200	-0.31	98.4	3.42	0.00	22.80
8	4,578	4,582						
8			20	23.53	59.3	0.00	5.60	7.60
8			25	22.64	65.2	0.09	5.40	8.30
8			32	21.60	70.6	0.14	5.20	9.20
8			40	20.80	76.0	0.23	5.00	10.30
8			50	19.71	80.9	0.32	4.70	11.50
8			63	18.03	85.3	0.50	4.30	13.00
8			80	15.50	89.1	0.73	3.70	14.80
8			100	12.18	92.3	1.15	3.00	16.80
8			125	8.04	94.9	1.74	1.80	18.80
8			160	2.42	97.0	2.61	0.00	21.10
8			200	-1.48	98.4	3.76	0.00	22.80
9	3,435	3,440						
9			20	26.02	59.3	0.00	5.60	7.60
9			25	25.16	65.2	0.07	5.40	8.30
9			32	24.12	70.6	0.10	5.20	9.20
9			40	23.35	76.0	0.17	5.00	10.30
9			50	22.28	80.9	0.24	4.70	11.50
9			63	20.64	85.3	0.38	4.30	13.00
9			80	18.17	89.1	0.55	3.70	14.80
9			100	14.96	92.3	0.86	3.00	16.80
9			125	10.96	94.9	1.31	1.80	18.80
9			160	5.56	97.0	1.96	0.00	21.10
9			200	1.95	98.4	2.82	0.00	22.80
Sum								
Sum			20	38.83				
Sum			25	37.96				
Sum			32	36.92				
Sum			40	36.15				
Sum			50	35.07				
Sum			63	33.42				
Sum			80	30.93				
Sum			100	27.70				
Sum			125	23.66				
Sum			160	18.22				
Sum			200	14.56				

Noise sensitive area: RH Ruunaharju Noise sensitive point: Finnish normal frequency - User defined (321)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,329	5,334						
1			20	22.21	59.3	0.00	5.60	7.60
1			25	21.31	65.2	0.11	5.40	8.30
1			32	20.25	70.6	0.16	5.20	9.20
1			40	19.45	76.0	0.27	5.00	10.30

To be continued on next page...

Project:
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Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1			50	18.34	80.9	0.37	4.70	11.50
1			63	16.62	85.3	0.59	4.30	13.00
1			80	14.06	89.1	0.85	3.70	14.80
1			100	10.68	92.3	1.33	3.00	16.80
1			125	6.43	94.9	2.03	1.80	18.80
1			160	0.67	97.0	3.04	0.00	21.10
1			200	-3.41	98.4	4.37	0.00	22.80
10	5,850	5,854						
10			20	21.41	59.3	0.00	5.60	7.60
10			25	20.49	65.2	0.12	5.40	8.30
10			32	19.43	70.6	0.18	5.20	9.20
10			40	18.61	76.0	0.29	5.00	10.30
10			50	17.49	80.9	0.41	4.70	11.50
10			63	15.76	85.3	0.64	4.30	13.00
10			80	13.17	89.1	0.94	3.70	14.80
10			100	9.74	92.3	1.46	3.00	16.80
10			125	5.43	94.9	2.22	1.80	18.80
10			160	-0.43	97.0	3.34	0.00	21.10
10			200	-4.65	98.4	4.80	0.00	22.80
11	6,112	6,117						
11			20	21.02	59.3	0.00	5.60	7.60
11			25	20.10	65.2	0.12	5.40	8.30
11			32	19.04	70.6	0.18	5.20	9.20
11			40	18.22	76.0	0.31	5.00	10.30
11			50	17.09	80.9	0.43	4.70	11.50
11			63	15.35	85.3	0.67	4.30	13.00
11			80	12.74	89.1	0.98	3.70	14.80
11			100	9.29	92.3	1.53	3.00	16.80
11			125	4.95	94.9	2.32	1.80	18.80
11			160	-0.97	97.0	3.49	0.00	21.10
11			200	-5.25	98.4	5.02	0.00	22.80
12	5,827	5,831						
12			20	21.44	59.3	0.00	5.60	7.60
12			25	20.52	65.2	0.12	5.40	8.30
12			32	19.47	70.6	0.17	5.20	9.20
12			40	18.65	76.0	0.29	5.00	10.30
12			50	17.53	80.9	0.41	4.70	11.50
12			63	15.80	85.3	0.64	4.30	13.00
12			80	13.20	89.1	0.93	3.70	14.80
12			100	9.78	92.3	1.46	3.00	16.80
12			125	5.47	94.9	2.22	1.80	18.80
12			160	-0.39	97.0	3.32	0.00	21.10
12			200	-4.60	98.4	4.78	0.00	22.80
13	5,156	5,162						
13			20	22.50	59.3	0.00	5.60	7.60
13			25	21.59	65.2	0.10	5.40	8.30
13			32	20.54	70.6	0.15	5.20	9.20
13			40	19.74	76.0	0.26	5.00	10.30
13			50	18.63	80.9	0.36	4.70	11.50
13			63	16.93	85.3	0.57	4.30	13.00
13			80	14.37	89.1	0.83	3.70	14.80
13			100	11.00	92.3	1.29	3.00	16.80
13			125	6.78	94.9	1.96	1.80	18.80
13			160	1.05	97.0	2.94	0.00	21.10
13			200	-2.99	98.4	4.23	0.00	22.80
14	4,875	4,881						
14			20	22.98	59.3	0.00	5.60	7.60
14			25	22.09	65.2	0.10	5.40	8.30
14			32	21.04	70.6	0.15	5.20	9.20
14			40	20.24	76.0	0.24	5.00	10.30
14			50	19.14	80.9	0.34	4.70	11.50
14			63	17.44	85.3	0.54	4.30	13.00
14			80	14.90	89.1	0.78	3.70	14.80
14			100	11.56	92.3	1.22	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			125	7.37	94.9	1.85	1.80	18.80
14			160	1.70	97.0	2.78	0.00	21.10
14			200	-2.27	98.4	4.00	0.00	22.80
15	4,627	4,635						
15			20	23.43	59.3	0.00	5.60	7.60
15			25	22.54	65.2	0.09	5.40	8.30
15			32	21.49	70.6	0.14	5.20	9.20
15			40	20.70	76.0	0.23	5.00	10.30
15			50	19.61	80.9	0.32	4.70	11.50
15			63	17.92	85.3	0.51	4.30	13.00
15			80	15.39	89.1	0.74	3.70	14.80
15			100	12.07	92.3	1.16	3.00	16.80
15			125	7.92	94.9	1.76	1.80	18.80
15			160	2.29	97.0	2.64	0.00	21.10
15			200	-1.62	98.4	3.80	0.00	22.80
16	4,121	4,128						
16			20	24.44	59.3	0.00	5.60	7.60
16			25	23.56	65.2	0.08	5.40	8.30
16			32	22.52	70.6	0.12	5.20	9.20
16			40	21.73	76.0	0.21	5.00	10.30
16			50	20.65	80.9	0.29	4.70	11.50
16			63	18.98	85.3	0.45	4.30	13.00
16			80	16.48	89.1	0.66	3.70	14.80
16			100	13.20	92.3	1.03	3.00	16.80
16			125	9.12	94.9	1.57	1.80	18.80
16			160	3.58	97.0	2.35	0.00	21.10
16			200	-0.20	98.4	3.38	0.00	22.80
17	3,507	3,514						
17			20	25.84	59.3	0.00	5.60	7.60
17			25	24.97	65.2	0.07	5.40	8.30
17			32	23.93	70.6	0.11	5.20	9.20
17			40	23.16	76.0	0.18	5.00	10.30
17			50	22.09	80.9	0.25	4.70	11.50
17			63	20.45	85.3	0.39	4.30	13.00
17			80	17.97	89.1	0.56	3.70	14.80
17			100	14.76	92.3	0.88	3.00	16.80
17			125	10.75	94.9	1.34	1.80	18.80
17			160	5.33	97.0	2.00	0.00	21.10
17			200	1.70	98.4	2.88	0.00	22.80
18	5,295	5,301						
18			20	22.27	59.3	0.00	5.60	7.60
18			25	21.36	65.2	0.11	5.40	8.30
18			32	20.31	70.6	0.16	5.20	9.20
18			40	19.50	76.0	0.27	5.00	10.30
18			50	18.39	80.9	0.37	4.70	11.50
18			63	16.68	85.3	0.58	4.30	13.00
18			80	14.12	89.1	0.85	3.70	14.80
18			100	10.74	92.3	1.33	3.00	16.80
18			125	6.50	94.9	2.01	1.80	18.80
18			160	0.74	97.0	3.02	0.00	21.10
18			200	-3.33	98.4	4.35	0.00	22.80
19	4,887	4,894						
19			20	22.96	59.3	0.00	5.60	7.60
19			25	22.06	65.2	0.10	5.40	8.30
19			32	21.01	70.6	0.15	5.20	9.20
19			40	20.22	76.0	0.24	5.00	10.30
19			50	19.12	80.9	0.34	4.70	11.50
19			63	17.42	85.3	0.54	4.30	13.00
19			80	14.88	89.1	0.78	3.70	14.80
19			100	11.54	92.3	1.22	3.00	16.80
19			125	7.35	94.9	1.86	1.80	18.80
19			160	1.67	97.0	2.79	0.00	21.10
19			200	-2.31	98.4	4.01	0.00	22.80
2	5,496	5,501						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			20	21.95	59.3	0.00	5.60	7.60
2			25	21.04	65.2	0.11	5.40	8.30
2			32	19.98	70.6	0.17	5.20	9.20
2			40	19.17	76.0	0.28	5.00	10.30
2			50	18.06	80.9	0.39	4.70	11.50
2			63	16.34	85.3	0.61	4.30	13.00
2			80	13.76	89.1	0.88	3.70	14.80
2			100	10.37	92.3	1.38	3.00	16.80
2			125	6.10	94.9	2.09	1.80	18.80
2			160	0.31	97.0	3.14	0.00	21.10
2			200	-3.82	98.4	4.51	0.00	22.80
20	4,442	4,449						
20			20	23.79	59.3	0.00	5.60	7.60
20			25	22.90	65.2	0.09	5.40	8.30
20			32	21.86	70.6	0.13	5.20	9.20
20			40	21.07	76.0	0.22	5.00	10.30
20			50	19.97	80.9	0.31	4.70	11.50
20			63	18.30	85.3	0.49	4.30	13.00
20			80	15.77	89.1	0.71	3.70	14.80
20			100	12.47	92.3	1.11	3.00	16.80
20			125	8.34	94.9	1.69	1.80	18.80
20			160	2.75	97.0	2.54	0.00	21.10
20			200	-1.11	98.4	3.65	0.00	22.80
21	3,812	3,819						
21			20	25.11	59.3	0.00	5.60	7.60
21			25	24.24	65.2	0.08	5.40	8.30
21			32	23.20	70.6	0.11	5.20	9.20
21			40	22.42	76.0	0.19	5.00	10.30
21			50	21.34	80.9	0.27	4.70	11.50
21			63	19.69	85.3	0.42	4.30	13.00
21			80	17.20	89.1	0.61	3.70	14.80
21			100	13.96	92.3	0.95	3.00	16.80
21			125	9.91	94.9	1.45	1.80	18.80
21			160	4.43	97.0	2.18	0.00	21.10
21			200	0.73	98.4	3.13	0.00	22.80
22	3,161	3,170						
22			20	26.73	59.3	0.00	5.60	7.60
22			25	25.87	65.2	0.06	5.40	8.30
22			32	24.84	70.6	0.10	5.20	9.20
22			40	24.07	76.0	0.16	5.00	10.30
22			50	23.01	80.9	0.22	4.70	11.50
22			63	21.38	85.3	0.35	4.30	13.00
22			80	18.92	89.1	0.51	3.70	14.80
22			100	15.74	92.3	0.79	3.00	16.80
22			125	11.77	94.9	1.20	1.80	18.80
22			160	6.42	97.0	1.81	0.00	21.10
22			200	2.88	98.4	2.60	0.00	22.80
23	2,670	2,679						
23			20	28.19	59.3	0.00	5.60	7.60
23			25	27.34	65.2	0.05	5.40	8.30
23			32	26.31	70.6	0.08	5.20	9.20
23			40	25.56	76.0	0.13	5.00	10.30
23			50	24.50	80.9	0.19	4.70	11.50
23			63	22.90	85.3	0.29	4.30	13.00
23			80	20.46	89.1	0.43	3.70	14.80
23			100	17.32	92.3	0.67	3.00	16.80
23			125	13.42	94.9	1.02	1.80	18.80
23			160	8.16	97.0	1.53	0.00	21.10
23			200	4.74	98.4	2.20	0.00	22.80
24	2,716	2,724						
24			20	28.05	59.3	0.00	5.60	7.60
24			25	27.20	65.2	0.05	5.40	8.30
24			32	26.17	70.6	0.08	5.20	9.20
24			40	25.41	76.0	0.14	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
24			50	24.36	80.9	0.19	4.70	11.50
24			63	22.75	85.3	0.30	4.30	13.00
24			80	20.31	89.1	0.44	3.70	14.80
24			100	17.17	92.3	0.68	3.00	16.80
24			125	13.26	94.9	1.04	1.80	18.80
24			160	7.99	97.0	1.55	0.00	21.10
24			200	4.56	98.4	2.23	0.00	22.80
3	5,097	5,102						
3			20	22.60	59.3	0.00	5.60	7.60
3			25	21.70	65.2	0.10	5.40	8.30
3			32	20.65	70.6	0.15	5.20	9.20
3			40	19.84	76.0	0.26	5.00	10.30
3			50	18.74	80.9	0.36	4.70	11.50
3			63	17.04	85.3	0.56	4.30	13.00
3			80	14.48	89.1	0.82	3.70	14.80
3			100	11.12	92.3	1.28	3.00	16.80
3			125	6.91	94.9	1.94	1.80	18.80
3			160	1.19	97.0	2.91	0.00	21.10
3			200	-2.84	98.4	4.18	0.00	22.80
4	4,918	4,924						
4			20	22.91	59.3	0.00	5.60	7.60
4			25	22.01	65.2	0.10	5.40	8.30
4			32	20.96	70.6	0.15	5.20	9.20
4			40	20.16	76.0	0.25	5.00	10.30
4			50	19.06	80.9	0.34	4.70	11.50
4			63	17.36	85.3	0.54	4.30	13.00
4			80	14.82	89.1	0.79	3.70	14.80
4			100	11.47	92.3	1.23	3.00	16.80
4			125	7.28	94.9	1.87	1.80	18.80
4			160	1.60	97.0	2.81	0.00	21.10
4			200	-2.38	98.4	4.04	0.00	22.80
5	4,450	4,456						
5			20	23.78	59.3	0.00	5.60	7.60
5			25	22.89	65.2	0.09	5.40	8.30
5			32	21.84	70.6	0.13	5.20	9.20
5			40	21.05	76.0	0.22	5.00	10.30
5			50	19.96	80.9	0.31	4.70	11.50
5			63	18.28	85.3	0.49	4.30	13.00
5			80	15.76	89.1	0.71	3.70	14.80
5			100	12.46	92.3	1.11	3.00	16.80
5			125	8.33	94.9	1.69	1.80	18.80
5			160	2.73	97.0	2.54	0.00	21.10
5			200	-1.13	98.4	3.65	0.00	22.80
6	6,060	6,064						
6			20	21.10	59.3	0.00	5.60	7.60
6			25	20.18	65.2	0.12	5.40	8.30
6			32	19.12	70.6	0.18	5.20	9.20
6			40	18.30	76.0	0.30	5.00	10.30
6			50	17.17	80.9	0.42	4.70	11.50
6			63	15.43	85.3	0.67	4.30	13.00
6			80	12.83	89.1	0.97	3.70	14.80
6			100	9.38	92.3	1.52	3.00	16.80
6			125	5.04	94.9	2.30	1.80	18.80
6			160	-0.86	97.0	3.46	0.00	21.10
6			200	-5.13	98.4	4.97	0.00	22.80
7	5,418	5,423						
7			20	22.07	59.3	0.00	5.60	7.60
7			25	21.16	65.2	0.11	5.40	8.30
7			32	20.11	70.6	0.16	5.20	9.20
7			40	19.30	76.0	0.27	5.00	10.30
7			50	18.19	80.9	0.38	4.70	11.50
7			63	16.47	85.3	0.60	4.30	13.00
7			80	13.90	89.1	0.87	3.70	14.80
7			100	10.51	92.3	1.36	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			125	6.26	94.9	2.06	1.80	18.80
7			160	0.48	97.0	3.09	0.00	21.10
7			200	-3.63	98.4	4.45	0.00	22.80
8	4,914	4,919						
8			20	22.92	59.3	0.00	5.60	7.60
8			25	22.02	65.2	0.10	5.40	8.30
8			32	20.97	70.6	0.15	5.20	9.20
8			40	20.17	76.0	0.25	5.00	10.30
8			50	19.07	80.9	0.34	4.70	11.50
8			63	17.37	85.3	0.54	4.30	13.00
8			80	14.83	89.1	0.79	3.70	14.80
8			100	11.48	92.3	1.23	3.00	16.80
8			125	7.29	94.9	1.87	1.80	18.80
8			160	1.61	97.0	2.80	0.00	21.10
8			200	-2.37	98.4	4.03	0.00	22.80
9	6,468	6,472						
9			20	20.53	59.3	0.00	5.60	7.60
9			25	19.61	65.2	0.13	5.40	8.30
9			32	18.54	70.6	0.19	5.20	9.20
9			40	17.71	76.0	0.32	5.00	10.30
9			50	16.58	80.9	0.45	4.70	11.50
9			63	14.82	85.3	0.71	4.30	13.00
9			80	12.20	89.1	1.04	3.70	14.80
9			100	8.71	92.3	1.62	3.00	16.80
9			125	4.32	94.9	2.46	1.80	18.80
9			160	-1.66	97.0	3.69	0.00	21.10
9			200	-6.03	98.4	5.31	0.00	22.80
Sum								
Sum			20	37.71				
Sum			25	36.82				
Sum			32	35.78				
Sum			40	35.00				
Sum			50	33.91				
Sum			63	32.24				
Sum			80	29.73				
Sum			100	26.45				
Sum			125	22.36				
Sum			160	16.84				
Sum			200	13.08				

Noise sensitive area: RH Suoniemi Noise sensitive point: Finnish normal frequency - User defined (327)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,785	5,790						
1			20	21.50	59.3	0.00	5.60	7.60
1			25	20.59	65.2	0.12	5.40	8.30
1			32	19.53	70.6	0.17	5.20	9.20
1			40	18.71	76.0	0.29	5.00	10.30
1			50	17.59	80.9	0.41	4.70	11.50
1			63	15.86	85.3	0.64	4.30	13.00
1			80	13.27	89.1	0.93	3.70	14.80
1			100	9.85	92.3	1.45	3.00	16.80
1			125	5.55	94.9	2.20	1.80	18.80
1			160	-0.30	97.0	3.30	0.00	21.10
1			200	-4.50	98.4	4.75	0.00	22.80
10	5,636	5,641						
10			20	21.73	59.3	0.00	5.60	7.60
10			25	20.81	65.2	0.11	5.40	8.30
10			32	19.76	70.6	0.17	5.20	9.20
10			40	18.95	76.0	0.28	5.00	10.30
10			50	17.83	80.9	0.39	4.70	11.50
10			63	16.10	85.3	0.62	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			80	13.52	89.1	0.90	3.70	14.80
10			100	10.11	92.3	1.41	3.00	16.80
10			125	5.83	94.9	2.14	1.80	18.80
10			160	0.01	97.0	3.22	0.00	21.10
10			200	-4.15	98.4	4.63	0.00	22.80
11	5,762	5,767						
11			20	21.54	59.3	0.00	5.60	7.60
11			25	20.62	65.2	0.12	5.40	8.30
11			32	19.56	70.6	0.17	5.20	9.20
11			40	18.75	76.0	0.29	5.00	10.30
11			50	17.63	80.9	0.40	4.70	11.50
11			63	15.90	85.3	0.63	4.30	13.00
11			80	13.31	89.1	0.92	3.70	14.80
11			100	9.89	92.3	1.44	3.00	16.80
11			125	5.59	94.9	2.19	1.80	18.80
11			160	-0.25	97.0	3.29	0.00	21.10
11			200	-4.45	98.4	4.73	0.00	22.80
12	5,372	5,377						
12			20	22.14	59.3	0.00	5.60	7.60
12			25	21.24	65.2	0.11	5.40	8.30
12			32	20.18	70.6	0.16	5.20	9.20
12			40	19.38	76.0	0.27	5.00	10.30
12			50	18.26	80.9	0.38	4.70	11.50
12			63	16.55	85.3	0.59	4.30	13.00
12			80	13.98	89.1	0.86	3.70	14.80
12			100	10.60	92.3	1.34	3.00	16.80
12			125	6.35	94.9	2.04	1.80	18.80
12			160	0.58	97.0	3.06	0.00	21.10
12			200	-3.52	98.4	4.41	0.00	22.80
13	4,704	4,712						
13			20	23.29	59.3	0.00	5.60	7.60
13			25	22.40	65.2	0.09	5.40	8.30
13			32	21.35	70.6	0.14	5.20	9.20
13			40	20.56	76.0	0.24	5.00	10.30
13			50	19.46	80.9	0.33	4.70	11.50
13			63	17.77	85.3	0.52	4.30	13.00
13			80	15.23	89.1	0.75	3.70	14.80
13			100	11.91	92.3	1.18	3.00	16.80
13			125	7.75	94.9	1.79	1.80	18.80
13			160	2.10	97.0	2.69	0.00	21.10
13			200	-1.83	98.4	3.86	0.00	22.80
14	4,554	4,562						
14			20	23.57	59.3	0.00	5.60	7.60
14			25	22.68	65.2	0.09	5.40	8.30
14			32	21.64	70.6	0.14	5.20	9.20
14			40	20.84	76.0	0.23	5.00	10.30
14			50	19.75	80.9	0.32	4.70	11.50
14			63	18.07	85.3	0.50	4.30	13.00
14			80	15.54	89.1	0.73	3.70	14.80
14			100	12.23	92.3	1.14	3.00	16.80
14			125	8.08	94.9	1.73	1.80	18.80
14			160	2.47	97.0	2.60	0.00	21.10
14			200	-1.42	98.4	3.74	0.00	22.80
15	4,106	4,116						
15			20	24.47	59.3	0.00	5.60	7.60
15			25	23.58	65.2	0.08	5.40	8.30
15			32	22.54	70.6	0.12	5.20	9.20
15			40	21.76	76.0	0.21	5.00	10.30
15			50	20.67	80.9	0.29	4.70	11.50
15			63	19.01	85.3	0.45	4.30	13.00
15			80	16.50	89.1	0.66	3.70	14.80
15			100	13.23	92.3	1.03	3.00	16.80
15			125	9.15	94.9	1.56	1.80	18.80
15			160	3.62	97.0	2.35	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			200	-0.16	98.4	3.38	0.00	22.80
16	3,535	3,544						
16			20	25.76	59.3	0.00	5.60	7.60
16			25	24.89	65.2	0.07	5.40	8.30
16			32	23.86	70.6	0.11	5.20	9.20
16			40	23.09	76.0	0.18	5.00	10.30
16			50	22.01	80.9	0.25	4.70	11.50
16			63	20.37	85.3	0.39	4.30	13.00
16			80	17.89	89.1	0.57	3.70	14.80
16			100	14.67	92.3	0.89	3.00	16.80
16			125	10.66	94.9	1.35	1.80	18.80
16			160	5.24	97.0	2.02	0.00	21.10
16			200	1.60	98.4	2.91	0.00	22.80
17	3,033	3,042						
17			20	27.09	59.3	0.00	5.60	7.60
17			25	26.23	65.2	0.06	5.40	8.30
17			32	25.20	70.6	0.09	5.20	9.20
17			40	24.44	76.0	0.15	5.00	10.30
17			50	23.37	80.9	0.21	4.70	11.50
17			63	21.75	85.3	0.33	4.30	13.00
17			80	19.30	89.1	0.49	3.70	14.80
17			100	16.13	92.3	0.76	3.00	16.80
17			125	12.18	94.9	1.16	1.80	18.80
17			160	6.85	97.0	1.73	0.00	21.10
17			200	3.34	98.4	2.49	0.00	22.80
18	4,684	4,690						
18			20	23.33	59.3	0.00	5.60	7.60
18			25	22.44	65.2	0.09	5.40	8.30
18			32	21.39	70.6	0.14	5.20	9.20
18			40	20.60	76.0	0.23	5.00	10.30
18			50	19.50	80.9	0.33	4.70	11.50
18			63	17.81	85.3	0.52	4.30	13.00
18			80	15.28	89.1	0.75	3.70	14.80
18			100	11.95	92.3	1.17	3.00	16.80
18			125	7.79	94.9	1.78	1.80	18.80
18			160	2.15	97.0	2.67	0.00	21.10
18			200	-1.77	98.4	3.85	0.00	22.80
19	4,193	4,202						
19			20	24.29	59.3	0.00	5.60	7.60
19			25	23.40	65.2	0.08	5.40	8.30
19			32	22.36	70.6	0.13	5.20	9.20
19			40	21.58	76.0	0.21	5.00	10.30
19			50	20.49	80.9	0.29	4.70	11.50
19			63	18.82	85.3	0.46	4.30	13.00
19			80	16.31	89.1	0.67	3.70	14.80
19			100	13.03	92.3	1.05	3.00	16.80
19			125	8.93	94.9	1.60	1.80	18.80
19			160	3.39	97.0	2.40	0.00	21.10
19			200	-0.41	98.4	3.45	0.00	22.80
2	5,688	5,693						
2			20	21.65	59.3	0.00	5.60	7.60
2			25	20.73	65.2	0.11	5.40	8.30
2			32	19.68	70.6	0.17	5.20	9.20
2			40	18.86	76.0	0.28	5.00	10.30
2			50	17.75	80.9	0.40	4.70	11.50
2			63	16.02	85.3	0.63	4.30	13.00
2			80	13.43	89.1	0.91	3.70	14.80
2			100	10.02	92.3	1.42	3.00	16.80
2			125	5.73	94.9	2.16	1.80	18.80
2			160	-0.10	97.0	3.25	0.00	21.10
2			200	-4.28	98.4	4.67	0.00	22.80
20	3,701	3,711						
20			20	25.37	59.3	0.00	5.60	7.60
20			25	24.49	65.2	0.07	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
20			32	23.45	70.6	0.11	5.20	9.20
20			40	22.68	76.0	0.19	5.00	10.30
20			50	21.60	80.9	0.26	4.70	11.50
20			63	19.95	85.3	0.41	4.30	13.00
20			80	17.47	89.1	0.59	3.70	14.80
20			100	14.23	92.3	0.93	3.00	16.80
20			125	10.20	94.9	1.41	1.80	18.80
20			160	4.75	97.0	2.12	0.00	21.10
20			200	1.07	98.4	3.04	0.00	22.80
21	3,076	3,087						
21			20	26.97	59.3	0.00	5.60	7.60
21			25	26.10	65.2	0.06	5.40	8.30
21			32	25.07	70.6	0.09	5.20	9.20
21			40	24.31	76.0	0.15	5.00	10.30
21			50	23.25	80.9	0.22	4.70	11.50
21			63	21.62	85.3	0.34	4.30	13.00
21			80	19.17	89.1	0.49	3.70	14.80
21			100	15.99	92.3	0.77	3.00	16.80
21			125	12.04	94.9	1.17	1.80	18.80
21			160	6.70	97.0	1.76	0.00	21.10
21			200	3.18	98.4	2.53	0.00	22.80
22	2,435	2,449						
22			20	28.97	59.3	0.00	5.60	7.60
22			25	28.13	65.2	0.05	5.40	8.30
22			32	27.10	70.6	0.07	5.20	9.20
22			40	26.35	76.0	0.12	5.00	10.30
22			50	25.30	80.9	0.17	4.70	11.50
22			63	23.70	85.3	0.27	4.30	13.00
22			80	21.28	89.1	0.39	3.70	14.80
22			100	18.16	92.3	0.61	3.00	16.80
22			125	14.29	94.9	0.93	1.80	18.80
22			160	9.08	97.0	1.40	0.00	21.10
22			200	5.71	98.4	2.01	0.00	22.80
23	2,219	2,232						
23			20	29.78	59.3	0.00	5.60	7.60
23			25	28.94	65.2	0.04	5.40	8.30
23			32	27.92	70.6	0.07	5.20	9.20
23			40	27.17	76.0	0.11	5.00	10.30
23			50	26.12	80.9	0.16	4.70	11.50
23			63	24.53	85.3	0.25	4.30	13.00
23			80	22.12	89.1	0.36	3.70	14.80
23			100	19.02	92.3	0.56	3.00	16.80
23			125	15.18	94.9	0.85	1.80	18.80
23			160	10.01	97.0	1.27	0.00	21.10
23			200	6.70	98.4	1.83	0.00	22.80
24	1,911	1,926						
24			20	31.06	59.3	0.00	5.60	7.60
24			25	30.23	65.2	0.04	5.40	8.30
24			32	29.21	70.6	0.06	5.20	9.20
24			40	28.47	76.0	0.10	5.00	10.30
24			50	27.43	80.9	0.13	4.70	11.50
24			63	25.85	85.3	0.21	4.30	13.00
24			80	23.45	89.1	0.31	3.70	14.80
24			100	20.38	92.3	0.48	3.00	16.80
24			125	16.58	94.9	0.73	1.80	18.80
24			160	11.46	97.0	1.10	0.00	21.10
24			200	8.23	98.4	1.58	0.00	22.80
3	5,428	5,433						
3			20	22.05	59.3	0.00	5.60	7.60
3			25	21.15	65.2	0.11	5.40	8.30
3			32	20.09	70.6	0.16	5.20	9.20
3			40	19.28	76.0	0.27	5.00	10.30
3			50	18.17	80.9	0.38	4.70	11.50
3			63	16.45	85.3	0.60	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			80	13.88	89.1	0.87	3.70	14.80
3			100	10.49	92.3	1.36	3.00	16.80
3			125	6.23	94.9	2.06	1.80	18.80
3			160	0.45	97.0	3.10	0.00	21.10
3			200	-3.66	98.4	4.46	0.00	22.80
4	5,112	5,117						
4			20	22.57	59.3	0.00	5.60	7.60
4			25	21.67	65.2	0.10	5.40	8.30
4			32	20.62	70.6	0.15	5.20	9.20
4			40	19.82	76.0	0.26	5.00	10.30
4			50	18.71	80.9	0.36	4.70	11.50
4			63	17.01	85.3	0.56	4.30	13.00
4			80	14.45	89.1	0.82	3.70	14.80
4			100	11.09	92.3	1.28	3.00	16.80
4			125	6.87	94.9	1.94	1.80	18.80
4			160	1.15	97.0	2.92	0.00	21.10
4			200	-2.88	98.4	4.20	0.00	22.80
5	4,575	4,581						
5			20	23.54	59.3	0.00	5.60	7.60
5			25	22.64	65.2	0.09	5.40	8.30
5			32	21.60	70.6	0.14	5.20	9.20
5			40	20.81	76.0	0.23	5.00	10.30
5			50	19.71	80.9	0.32	4.70	11.50
5			63	18.03	85.3	0.50	4.30	13.00
5			80	15.50	89.1	0.73	3.70	14.80
5			100	12.19	92.3	1.15	3.00	16.80
5			125	8.04	94.9	1.74	1.80	18.80
5			160	2.42	97.0	2.61	0.00	21.10
5			200	-1.48	98.4	3.76	0.00	22.80
6	5,989	5,994						
6			20	21.20	59.3	0.00	5.60	7.60
6			25	20.28	65.2	0.12	5.40	8.30
6			32	19.22	70.6	0.18	5.20	9.20
6			40	18.40	76.0	0.30	5.00	10.30
6			50	17.28	80.9	0.42	4.70	11.50
6			63	15.54	85.3	0.66	4.30	13.00
6			80	12.94	89.1	0.96	3.70	14.80
6			100	9.50	92.3	1.50	3.00	16.80
6			125	5.17	94.9	2.28	1.80	18.80
6			160	-0.72	97.0	3.42	0.00	21.10
6			200	-4.97	98.4	4.91	0.00	22.80
7	5,335	5,340						
7			20	22.20	59.3	0.00	5.60	7.60
7			25	21.30	65.2	0.11	5.40	8.30
7			32	20.24	70.6	0.16	5.20	9.20
7			40	19.44	76.0	0.27	5.00	10.30
7			50	18.33	80.9	0.37	4.70	11.50
7			63	16.61	85.3	0.59	4.30	13.00
7			80	14.05	89.1	0.85	3.70	14.80
7			100	10.67	92.3	1.33	3.00	16.80
7			125	6.42	94.9	2.03	1.80	18.80
7			160	0.66	97.0	3.04	0.00	21.10
7			200	-3.43	98.4	4.38	0.00	22.80
8	4,919	4,924						
8			20	22.91	59.3	0.00	5.60	7.60
8			25	22.01	65.2	0.10	5.40	8.30
8			32	20.96	70.6	0.15	5.20	9.20
8			40	20.16	76.0	0.25	5.00	10.30
8			50	19.06	80.9	0.34	4.70	11.50
8			63	17.36	85.3	0.54	4.30	13.00
8			80	14.82	89.1	0.79	3.70	14.80
8			100	11.47	92.3	1.23	3.00	16.80
8			125	7.28	94.9	1.87	1.80	18.80
8			160	1.60	97.0	2.81	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			200	-2.39	98.4	4.04	0.00	22.80
9	6,245	6,249						
9			20	20.84	59.3	0.00	5.60	7.60
9			25	19.91	65.2	0.12	5.40	8.30
9			32	18.85	70.6	0.19	5.20	9.20
9			40	18.03	76.0	0.31	5.00	10.30
9			50	16.90	80.9	0.44	4.70	11.50
9			63	15.15	85.3	0.69	4.30	13.00
9			80	12.54	89.1	1.00	3.70	14.80
9			100	9.07	92.3	1.56	3.00	16.80
9			125	4.71	94.9	2.37	1.80	18.80
9			160	-1.23	97.0	3.56	0.00	21.10
9			200	-5.54	98.4	5.12	0.00	22.80
Sum								
Sum			20	38.96				
Sum			25	38.09				
Sum			32	37.06				
Sum			40	36.29				
Sum			50	35.21				
Sum			63	33.57				
Sum			80	31.10				
Sum			100	27.89				
Sum			125	23.89				
Sum			160	18.50				
Sum			200	14.93				

Noise sensitive area: RH Suonpää Noise sensitive point: Finnish normal frequency - User defined (309)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	4,872	4,876						
1			20	22.99	59.3	0.00	5.60	7.60
1			25	22.10	65.2	0.10	5.40	8.30
1			32	21.05	70.6	0.15	5.20	9.20
1			40	20.25	76.0	0.24	5.00	10.30
1			50	19.15	80.9	0.34	4.70	11.50
1			63	17.45	85.3	0.54	4.30	13.00
1			80	14.91	89.1	0.78	3.70	14.80
1			100	11.57	92.3	1.22	3.00	16.80
1			125	7.38	94.9	1.85	1.80	18.80
1			160	1.71	97.0	2.78	0.00	21.10
1			200	-2.26	98.4	4.00	0.00	22.80
10	2,830	2,840						
10			20	27.69	59.3	0.00	5.60	7.60
10			25	26.83	65.2	0.06	5.40	8.30
10			32	25.80	70.6	0.09	5.20	9.20
10			40	25.05	76.0	0.14	5.00	10.30
10			50	23.99	80.9	0.20	4.70	11.50
10			63	22.37	85.3	0.31	4.30	13.00
10			80	19.93	89.1	0.45	3.70	14.80
10			100	16.78	92.3	0.71	3.00	16.80
10			125	12.86	94.9	1.08	1.80	18.80
10			160	7.57	97.0	1.62	0.00	21.10
10			200	4.11	98.4	2.33	0.00	22.80
11	2,546	2,556						
11			20	28.60	59.3	0.00	5.60	7.60
11			25	27.75	65.2	0.05	5.40	8.30
11			32	26.73	70.6	0.08	5.20	9.20
11			40	25.98	76.0	0.13	5.00	10.30
11			50	24.92	80.9	0.18	4.70	11.50
11			63	23.32	85.3	0.28	4.30	13.00
11			80	20.89	89.1	0.41	3.70	14.80
11			100	17.76	92.3	0.64	3.00	16.80

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
11			125	13.88	94.9	0.97	1.80	18.80
11			160	8.64	97.0	1.46	0.00	21.10
11			200	5.25	98.4	2.10	0.00	22.80
12	2,930	2,938						
12			20	27.39	59.3	0.00	5.60	7.60
12			25	26.53	65.2	0.06	5.40	8.30
12			32	25.51	70.6	0.09	5.20	9.20
12			40	24.75	76.0	0.15	5.00	10.30
12			50	23.68	80.9	0.21	4.70	11.50
12			63	22.07	85.3	0.32	4.30	13.00
12			80	19.62	89.1	0.47	3.70	14.80
12			100	16.46	92.3	0.73	3.00	16.80
12			125	12.52	94.9	1.12	1.80	18.80
12			160	7.22	97.0	1.67	0.00	21.10
12			200	3.73	98.4	2.41	0.00	22.80
13	3,590	3,599						
13			20	25.63	59.3	0.00	5.60	7.60
13			25	24.76	65.2	0.07	5.40	8.30
13			32	23.72	70.6	0.11	5.20	9.20
13			40	22.95	76.0	0.18	5.00	10.30
13			50	21.88	80.9	0.25	4.70	11.50
13			63	20.23	85.3	0.40	4.30	13.00
13			80	17.75	89.1	0.58	3.70	14.80
13			100	14.53	92.3	0.90	3.00	16.80
13			125	10.51	94.9	1.37	1.80	18.80
13			160	5.08	97.0	2.05	0.00	21.10
13			200	1.43	98.4	2.95	0.00	22.80
14	3,783	3,791						
14			20	25.18	59.3	0.00	5.60	7.60
14			25	24.30	65.2	0.08	5.40	8.30
14			32	23.27	70.6	0.11	5.20	9.20
14			40	22.49	76.0	0.19	5.00	10.30
14			50	21.41	80.9	0.27	4.70	11.50
14			63	19.76	85.3	0.42	4.30	13.00
14			80	17.27	89.1	0.61	3.70	14.80
14			100	14.03	92.3	0.95	3.00	16.80
14			125	9.99	94.9	1.44	1.80	18.80
14			160	4.52	97.0	2.16	0.00	21.10
14			200	0.82	98.4	3.11	0.00	22.80
15	4,196	4,205						
15			20	24.28	59.3	0.00	5.60	7.60
15			25	23.40	65.2	0.08	5.40	8.30
15			32	22.35	70.6	0.13	5.20	9.20
15			40	21.57	76.0	0.21	5.00	10.30
15			50	20.48	80.9	0.29	4.70	11.50
15			63	18.81	85.3	0.46	4.30	13.00
15			80	16.30	89.1	0.67	3.70	14.80
15			100	13.03	92.3	1.05	3.00	16.80
15			125	8.93	94.9	1.60	1.80	18.80
15			160	3.38	97.0	2.40	0.00	21.10
15			200	-0.42	98.4	3.45	0.00	22.80
16	4,776	4,782						
16			20	23.16	59.3	0.00	5.60	7.60
16			25	22.27	65.2	0.10	5.40	8.30
16			32	21.22	70.6	0.14	5.20	9.20
16			40	20.42	76.0	0.24	5.00	10.30
16			50	19.32	80.9	0.33	4.70	11.50
16			63	17.63	85.3	0.53	4.30	13.00
16			80	15.09	89.1	0.77	3.70	14.80
16			100	11.76	92.3	1.20	3.00	16.80
16			125	7.59	94.9	1.82	1.80	18.80
16			160	1.93	97.0	2.73	0.00	21.10
16			200	-2.01	98.4	3.92	0.00	22.80
17	5,266	5,271						

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
17			20	22.32	59.3	0.00	5.60	7.60
17			25	21.41	65.2	0.11	5.40	8.30
17			32	20.36	70.6	0.16	5.20	9.20
17			40	19.55	76.0	0.26	5.00	10.30
17			50	18.45	80.9	0.37	4.70	11.50
17			63	16.73	85.3	0.58	4.30	13.00
17			80	14.17	89.1	0.84	3.70	14.80
17			100	10.80	92.3	1.32	3.00	16.80
17			125	6.56	94.9	2.00	1.80	18.80
17			160	0.81	97.0	3.00	0.00	21.10
17			200	-3.26	98.4	4.32	0.00	22.80
18	3,714	3,721						
18			20	25.34	59.3	0.00	5.60	7.60
18			25	24.47	65.2	0.07	5.40	8.30
18			32	23.43	70.6	0.11	5.20	9.20
18			40	22.66	76.0	0.19	5.00	10.30
18			50	21.58	80.9	0.26	4.70	11.50
18			63	19.93	85.3	0.41	4.30	13.00
18			80	17.44	89.1	0.60	3.70	14.80
18			100	14.21	92.3	0.93	3.00	16.80
18			125	10.17	94.9	1.41	1.80	18.80
18			160	4.72	97.0	2.12	0.00	21.10
18			200	1.04	98.4	3.05	0.00	22.80
19	4,259	4,267						
19			20	24.15	59.3	0.00	5.60	7.60
19			25	23.27	65.2	0.09	5.40	8.30
19			32	22.23	70.6	0.13	5.20	9.20
19			40	21.44	76.0	0.21	5.00	10.30
19			50	20.35	80.9	0.30	4.70	11.50
19			63	18.68	85.3	0.47	4.30	13.00
19			80	16.17	89.1	0.68	3.70	14.80
19			100	12.88	92.3	1.07	3.00	16.80
19			125	8.78	94.9	1.62	1.80	18.80
19			160	3.22	97.0	2.43	0.00	21.10
19			200	-0.60	98.4	3.50	0.00	22.80
2	3,914	3,921						
2			20	24.89	59.3	0.00	5.60	7.60
2			25	24.01	65.2	0.08	5.40	8.30
2			32	22.97	70.6	0.12	5.20	9.20
2			40	22.19	76.0	0.20	5.00	10.30
2			50	21.11	80.9	0.27	4.70	11.50
2			63	19.45	85.3	0.43	4.30	13.00
2			80	16.96	89.1	0.63	3.70	14.80
2			100	13.70	92.3	0.98	3.00	16.80
2			125	9.64	94.9	1.49	1.80	18.80
2			160	4.15	97.0	2.23	0.00	21.10
2			200	0.42	98.4	3.21	0.00	22.80
20	4,749	4,755						
20			20	23.21	59.3	0.00	5.60	7.60
20			25	22.32	65.2	0.10	5.40	8.30
20			32	21.27	70.6	0.14	5.20	9.20
20			40	20.47	76.0	0.24	5.00	10.30
20			50	19.38	80.9	0.33	4.70	11.50
20			63	17.69	85.3	0.52	4.30	13.00
20			80	15.15	89.1	0.76	3.70	14.80
20			100	11.82	92.3	1.19	3.00	16.80
20			125	7.65	94.9	1.81	1.80	18.80
20			160	2.00	97.0	2.71	0.00	21.10
20			200	-1.94	98.4	3.90	0.00	22.80
21	5,298	5,303						
21			20	22.26	59.3	0.00	5.60	7.60
21			25	21.36	65.2	0.11	5.40	8.30
21			32	20.30	70.6	0.16	5.20	9.20
21			40	19.50	76.0	0.27	5.00	10.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
21			50	18.39	80.9	0.37	4.70	11.50
21			63	16.68	85.3	0.58	4.30	13.00
21			80	14.11	89.1	0.85	3.70	14.80
21			100	10.73	92.3	1.33	3.00	16.80
21			125	6.49	94.9	2.02	1.80	18.80
21			160	0.74	97.0	3.02	0.00	21.10
21			200	-3.34	98.4	4.35	0.00	22.80
22	5,886	5,891						
22			20	21.35	59.3	0.00	5.60	7.60
22			25	20.43	65.2	0.12	5.40	8.30
22			32	19.37	70.6	0.18	5.20	9.20
22			40	18.56	76.0	0.29	5.00	10.30
22			50	17.44	80.9	0.41	4.70	11.50
22			63	15.70	85.3	0.65	4.30	13.00
22			80	13.11	89.1	0.94	3.70	14.80
22			100	9.68	92.3	1.47	3.00	16.80
22			125	5.36	94.9	2.24	1.80	18.80
22			160	-0.51	97.0	3.36	0.00	21.10
22			200	-4.73	98.4	4.83	0.00	22.80
23	6,105	6,109						
23			20	21.04	59.3	0.00	5.60	7.60
23			25	20.11	65.2	0.12	5.40	8.30
23			32	19.05	70.6	0.18	5.20	9.20
23			40	18.23	76.0	0.31	5.00	10.30
23			50	17.10	80.9	0.43	4.70	11.50
23			63	15.36	85.3	0.67	4.30	13.00
23			80	12.75	89.1	0.98	3.70	14.80
23			100	9.31	92.3	1.53	3.00	16.80
23			125	4.96	94.9	2.32	1.80	18.80
23			160	-0.95	97.0	3.48	0.00	21.10
23			200	-5.23	98.4	5.01	0.00	22.80
24	6,408	6,411						
24			20	20.62	59.3	0.00	5.60	7.60
24			25	19.69	65.2	0.13	5.40	8.30
24			32	18.62	70.6	0.19	5.20	9.20
24			40	17.80	76.0	0.32	5.00	10.30
24			50	16.66	80.9	0.45	4.70	11.50
24			63	14.91	85.3	0.71	4.30	13.00
24			80	12.29	89.1	1.03	3.70	14.80
24			100	8.81	92.3	1.60	3.00	16.80
24			125	4.42	94.9	2.44	1.80	18.80
24			160	-1.54	97.0	3.65	0.00	21.10
24			200	-5.90	98.4	5.26	0.00	22.80
3	4,545	4,550						
3			20	23.59	59.3	0.00	5.60	7.60
3			25	22.70	65.2	0.09	5.40	8.30
3			32	21.66	70.6	0.14	5.20	9.20
3			40	20.87	76.0	0.23	5.00	10.30
3			50	19.77	80.9	0.32	4.70	11.50
3			63	18.09	85.3	0.50	4.30	13.00
3			80	15.56	89.1	0.73	3.70	14.80
3			100	12.25	92.3	1.14	3.00	16.80
3			125	8.11	94.9	1.73	1.80	18.80
3			160	2.50	97.0	2.59	0.00	21.10
3			200	-1.39	98.4	3.73	0.00	22.80
4	4,283	4,289						
4			20	24.11	59.3	0.00	5.60	7.60
4			25	23.22	65.2	0.09	5.40	8.30
4			32	22.18	70.6	0.13	5.20	9.20
4			40	21.39	76.0	0.21	5.00	10.30
4			50	20.30	80.9	0.30	4.70	11.50
4			63	18.63	85.3	0.47	4.30	13.00
4			80	16.12	89.1	0.69	3.70	14.80
4			100	12.83	92.3	1.07	3.00	16.80

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
4			125	8.72	94.9	1.63	1.80	18.80
4			160	3.16	97.0	2.44	0.00	21.10
4			200	-0.66	98.4	3.52	0.00	22.80
5	4,495	4,500						
5			20	23.69	59.3	0.00	5.60	7.60
5			25	22.80	65.2	0.09	5.40	8.30
5			32	21.76	70.6	0.14	5.20	9.20
5			40	20.97	76.0	0.23	5.00	10.30
5			50	19.87	80.9	0.32	4.70	11.50
5			63	18.19	85.3	0.50	4.30	13.00
5			80	15.67	89.1	0.72	3.70	14.80
5			100	12.36	92.3	1.13	3.00	16.80
5			125	8.23	94.9	1.71	1.80	18.80
5			160	2.62	97.0	2.57	0.00	21.10
5			200	-1.25	98.4	3.69	0.00	22.80
6	2,847	2,856						
6			20	27.64	59.3	0.00	5.60	7.60
6			25	26.78	65.2	0.06	5.40	8.30
6			32	25.76	70.6	0.09	5.20	9.20
6			40	25.00	76.0	0.14	5.00	10.30
6			50	23.94	80.9	0.20	4.70	11.50
6			63	22.32	85.3	0.31	4.30	13.00
6			80	19.88	89.1	0.46	3.70	14.80
6			100	16.72	92.3	0.71	3.00	16.80
6			125	12.80	94.9	1.09	1.80	18.80
6			160	7.51	97.0	1.63	0.00	21.10
6			200	4.04	98.4	2.34	0.00	22.80
7	3,371	3,378						
7			20	26.18	59.3	0.00	5.60	7.60
7			25	25.31	65.2	0.07	5.40	8.30
7			32	24.28	70.6	0.10	5.20	9.20
7			40	23.51	76.0	0.17	5.00	10.30
7			50	22.44	80.9	0.24	4.70	11.50
7			63	20.81	85.3	0.37	4.30	13.00
7			80	18.34	89.1	0.54	3.70	14.80
7			100	15.13	92.3	0.84	3.00	16.80
7			125	11.14	94.9	1.28	1.80	18.80
7			160	5.75	97.0	1.93	0.00	21.10
7			200	2.16	98.4	2.77	0.00	22.80
8	3,933	3,939						
8			20	24.85	59.3	0.00	5.60	7.60
8			25	23.97	65.2	0.08	5.40	8.30
8			32	22.93	70.6	0.12	5.20	9.20
8			40	22.15	76.0	0.20	5.00	10.30
8			50	21.07	80.9	0.28	4.70	11.50
8			63	19.41	85.3	0.43	4.30	13.00
8			80	16.91	89.1	0.63	3.70	14.80
8			100	13.66	92.3	0.98	3.00	16.80
8			125	9.60	94.9	1.50	1.80	18.80
8			160	4.10	97.0	2.25	0.00	21.10
8			200	0.36	98.4	3.23	0.00	22.80
9	2,234	2,245						
9			20	29.73	59.3	0.00	5.60	7.60
9			25	28.89	65.2	0.04	5.40	8.30
9			32	27.86	70.6	0.07	5.20	9.20
9			40	27.12	76.0	0.11	5.00	10.30
9			50	26.07	80.9	0.16	4.70	11.50
9			63	24.48	85.3	0.25	4.30	13.00
9			80	22.07	89.1	0.36	3.70	14.80
9			100	18.97	92.3	0.56	3.00	16.80
9			125	15.12	94.9	0.85	1.80	18.80
9			160	9.95	97.0	1.28	0.00	21.10
9			200	6.64	98.4	1.84	0.00	22.80
Sum								

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
Sum			20	39.05				
Sum			25	38.17				
Sum			32	37.14				
Sum			40	36.37				
Sum			50	35.29				
Sum			63	33.65				
Sum			80	31.17				
Sum			100	27.95				
Sum			125	23.93				
Sum			160	18.52				
Sum			200	14.90				

Noise sensitive area: RH Törmäharju 2 Noise sensitive point: Finnish normal frequency - User defined (318)

Highest noise value at receptor: 8.0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	3,591	3,597						
1			20	25.63	59.3	0.00	5.60	7.60
1			25	24.76	65.2	0.07	5.40	8.30
1			32	23.73	70.6	0.11	5.20	9.20
1			40	22.96	76.0	0.18	5.00	10.30
1			50	21.88	80.9	0.25	4.70	11.50
1			63	20.24	85.3	0.40	4.30	13.00
1			80	17.76	89.1	0.58	3.70	14.80
1			100	14.53	92.3	0.90	3.00	16.80
1			125	10.51	94.9	1.37	1.80	18.80
1			160	5.08	97.0	2.05	0.00	21.10
1			200	1.43	98.4	2.95	0.00	22.80
10	2,713	2,723						
10			20	28.05	59.3	0.00	5.60	7.60
10			25	27.20	65.2	0.05	5.40	8.30
10			32	26.17	70.6	0.08	5.20	9.20
10			40	25.42	76.0	0.14	5.00	10.30
10			50	24.36	80.9	0.19	4.70	11.50
10			63	22.75	85.3	0.30	4.30	13.00
10			80	20.32	89.1	0.44	3.70	14.80
10			100	17.17	92.3	0.68	3.00	16.80
10			125	13.26	94.9	1.03	1.80	18.80
10			160	8.00	97.0	1.55	0.00	21.10
10			200	4.57	98.4	2.23	0.00	22.80
11	2,854	2,863						
11			20	27.62	59.3	0.00	5.60	7.60
11			25	26.76	65.2	0.06	5.40	8.30
11			32	25.73	70.6	0.09	5.20	9.20
11			40	24.98	76.0	0.14	5.00	10.30
11			50	23.91	80.9	0.20	4.70	11.50
11			63	22.30	85.3	0.31	4.30	13.00
11			80	19.86	89.1	0.46	3.70	14.80
11			100	16.70	92.3	0.72	3.00	16.80
11			125	12.78	94.9	1.09	1.80	18.80
11			160	7.48	97.0	1.63	0.00	21.10
11			200	4.02	98.4	2.35	0.00	22.80
12	3,404	3,411						
12			20	26.10	59.3	0.00	5.60	7.60
12			25	25.23	65.2	0.07	5.40	8.30
12			32	24.19	70.6	0.10	5.20	9.20
12			40	23.43	76.0	0.17	5.00	10.30
12			50	22.35	80.9	0.24	4.70	11.50
12			63	20.72	85.3	0.38	4.30	13.00
12			80	18.25	89.1	0.55	3.70	14.80
12			100	15.04	92.3	0.85	3.00	16.80
12			125	11.04	94.9	1.30	1.80	18.80
12			160	5.65	97.0	1.94	0.00	21.10

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
12			200	2.04	98.4	2.80	0.00	22.80
13	3,889	3,897						
13			20	24.94	59.3	0.00	5.60	7.60
13			25	24.06	65.2	0.08	5.40	8.30
13			32	23.02	70.6	0.12	5.20	9.20
13			40	22.25	76.0	0.19	5.00	10.30
13			50	21.16	80.9	0.27	4.70	11.50
13			63	19.51	85.3	0.43	4.30	13.00
13			80	17.01	89.1	0.62	3.70	14.80
13			100	13.76	92.3	0.97	3.00	16.80
13			125	9.70	94.9	1.48	1.80	18.80
13			160	4.22	97.0	2.22	0.00	21.10
13			200	0.49	98.4	3.20	0.00	22.80
14	3,821	3,829						
14			20	25.09	59.3	0.00	5.60	7.60
14			25	24.22	65.2	0.08	5.40	8.30
14			32	23.18	70.6	0.11	5.20	9.20
14			40	22.40	76.0	0.19	5.00	10.30
14			50	21.32	80.9	0.27	4.70	11.50
14			63	19.67	85.3	0.42	4.30	13.00
14			80	17.18	89.1	0.61	3.70	14.80
14			100	13.93	92.3	0.96	3.00	16.80
14			125	9.88	94.9	1.46	1.80	18.80
14			160	4.41	97.0	2.18	0.00	21.10
14			200	0.70	98.4	3.14	0.00	22.80
15	4,479	4,487						
15			20	23.72	59.3	0.00	5.60	7.60
15			25	22.83	65.2	0.09	5.40	8.30
15			32	21.78	70.6	0.13	5.20	9.20
15			40	20.99	76.0	0.22	5.00	10.30
15			50	19.90	80.9	0.31	4.70	11.50
15			63	18.22	85.3	0.49	4.30	13.00
15			80	15.69	89.1	0.72	3.70	14.80
15			100	12.39	92.3	1.12	3.00	16.80
15			125	8.26	94.9	1.71	1.80	18.80
15			160	2.65	97.0	2.56	0.00	21.10
15			200	-1.22	98.4	3.68	0.00	22.80
16	5,027	5,032						
16			20	22.72	59.3	0.00	5.60	7.60
16			25	21.82	65.2	0.10	5.40	8.30
16			32	20.77	70.6	0.15	5.20	9.20
16			40	19.97	76.0	0.25	5.00	10.30
16			50	18.86	80.9	0.35	4.70	11.50
16			63	17.16	85.3	0.55	4.30	13.00
16			80	14.61	89.1	0.81	3.70	14.80
16			100	11.26	92.3	1.26	3.00	16.80
16			125	7.05	94.9	1.91	1.80	18.80
16			160	1.35	97.0	2.87	0.00	21.10
16			200	-2.66	98.4	4.13	0.00	22.80
17	5,326	5,330						
17			20	22.22	59.3	0.00	5.60	7.60
17			25	21.31	65.2	0.11	5.40	8.30
17			32	20.26	70.6	0.16	5.20	9.20
17			40	19.45	76.0	0.27	5.00	10.30
17			50	18.34	80.9	0.37	4.70	11.50
17			63	16.63	85.3	0.59	4.30	13.00
17			80	14.06	89.1	0.85	3.70	14.80
17			100	10.68	92.3	1.33	3.00	16.80
17			125	6.44	94.9	2.03	1.80	18.80
17			160	0.68	97.0	3.04	0.00	21.10
17			200	-3.41	98.4	4.37	0.00	22.80
18	4,277	4,283						
18			20	24.12	59.3	0.00	5.60	7.60
18			25	23.23	65.2	0.09	5.40	8.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
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+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
18			32	22.19	70.6	0.13	5.20	9.20
18			40	21.41	76.0	0.21	5.00	10.30
18			50	20.32	80.9	0.30	4.70	11.50
18			63	18.64	85.3	0.47	4.30	13.00
18			80	16.13	89.1	0.69	3.70	14.80
18			100	12.85	92.3	1.07	3.00	16.80
18			125	8.74	94.9	1.63	1.80	18.80
18			160	3.17	97.0	2.44	0.00	21.10
18			200	-0.65	98.4	3.51	0.00	22.80
19	4,795	4,802						
19			20	23.13	59.3	0.00	5.60	7.60
19			25	22.23	65.2	0.10	5.40	8.30
19			32	21.18	70.6	0.14	5.20	9.20
19			40	20.39	76.0	0.24	5.00	10.30
19			50	19.29	80.9	0.34	4.70	11.50
19			63	17.59	85.3	0.53	4.30	13.00
19			80	15.05	89.1	0.77	3.70	14.80
19			100	11.72	92.3	1.20	3.00	16.80
19			125	7.55	94.9	1.82	1.80	18.80
19			160	1.89	97.0	2.74	0.00	21.10
19			200	-2.07	98.4	3.94	0.00	22.80
2	2,902	2,911						
2			20	27.48	59.3	0.00	5.60	7.60
2			25	26.62	65.2	0.06	5.40	8.30
2			32	25.59	70.6	0.09	5.20	9.20
2			40	24.83	76.0	0.15	5.00	10.30
2			50	23.77	80.9	0.20	4.70	11.50
2			63	22.15	85.3	0.32	4.30	13.00
2			80	19.71	89.1	0.47	3.70	14.80
2			100	16.54	92.3	0.73	3.00	16.80
2			125	12.61	94.9	1.11	1.80	18.80
2			160	7.31	97.0	1.66	0.00	21.10
2			200	3.83	98.4	2.39	0.00	22.80
20	5,207	5,213						
20			20	22.41	59.3	0.00	5.60	7.60
20			25	21.51	65.2	0.10	5.40	8.30
20			32	20.46	70.6	0.16	5.20	9.20
20			40	19.65	76.0	0.26	5.00	10.30
20			50	18.54	80.9	0.36	4.70	11.50
20			63	16.84	85.3	0.57	4.30	13.00
20			80	14.28	89.1	0.83	3.70	14.80
20			100	10.91	92.3	1.30	3.00	16.80
20			125	6.68	94.9	1.98	1.80	18.80
20			160	0.94	97.0	2.97	0.00	21.10
20			200	-3.12	98.4	4.27	0.00	22.80
21	5,604	5,609						
21			20	21.78	59.3	0.00	5.60	7.60
21			25	20.86	65.2	0.11	5.40	8.30
21			32	19.81	70.6	0.17	5.20	9.20
21			40	19.00	76.0	0.28	5.00	10.30
21			50	17.88	80.9	0.39	4.70	11.50
21			63	16.16	85.3	0.62	4.30	13.00
21			80	13.58	89.1	0.90	3.70	14.80
21			100	10.17	92.3	1.40	3.00	16.80
21			125	5.89	94.9	2.13	1.80	18.80
21			160	0.08	97.0	3.20	0.00	21.10
21			200	-4.08	98.4	4.60	0.00	22.80
22	6,057	6,062						
22			20	21.10	59.3	0.00	5.60	7.60
22			25	20.18	65.2	0.12	5.40	8.30
22			32	19.12	70.6	0.18	5.20	9.20
22			40	18.30	76.0	0.30	5.00	10.30
22			50	17.18	80.9	0.42	4.70	11.50
22			63	15.43	85.3	0.67	4.30	13.00

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
22			80	12.83	89.1	0.97	3.70	14.80
22			100	9.38	92.3	1.52	3.00	16.80
22			125	5.04	94.9	2.30	1.80	18.80
22			160	-0.86	97.0	3.46	0.00	21.10
22			200	-5.12	98.4	4.97	0.00	22.80
23	6,067	6,071						
23			20	21.09	59.3	0.00	5.60	7.60
23			25	20.17	65.2	0.12	5.40	8.30
23			32	19.11	70.6	0.18	5.20	9.20
23			40	18.29	76.0	0.30	5.00	10.30
23			50	17.16	80.9	0.42	4.70	11.50
23			63	15.42	85.3	0.67	4.30	13.00
23			80	12.82	89.1	0.97	3.70	14.80
23			100	9.37	92.3	1.52	3.00	16.80
23			125	5.03	94.9	2.31	1.80	18.80
23			160	-0.87	97.0	3.46	0.00	21.10
23			200	-5.14	98.4	4.98	0.00	22.80
24	6,536	6,540						
24			20	20.44	59.3	0.00	5.60	7.60
24			25	19.51	65.2	0.13	5.40	8.30
24			32	18.45	70.6	0.20	5.20	9.20
24			40	17.62	76.0	0.33	5.00	10.30
24			50	16.48	80.9	0.46	4.70	11.50
24			63	14.72	85.3	0.72	4.30	13.00
24			80	12.09	89.1	1.05	3.70	14.80
24			100	8.61	92.3	1.63	3.00	16.80
24			125	4.20	94.9	2.49	1.80	18.80
24			160	-1.79	97.0	3.73	0.00	21.10
24			200	-6.17	98.4	5.36	0.00	22.80
3	3,464	3,472						
3			20	25.94	59.3	0.00	5.60	7.60
3			25	25.07	65.2	0.07	5.40	8.30
3			32	24.04	70.6	0.10	5.20	9.20
3			40	23.27	76.0	0.17	5.00	10.30
3			50	22.20	80.9	0.24	4.70	11.50
3			63	20.56	85.3	0.38	4.30	13.00
3			80	18.09	89.1	0.56	3.70	14.80
3			100	14.87	92.3	0.87	3.00	16.80
3			125	10.87	94.9	1.32	1.80	18.80
3			160	5.46	97.0	1.98	0.00	21.10
3			200	1.84	98.4	2.85	0.00	22.80
4	3,438	3,445						
4			20	26.01	59.3	0.00	5.60	7.60
4			25	25.14	65.2	0.07	5.40	8.30
4			32	24.11	70.6	0.10	5.20	9.20
4			40	23.34	76.0	0.17	5.00	10.30
4			50	22.27	80.9	0.24	4.70	11.50
4			63	20.63	85.3	0.38	4.30	13.00
4			80	18.16	89.1	0.55	3.70	14.80
4			100	14.95	92.3	0.86	3.00	16.80
4			125	10.95	94.9	1.31	1.80	18.80
4			160	5.54	97.0	1.96	0.00	21.10
4			200	1.93	98.4	2.82	0.00	22.80
5	3,854	3,861						
5			20	25.02	59.3	0.00	5.60	7.60
5			25	24.14	65.2	0.08	5.40	8.30
5			32	23.11	70.6	0.12	5.20	9.20
5			40	22.33	76.0	0.19	5.00	10.30
5			50	21.25	80.9	0.27	4.70	11.50
5			63	19.59	85.3	0.42	4.30	13.00
5			80	17.10	89.1	0.62	3.70	14.80
5			100	13.85	92.3	0.97	3.00	16.80
5			125	9.80	94.9	1.47	1.80	18.80
5			160	4.32	97.0	2.20	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
5			200	0.60	98.4	3.17	0.00	22.80
6	2,284	2,295						
6			20	29.54	59.3	0.00	5.60	7.60
6			25	28.69	65.2	0.05	5.40	8.30
6			32	27.67	70.6	0.07	5.20	9.20
6			40	26.92	76.0	0.11	5.00	10.30
6			50	25.87	80.9	0.16	4.70	11.50
6			63	24.28	85.3	0.25	4.30	13.00
6			80	21.87	89.1	0.37	3.70	14.80
6			100	18.76	92.3	0.57	3.00	16.80
6			125	14.91	94.9	0.87	1.80	18.80
6			160	9.73	97.0	1.31	0.00	21.10
6			200	6.40	98.4	1.88	0.00	22.80
7	2,939	2,947						
7			20	27.37	59.3	0.00	5.60	7.60
7			25	26.51	65.2	0.06	5.40	8.30
7			32	25.48	70.6	0.09	5.20	9.20
7			40	24.72	76.0	0.15	5.00	10.30
7			50	23.66	80.9	0.21	4.70	11.50
7			63	22.04	85.3	0.32	4.30	13.00
7			80	19.59	89.1	0.47	3.70	14.80
7			100	16.43	92.3	0.74	3.00	16.80
7			125	12.49	94.9	1.12	1.80	18.80
7			160	7.18	97.0	1.68	0.00	21.10
7			200	3.70	98.4	2.42	0.00	22.80
8	3,394	3,402						
8			20	26.12	59.3	0.00	5.60	7.60
8			25	25.25	65.2	0.07	5.40	8.30
8			32	24.22	70.6	0.10	5.20	9.20
8			40	23.45	76.0	0.17	5.00	10.30
8			50	22.38	80.9	0.24	4.70	11.50
8			63	20.74	85.3	0.37	4.30	13.00
8			80	18.27	89.1	0.54	3.70	14.80
8			100	15.07	92.3	0.85	3.00	16.80
8			125	11.07	94.9	1.29	1.80	18.80
8			160	5.68	97.0	1.94	0.00	21.10
8			200	2.08	98.4	2.79	0.00	22.80
9	2,182	2,194						
9			20	29.93	59.3	0.00	5.60	7.60
9			25	29.09	65.2	0.04	5.40	8.30
9			32	28.06	70.6	0.07	5.20	9.20
9			40	27.32	76.0	0.11	5.00	10.30
9			50	26.27	80.9	0.15	4.70	11.50
9			63	24.69	85.3	0.24	4.30	13.00
9			80	22.28	89.1	0.35	3.70	14.80
9			100	19.18	92.3	0.55	3.00	16.80
9			125	15.34	94.9	0.83	1.80	18.80
9			160	10.18	97.0	1.25	0.00	21.10
9			200	6.88	98.4	1.80	0.00	22.80
Sum								
Sum			20	39.48				
Sum			25	38.61				
Sum			32	37.58				
Sum			40	36.81				
Sum			50	35.74				
Sum			63	34.10				
Sum			80	31.64				
Sum			100	28.43				
Sum			125	24.44				
Sum			160	19.07				
Sum			200	15.50				

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

Noise sensitive area: RH Tuomaala Noise sensitive point: Finnish normal frequency - User defined (310)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	1,686	1,701						
1			20	32.14	59.3	0.00	5.60	7.60
1			25	31.31	65.2	0.03	5.40	8.30
1			32	30.29	70.6	0.05	5.20	9.20
1			40	29.55	76.0	0.09	5.00	10.30
1			50	28.52	80.9	0.12	4.70	11.50
1			63	26.95	85.3	0.19	4.30	13.00
1			80	24.56	89.1	0.27	3.70	14.80
1			100	21.51	92.3	0.43	3.00	16.80
1			125	17.74	94.9	0.65	1.80	18.80
1			160	12.67	97.0	0.97	0.00	21.10
1			200	9.49	98.4	1.39	0.00	22.80
10	4,189	4,195						
10			20	24.30	59.3	0.00	5.60	7.60
10			25	23.42	65.2	0.08	5.40	8.30
10			32	22.37	70.6	0.13	5.20	9.20
10			40	21.59	76.0	0.21	5.00	10.30
10			50	20.50	80.9	0.29	4.70	11.50
10			63	18.84	85.3	0.46	4.30	13.00
10			80	16.33	89.1	0.67	3.70	14.80
10			100	13.05	92.3	1.05	3.00	16.80
10			125	8.95	94.9	1.59	1.80	18.80
10			160	3.41	97.0	2.39	0.00	21.10
10			200	-0.40	98.4	3.44	0.00	22.80
11	4,776	4,782						
11			20	23.16	59.3	0.00	5.60	7.60
11			25	22.27	65.2	0.10	5.40	8.30
11			32	21.22	70.6	0.14	5.20	9.20
11			40	20.42	76.0	0.24	5.00	10.30
11			50	19.33	80.9	0.33	4.70	11.50
11			63	17.63	85.3	0.53	4.30	13.00
11			80	15.10	89.1	0.77	3.70	14.80
11			100	11.76	92.3	1.20	3.00	16.80
11			125	7.59	94.9	1.82	1.80	18.80
11			160	1.93	97.0	2.73	0.00	21.10
11			200	-2.01	98.4	3.92	0.00	22.80
12	4,962	4,967						
12			20	22.83	59.3	0.00	5.60	7.60
12			25	21.93	65.2	0.10	5.40	8.30
12			32	20.88	70.6	0.15	5.20	9.20
12			40	20.08	76.0	0.25	5.00	10.30
12			50	18.98	80.9	0.35	4.70	11.50
12			63	17.28	85.3	0.55	4.30	13.00
12			80	14.73	89.1	0.79	3.70	14.80
12			100	11.39	92.3	1.24	3.00	16.80
12			125	7.19	94.9	1.89	1.80	18.80
12			160	1.50	97.0	2.83	0.00	21.10
12			200	-2.50	98.4	4.07	0.00	22.80
13	4,633	4,640						
13			20	23.42	59.3	0.00	5.60	7.60
13			25	22.53	65.2	0.09	5.40	8.30
13			32	21.48	70.6	0.14	5.20	9.20
13			40	20.69	76.0	0.23	5.00	10.30
13			50	19.60	80.9	0.32	4.70	11.50
13			63	17.91	85.3	0.51	4.30	13.00
13			80	15.38	89.1	0.74	3.70	14.80
13			100	12.06	92.3	1.16	3.00	16.80
13			125	7.91	94.9	1.76	1.80	18.80
13			160	2.28	97.0	2.64	0.00	21.10
13			200	-1.64	98.4	3.80	0.00	22.80
14	4,126	4,134						
14			20	24.43	59.3	0.00	5.60	7.60
14			25	23.55	65.2	0.08	5.40	8.30

To be continued on next page...

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DE-28211 Bremen
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Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
14			32	22.50	70.6	0.12	5.20	9.20
14			40	21.72	76.0	0.21	5.00	10.30
14			50	20.64	80.9	0.29	4.70	11.50
14			63	18.97	85.3	0.45	4.30	13.00
14			80	16.46	89.1	0.66	3.70	14.80
14			100	13.19	92.3	1.03	3.00	16.80
14			125	9.10	94.9	1.57	1.80	18.80
14			160	3.57	97.0	2.36	0.00	21.10
14			200	-0.22	98.4	3.39	0.00	22.80
15	4,638	4,646						
15			20	23.41	59.3	0.00	5.60	7.60
15			25	22.52	65.2	0.09	5.40	8.30
15			32	21.47	70.6	0.14	5.20	9.20
15			40	20.68	76.0	0.23	5.00	10.30
15			50	19.58	80.9	0.33	4.70	11.50
15			63	17.90	85.3	0.51	4.30	13.00
15			80	15.37	89.1	0.74	3.70	14.80
15			100	12.05	92.3	1.16	3.00	16.80
15			125	7.89	94.9	1.77	1.80	18.80
15			160	2.26	97.0	2.65	0.00	21.10
15			200	-1.65	98.4	3.81	0.00	22.80
16	4,665	4,672						
16			20	23.37	59.3	0.00	5.60	7.60
16			25	22.47	65.2	0.09	5.40	8.30
16			32	21.43	70.6	0.14	5.20	9.20
16			40	20.63	76.0	0.23	5.00	10.30
16			50	19.54	80.9	0.33	4.70	11.50
16			63	17.85	85.3	0.51	4.30	13.00
16			80	15.31	89.1	0.75	3.70	14.80
16			100	11.99	92.3	1.17	3.00	16.80
16			125	7.84	94.9	1.78	1.80	18.80
16			160	2.20	97.0	2.66	0.00	21.10
16			200	-1.72	98.4	3.83	0.00	22.80
17	4,276	4,282						
17			20	24.12	59.3	0.00	5.60	7.60
17			25	23.24	65.2	0.09	5.40	8.30
17			32	22.19	70.6	0.13	5.20	9.20
17			40	21.41	76.0	0.21	5.00	10.30
17			50	20.32	80.9	0.30	4.70	11.50
17			63	18.65	85.3	0.47	4.30	13.00
17			80	16.13	89.1	0.69	3.70	14.80
17			100	12.85	92.3	1.07	3.00	16.80
17			125	8.74	94.9	1.63	1.80	18.80
17			160	3.18	97.0	2.44	0.00	21.10
17			200	-0.65	98.4	3.51	0.00	22.80
18	5,192	5,197						
18			20	22.44	59.3	0.00	5.60	7.60
18			25	21.54	65.2	0.10	5.40	8.30
18			32	20.48	70.6	0.16	5.20	9.20
18			40	19.68	76.0	0.26	5.00	10.30
18			50	18.57	80.9	0.36	4.70	11.50
18			63	16.86	85.3	0.57	4.30	13.00
18			80	14.30	89.1	0.83	3.70	14.80
18			100	10.94	92.3	1.30	3.00	16.80
18			125	6.71	94.9	1.97	1.80	18.80
18			160	0.97	97.0	2.96	0.00	21.10
18			200	-3.08	98.4	4.26	0.00	22.80
19	5,253	5,260						
19			20	22.33	59.3	0.00	5.60	7.60
19			25	21.43	65.2	0.11	5.40	8.30
19			32	20.38	70.6	0.16	5.20	9.20
19			40	19.57	76.0	0.26	5.00	10.30
19			50	18.46	80.9	0.37	4.70	11.50
19			63	16.75	85.3	0.58	4.30	13.00

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
19			80	14.19	89.1	0.84	3.70	14.80
19			100	10.82	92.3	1.32	3.00	16.80
19			125	6.58	94.9	2.00	1.80	18.80
19			160	0.83	97.0	3.00	0.00	21.10
19			200	-3.23	98.4	4.31	0.00	22.80
2	2,677	2,687						
2			20	28.17	59.3	0.00	5.60	7.60
2			25	27.32	65.2	0.05	5.40	8.30
2			32	26.29	70.6	0.08	5.20	9.20
2			40	25.54	76.0	0.13	5.00	10.30
2			50	24.48	80.9	0.19	4.70	11.50
2			63	22.87	85.3	0.30	4.30	13.00
2			80	20.44	89.1	0.43	3.70	14.80
2			100	17.30	92.3	0.67	3.00	16.80
2			125	13.39	94.9	1.02	1.80	18.80
2			160	8.14	97.0	1.53	0.00	21.10
2			200	4.71	98.4	2.20	0.00	22.80
20	5,202	5,208						
20			20	22.42	59.3	0.00	5.60	7.60
20			25	21.52	65.2	0.10	5.40	8.30
20			32	20.47	70.6	0.16	5.20	9.20
20			40	19.66	76.0	0.26	5.00	10.30
20			50	18.55	80.9	0.36	4.70	11.50
20			63	16.85	85.3	0.57	4.30	13.00
20			80	14.29	89.1	0.83	3.70	14.80
20			100	10.92	92.3	1.30	3.00	16.80
20			125	6.69	94.9	1.98	1.80	18.80
20			160	0.95	97.0	2.97	0.00	21.10
20			200	-3.10	98.4	4.27	0.00	22.80
21	4,972	4,978						
21			20	22.81	59.3	0.00	5.60	7.60
21			25	21.91	65.2	0.10	5.40	8.30
21			32	20.86	70.6	0.15	5.20	9.20
21			40	20.06	76.0	0.25	5.00	10.30
21			50	18.96	80.9	0.35	4.70	11.50
21			63	17.26	85.3	0.55	4.30	13.00
21			80	14.71	89.1	0.80	3.70	14.80
21			100	11.37	92.3	1.24	3.00	16.80
21			125	7.17	94.9	1.89	1.80	18.80
21			160	1.47	97.0	2.84	0.00	21.10
21			200	-2.52	98.4	4.08	0.00	22.80
22	4,810	4,816						
22			20	23.10	59.3	0.00	5.60	7.60
22			25	22.20	65.2	0.10	5.40	8.30
22			32	21.16	70.6	0.14	5.20	9.20
22			40	20.36	76.0	0.24	5.00	10.30
22			50	19.26	80.9	0.34	4.70	11.50
22			63	17.57	85.3	0.53	4.30	13.00
22			80	15.03	89.1	0.77	3.70	14.80
22			100	11.69	92.3	1.20	3.00	16.80
22			125	7.52	94.9	1.83	1.80	18.80
22			160	1.85	97.0	2.75	0.00	21.10
22			200	-2.10	98.4	3.95	0.00	22.80
23	4,263	4,269						
23			20	24.15	59.3	0.00	5.60	7.60
23			25	23.26	65.2	0.09	5.40	8.30
23			32	22.22	70.6	0.13	5.20	9.20
23			40	21.43	76.0	0.21	5.00	10.30
23			50	20.35	80.9	0.30	4.70	11.50
23			63	18.68	85.3	0.47	4.30	13.00
23			80	16.16	89.1	0.68	3.70	14.80
23			100	12.88	92.3	1.07	3.00	16.80
23			125	8.77	94.9	1.62	1.80	18.80
23			160	3.21	97.0	2.43	0.00	21.10

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
23			200	-0.61	98.4	3.50	0.00	22.80
24	4,917	4,922						
24			20	22.91	59.3	0.00	5.60	7.60
24			25	22.01	65.2	0.10	5.40	8.30
24			32	20.96	70.6	0.15	5.20	9.20
24			40	20.17	76.0	0.25	5.00	10.30
24			50	19.06	80.9	0.34	4.70	11.50
24			63	17.37	85.3	0.54	4.30	13.00
24			80	14.82	89.1	0.79	3.70	14.80
24			100	11.48	92.3	1.23	3.00	16.80
24			125	7.29	94.9	1.87	1.80	18.80
24			160	1.60	97.0	2.81	0.00	21.10
24			200	-2.38	98.4	4.04	0.00	22.80
3	2,063	2,076						
3			20	30.41	59.3	0.00	5.60	7.60
3			25	29.57	65.2	0.04	5.40	8.30
3			32	28.55	70.6	0.06	5.20	9.20
3			40	27.81	76.0	0.10	5.00	10.30
3			50	26.76	80.9	0.15	4.70	11.50
3			63	25.18	85.3	0.23	4.30	13.00
3			80	22.78	89.1	0.33	3.70	14.80
3			100	19.69	92.3	0.52	3.00	16.80
3			125	15.87	94.9	0.79	1.80	18.80
3			160	10.72	97.0	1.18	0.00	21.10
3			200	7.45	98.4	1.70	0.00	22.80
4	2,500	2,510						
4			20	28.76	59.3	0.00	5.60	7.60
4			25	27.91	65.2	0.05	5.40	8.30
4			32	26.89	70.6	0.08	5.20	9.20
4			40	26.14	76.0	0.13	5.00	10.30
4			50	25.08	80.9	0.18	4.70	11.50
4			63	23.48	85.3	0.28	4.30	13.00
4			80	21.06	89.1	0.40	3.70	14.80
4			100	17.93	92.3	0.63	3.00	16.80
4			125	14.05	94.9	0.95	1.80	18.80
4			160	8.83	97.0	1.43	0.00	21.10
4			200	5.45	98.4	2.06	0.00	22.80
5	2,671	2,681						
5			20	28.19	59.3	0.00	5.60	7.60
5			25	27.33	65.2	0.05	5.40	8.30
5			32	26.31	70.6	0.08	5.20	9.20
5			40	25.55	76.0	0.13	5.00	10.30
5			50	24.50	80.9	0.19	4.70	11.50
5			63	22.89	85.3	0.29	4.30	13.00
5			80	20.46	89.1	0.43	3.70	14.80
5			100	17.31	92.3	0.67	3.00	16.80
5			125	13.41	94.9	1.02	1.80	18.80
5			160	8.16	97.0	1.53	0.00	21.10
5			200	4.73	98.4	2.20	0.00	22.80
6	3,825	3,832						
6			20	25.09	59.3	0.00	5.60	7.60
6			25	24.21	65.2	0.08	5.40	8.30
6			32	23.17	70.6	0.11	5.20	9.20
6			40	22.39	76.0	0.19	5.00	10.30
6			50	21.32	80.9	0.27	4.70	11.50
6			63	19.66	85.3	0.42	4.30	13.00
6			80	17.17	89.1	0.61	3.70	14.80
6			100	13.93	92.3	0.96	3.00	16.80
6			125	9.88	94.9	1.46	1.80	18.80
6			160	4.40	97.0	2.18	0.00	21.10
6			200	0.69	98.4	3.14	0.00	22.80
7	3,567	3,575						
7			20	25.69	59.3	0.00	5.60	7.60
7			25	24.82	65.2	0.07	5.40	8.30

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
7			32	23.78	70.6	0.11	5.20	9.20
7			40	23.01	76.0	0.18	5.00	10.30
7			50	21.94	80.9	0.25	4.70	11.50
7			63	20.29	85.3	0.39	4.30	13.00
7			80	17.81	89.1	0.57	3.70	14.80
7			100	14.59	92.3	0.89	3.00	16.80
7			125	10.58	94.9	1.36	1.80	18.80
7			160	5.15	97.0	2.04	0.00	21.10
7			200	1.50	98.4	2.93	0.00	22.80
8	3,119	3,128						
8			20	26.85	59.3	0.00	5.60	7.60
8			25	25.99	65.2	0.06	5.40	8.30
8			32	24.96	70.6	0.09	5.20	9.20
8			40	24.19	76.0	0.16	5.00	10.30
8			50	23.13	80.9	0.22	4.70	11.50
8			63	21.50	85.3	0.34	4.30	13.00
8			80	19.05	89.1	0.50	3.70	14.80
8			100	15.86	92.3	0.78	3.00	16.80
8			125	11.91	94.9	1.19	1.80	18.80
8			160	6.56	97.0	1.78	0.00	21.10
8			200	3.03	98.4	2.56	0.00	22.80
9	4,560	4,566						
9			20	23.56	59.3	0.00	5.60	7.60
9			25	22.67	65.2	0.09	5.40	8.30
9			32	21.63	70.6	0.14	5.20	9.20
9			40	20.84	76.0	0.23	5.00	10.30
9			50	19.74	80.9	0.32	4.70	11.50
9			63	18.06	85.3	0.50	4.30	13.00
9			80	15.53	89.1	0.73	3.70	14.80
9			100	12.22	92.3	1.14	3.00	16.80
9			125	8.07	94.9	1.74	1.80	18.80
9			160	2.46	97.0	2.60	0.00	21.10
9			200	-1.44	98.4	3.74	0.00	22.80
Sum								
Sum			20	39.75				
Sum			25	38.88				
Sum			32	37.85				
Sum			40	37.09				
Sum			50	36.02				
Sum			63	34.39				
Sum			80	31.93				
Sum			100	28.74				
Sum			125	24.78				
Sum			160	19.45				
Sum			200	15.94				

Noise sensitive area: RH Yläpelto Noise sensitive point: Finnish normal frequency - User defined (320)

Highest noise value at receptor: 8.0 m/s

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
1	5,808	5,813						
1			20	21.47	59.3	0.00	5.60	7.60
1			25	20.55	65.2	0.12	5.40	8.30
1			32	19.49	70.6	0.17	5.20	9.20
1			40	18.68	76.0	0.29	5.00	10.30
1			50	17.56	80.9	0.41	4.70	11.50
1			63	15.82	85.3	0.64	4.30	13.00
1			80	13.23	89.1	0.93	3.70	14.80
1			100	9.81	92.3	1.45	3.00	16.80
1			125	5.50	94.9	2.21	1.80	18.80
1			160	-0.35	97.0	3.31	0.00	21.10
1			200	-4.55	98.4	4.77	0.00	22.80
10	6,106	6,111						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
10			20	21.03	59.3	0.00	5.60	7.60
10			25	20.11	65.2	0.12	5.40	8.30
10			32	19.05	70.6	0.18	5.20	9.20
10			40	18.23	76.0	0.31	5.00	10.30
10			50	17.10	80.9	0.43	4.70	11.50
10			63	15.36	85.3	0.67	4.30	13.00
10			80	12.75	89.1	0.98	3.70	14.80
10			100	9.30	92.3	1.53	3.00	16.80
10			125	4.96	94.9	2.32	1.80	18.80
10			160	-0.95	97.0	3.48	0.00	21.10
10			200	-5.23	98.4	5.01	0.00	22.80
11	6,317	6,321						
11			20	20.74	59.3	0.00	5.60	7.60
11			25	19.81	65.2	0.13	5.40	8.30
11			32	18.75	70.6	0.19	5.20	9.20
11			40	17.92	76.0	0.32	5.00	10.30
11			50	16.79	80.9	0.44	4.70	11.50
11			63	15.04	85.3	0.70	4.30	13.00
11			80	12.42	89.1	1.01	3.70	14.80
11			100	8.95	92.3	1.58	3.00	16.80
11			125	4.58	94.9	2.40	1.80	18.80
11			160	-1.37	97.0	3.60	0.00	21.10
11			200	-5.70	98.4	5.18	0.00	22.80
12	5,986	5,991						
12			20	21.21	59.3	0.00	5.60	7.60
12			25	20.29	65.2	0.12	5.40	8.30
12			32	19.23	70.6	0.18	5.20	9.20
12			40	18.41	76.0	0.30	5.00	10.30
12			50	17.28	80.9	0.42	4.70	11.50
12			63	15.54	85.3	0.66	4.30	13.00
12			80	12.94	89.1	0.96	3.70	14.80
12			100	9.50	92.3	1.50	3.00	16.80
12			125	5.17	94.9	2.28	1.80	18.80
12			160	-0.71	97.0	3.41	0.00	21.10
12			200	-4.96	98.4	4.91	0.00	22.80
13	5,312	5,318						
13			20	22.24	59.3	0.00	5.60	7.60
13			25	21.33	65.2	0.11	5.40	8.30
13			32	20.28	70.6	0.16	5.20	9.20
13			40	19.47	76.0	0.27	5.00	10.30
13			50	18.36	80.9	0.37	4.70	11.50
13			63	16.65	85.3	0.58	4.30	13.00
13			80	14.09	89.1	0.85	3.70	14.80
13			100	10.71	92.3	1.33	3.00	16.80
13			125	6.46	94.9	2.02	1.80	18.80
13			160	0.71	97.0	3.03	0.00	21.10
13			200	-3.38	98.4	4.36	0.00	22.80
14	5,081	5,088						
14			20	22.62	59.3	0.00	5.60	7.60
14			25	21.72	65.2	0.10	5.40	8.30
14			32	20.67	70.6	0.15	5.20	9.20
14			40	19.87	76.0	0.25	5.00	10.30
14			50	18.76	80.9	0.36	4.70	11.50
14			63	17.06	85.3	0.56	4.30	13.00
14			80	14.51	89.1	0.81	3.70	14.80
14			100	11.15	92.3	1.27	3.00	16.80
14			125	6.94	94.9	1.93	1.80	18.80
14			160	1.22	97.0	2.90	0.00	21.10
14			200	-2.80	98.4	4.17	0.00	22.80
15	4,748	4,756						
15			20	23.21	59.3	0.00	5.60	7.60
15			25	22.31	65.2	0.10	5.40	8.30
15			32	21.27	70.6	0.14	5.20	9.20
15			40	20.47	76.0	0.24	5.00	10.30

To be continued on next page...

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Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
15			50	19.37	80.9	0.33	4.70	11.50
15			63	17.68	85.3	0.52	4.30	13.00
15			80	15.15	89.1	0.76	3.70	14.80
15			100	11.82	92.3	1.19	3.00	16.80
15			125	7.65	94.9	1.81	1.80	18.80
15			160	2.00	97.0	2.71	0.00	21.10
15			200	-1.95	98.4	3.90	0.00	22.80
16	4,207	4,215						
16			20	24.26	59.3	0.00	5.60	7.60
16			25	23.37	65.2	0.08	5.40	8.30
16			32	22.33	70.6	0.13	5.20	9.20
16			40	21.55	76.0	0.21	5.00	10.30
16			50	20.46	80.9	0.30	4.70	11.50
16			63	18.79	85.3	0.46	4.30	13.00
16			80	16.28	89.1	0.67	3.70	14.80
16			100	13.00	92.3	1.05	3.00	16.80
16			125	8.90	94.9	1.60	1.80	18.80
16			160	3.35	97.0	2.40	0.00	21.10
16			200	-0.45	98.4	3.46	0.00	22.80
17	3,630	3,638						
17			20	25.54	59.3	0.00	5.60	7.60
17			25	24.67	65.2	0.07	5.40	8.30
17			32	23.63	70.6	0.11	5.20	9.20
17			40	22.86	76.0	0.18	5.00	10.30
17			50	21.78	80.9	0.25	4.70	11.50
17			63	20.14	85.3	0.40	4.30	13.00
17			80	17.65	89.1	0.58	3.70	14.80
17			100	14.43	92.3	0.91	3.00	16.80
17			125	10.40	94.9	1.38	1.80	18.80
17			160	4.96	97.0	2.07	0.00	21.10
17			200	1.30	98.4	2.98	0.00	22.80
18	5,383	5,389						
18			20	22.12	59.3	0.00	5.60	7.60
18			25	21.22	65.2	0.11	5.40	8.30
18			32	20.16	70.6	0.16	5.20	9.20
18			40	19.36	76.0	0.27	5.00	10.30
18			50	18.24	80.9	0.38	4.70	11.50
18			63	16.53	85.3	0.59	4.30	13.00
18			80	13.96	89.1	0.86	3.70	14.80
18			100	10.57	92.3	1.35	3.00	16.80
18			125	6.32	94.9	2.05	1.80	18.80
18			160	0.55	97.0	3.07	0.00	21.10
18			200	-3.55	98.4	4.42	0.00	22.80
19	4,934	4,942						
19			20	22.88	59.3	0.00	5.60	7.60
19			25	21.98	65.2	0.10	5.40	8.30
19			32	20.93	70.6	0.15	5.20	9.20
19			40	20.13	76.0	0.25	5.00	10.30
19			50	19.03	80.9	0.35	4.70	11.50
19			63	17.33	85.3	0.54	4.30	13.00
19			80	14.78	89.1	0.79	3.70	14.80
19			100	11.44	92.3	1.24	3.00	16.80
19			125	7.24	94.9	1.88	1.80	18.80
19			160	1.56	97.0	2.82	0.00	21.10
19			200	-2.43	98.4	4.05	0.00	22.80
2	5,895	5,900						
2			20	21.34	59.3	0.00	5.60	7.60
2			25	20.42	65.2	0.12	5.40	8.30
2			32	19.36	70.6	0.18	5.20	9.20
2			40	18.54	76.0	0.29	5.00	10.30
2			50	17.42	80.9	0.41	4.70	11.50
2			63	15.69	85.3	0.65	4.30	13.00
2			80	13.09	89.1	0.94	3.70	14.80
2			100	9.66	92.3	1.47	3.00	16.80

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
2			125	5.34	94.9	2.24	1.80	18.80
2			160	-0.53	97.0	3.36	0.00	21.10
2			200	-4.75	98.4	4.84	0.00	22.80
20	4,463	4,471						
20			20	23.75	59.3	0.00	5.60	7.60
20			25	22.86	65.2	0.09	5.40	8.30
20			32	21.81	70.6	0.13	5.20	9.20
20			40	21.02	76.0	0.22	5.00	10.30
20			50	19.93	80.9	0.31	4.70	11.50
20			63	18.25	85.3	0.49	4.30	13.00
20			80	15.73	89.1	0.72	3.70	14.80
20			100	12.43	92.3	1.12	3.00	16.80
20			125	8.29	94.9	1.70	1.80	18.80
20			160	2.70	97.0	2.55	0.00	21.10
20			200	-1.17	98.4	3.67	0.00	22.80
21	3,827	3,835						
21			20	25.08	59.3	0.00	5.60	7.60
21			25	24.20	65.2	0.08	5.40	8.30
21			32	23.16	70.6	0.12	5.20	9.20
21			40	22.39	76.0	0.19	5.00	10.30
21			50	21.31	80.9	0.27	4.70	11.50
21			63	19.65	85.3	0.42	4.30	13.00
21			80	17.16	89.1	0.61	3.70	14.80
21			100	13.92	92.3	0.96	3.00	16.80
21			125	9.87	94.9	1.46	1.80	18.80
21			160	4.39	97.0	2.19	0.00	21.10
21			200	0.68	98.4	3.14	0.00	22.80
22	3,167	3,177						
22			20	26.71	59.3	0.00	5.60	7.60
22			25	25.85	65.2	0.06	5.40	8.30
22			32	24.82	70.6	0.10	5.20	9.20
22			40	24.05	76.0	0.16	5.00	10.30
22			50	22.99	80.9	0.22	4.70	11.50
22			63	21.36	85.3	0.35	4.30	13.00
22			80	18.90	89.1	0.51	3.70	14.80
22			100	15.72	92.3	0.79	3.00	16.80
22			125	11.75	94.9	1.21	1.80	18.80
22			160	6.40	97.0	1.81	0.00	21.10
22			200	2.85	98.4	2.61	0.00	22.80
23	2,778	2,788						
23			20	27.85	59.3	0.00	5.60	7.60
23			25	26.99	65.2	0.06	5.40	8.30
23			32	25.96	70.6	0.08	5.20	9.20
23			40	25.21	76.0	0.14	5.00	10.30
23			50	24.15	80.9	0.20	4.70	11.50
23			63	22.54	85.3	0.31	4.30	13.00
23			80	20.10	89.1	0.45	3.70	14.80
23			100	16.95	92.3	0.70	3.00	16.80
23			125	13.03	94.9	1.06	1.80	18.80
23			160	7.76	97.0	1.59	0.00	21.10
23			200	4.31	98.4	2.29	0.00	22.80
24	2,673	2,683						
24			20	28.18	59.3	0.00	5.60	7.60
24			25	27.33	65.2	0.05	5.40	8.30
24			32	26.30	70.6	0.08	5.20	9.20
24			40	25.55	76.0	0.13	5.00	10.30
24			50	24.49	80.9	0.19	4.70	11.50
24			63	22.88	85.3	0.30	4.30	13.00
24			80	20.45	89.1	0.43	3.70	14.80
24			100	17.31	92.3	0.67	3.00	16.80
24			125	13.41	94.9	1.02	1.80	18.80
24			160	8.15	97.0	1.53	0.00	21.10
24			200	4.73	98.4	2.20	0.00	22.80
3	5,537	5,542						

To be continued on next page...

Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
3			20	21.88	59.3	0.00	5.60	7.60
3			25	20.97	65.2	0.11	5.40	8.30
3			32	19.91	70.6	0.17	5.20	9.20
3			40	19.10	76.0	0.28	5.00	10.30
3			50	17.99	80.9	0.39	4.70	11.50
3			63	16.27	85.3	0.61	4.30	13.00
3			80	13.69	89.1	0.89	3.70	14.80
3			100	10.29	92.3	1.39	3.00	16.80
3			125	6.02	94.9	2.11	1.80	18.80
3			160	0.22	97.0	3.16	0.00	21.10
3			200	-3.92	98.4	4.54	0.00	22.80
4	5,313	5,318						
4			20	22.24	59.3	0.00	5.60	7.60
4			25	21.33	65.2	0.11	5.40	8.30
4			32	20.28	70.6	0.16	5.20	9.20
4			40	19.47	76.0	0.27	5.00	10.30
4			50	18.36	80.9	0.37	4.70	11.50
4			63	16.65	85.3	0.59	4.30	13.00
4			80	14.09	89.1	0.85	3.70	14.80
4			100	10.71	92.3	1.33	3.00	16.80
4			125	6.46	94.9	2.02	1.80	18.80
4			160	0.70	97.0	3.03	0.00	21.10
4			200	-3.38	98.4	4.36	0.00	22.80
5	4,816	4,823						
5			20	23.09	59.3	0.00	5.60	7.60
5			25	22.19	65.2	0.10	5.40	8.30
5			32	21.14	70.6	0.14	5.20	9.20
5			40	20.35	76.0	0.24	5.00	10.30
5			50	19.25	80.9	0.34	4.70	11.50
5			63	17.56	85.3	0.53	4.30	13.00
5			80	15.01	89.1	0.77	3.70	14.80
5			100	11.68	92.3	1.21	3.00	16.80
5			125	7.50	94.9	1.83	1.80	18.80
5			160	1.84	97.0	2.75	0.00	21.10
5			200	-2.12	98.4	3.95	0.00	22.80
6	6,371	6,376						
6			20	20.66	59.3	0.00	5.60	7.60
6			25	19.74	65.2	0.13	5.40	8.30
6			32	18.67	70.6	0.19	5.20	9.20
6			40	17.85	76.0	0.32	5.00	10.30
6			50	16.71	80.9	0.45	4.70	11.50
6			63	14.96	85.3	0.70	4.30	13.00
6			80	12.34	89.1	1.02	3.70	14.80
6			100	8.87	92.3	1.59	3.00	16.80
6			125	4.49	94.9	2.42	1.80	18.80
6			160	-1.47	97.0	3.63	0.00	21.10
6			200	-5.82	98.4	5.23	0.00	22.80
7	5,720	5,725						
7			20	21.60	59.3	0.00	5.60	7.60
7			25	20.68	65.2	0.11	5.40	8.30
7			32	19.63	70.6	0.17	5.20	9.20
7			40	18.81	76.0	0.29	5.00	10.30
7			50	17.70	80.9	0.40	4.70	11.50
7			63	15.97	85.3	0.63	4.30	13.00
7			80	13.38	89.1	0.92	3.70	14.80
7			100	9.96	92.3	1.43	3.00	16.80
7			125	5.67	94.9	2.18	1.80	18.80
7			160	-0.17	97.0	3.26	0.00	21.10
7			200	-4.35	98.4	4.69	0.00	22.80
8	5,243	5,249						
8			20	22.35	59.3	0.00	5.60	7.60
8			25	21.45	65.2	0.10	5.40	8.30
8			32	20.40	70.6	0.16	5.20	9.20
8			40	19.59	76.0	0.26	5.00	10.30

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Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

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WTG No.	Distance [m]	Sound distance [m]	Frequency [Hz]	Calculated [dB]	LwA,ref [dB(A)]	Aatm [dB]	Agr [dB]	Lsigma [dB]
8			50	18.48	80.9	0.37	4.70	11.50
8			63	16.77	85.3	0.58	4.30	13.00
8			80	14.21	89.1	0.84	3.70	14.80
8			100	10.84	92.3	1.31	3.00	16.80
8			125	6.60	94.9	1.99	1.80	18.80
8			160	0.86	97.0	2.99	0.00	21.10
8			200	-3.20	98.4	4.30	0.00	22.80
9	6,725	6,729						
9			20	20.20	59.3	0.00	5.60	7.60
9			25	19.26	65.2	0.13	5.40	8.30
9			32	18.19	70.6	0.20	5.20	9.20
9			40	17.36	76.0	0.34	5.00	10.30
9			50	16.22	80.9	0.47	4.70	11.50
9			63	14.45	85.3	0.74	4.30	13.00
9			80	11.82	89.1	1.08	3.70	14.80
9			100	8.31	92.3	1.68	3.00	16.80
9			125	3.88	94.9	2.56	1.80	18.80
9			160	-2.14	97.0	3.84	0.00	21.10
9			200	-6.58	98.4	5.52	0.00	22.80
Sum								
Sum			20	37.45				
Sum			25	36.56				
Sum			32	35.52				
Sum			40	34.73				
Sum			50	33.64				
Sum			63	31.97				
Sum			80	29.45				
Sum			100	26.17				
Sum			125	22.06				
Sum			160	16.52				
Sum			200	12.74				

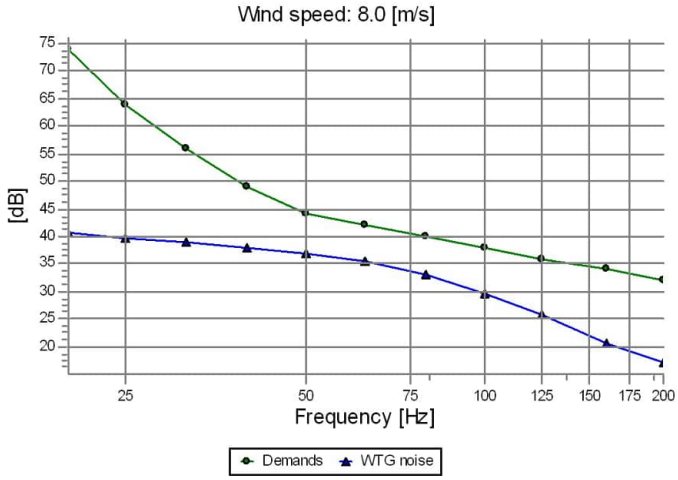
Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

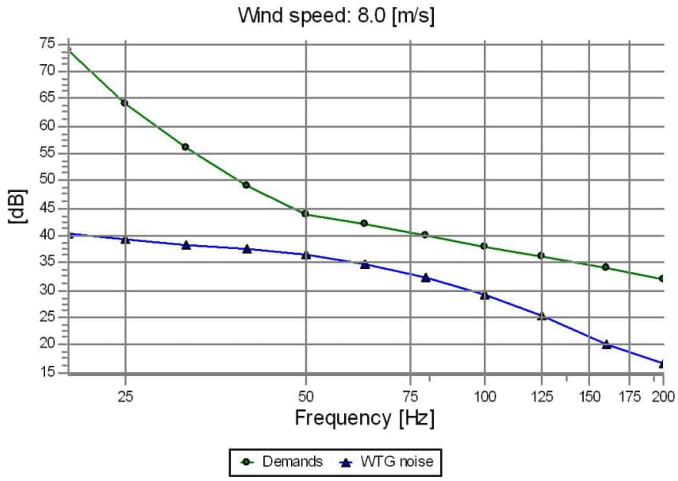
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Etelälahti 2 Noise sensitive point: Finnish normal frequency - User defined (305)



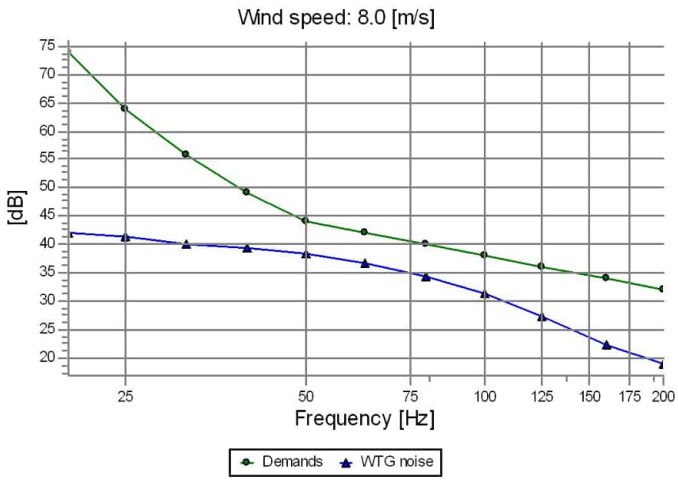
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.69	Yes
25.0	64.00	39.83	Yes
31.5	56.00	38.80	Yes
40.0	49.00	38.04	Yes
50.0	44.00	36.98	Yes
63.0	42.00	35.36	Yes
80.0	40.00	32.92	Yes
100.0	38.00	29.76	Yes
125.0	36.00	25.83	Yes
160.0	34.00	20.54	Yes
200.0	32.00	17.09	Yes

HH Etelälahti 5 Noise sensitive point: Finnish normal frequency - User defined (303)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.22	Yes
25.0	64.00	39.36	Yes
31.5	56.00	38.33	Yes
40.0	49.00	37.57	Yes
50.0	44.00	36.50	Yes
63.0	42.00	34.88	Yes
80.0	40.00	32.42	Yes
100.0	38.00	29.24	Yes
125.0	36.00	25.30	Yes
160.0	34.00	19.97	Yes
200.0	32.00	16.48	Yes

HH Eteläniemi 1 Noise sensitive point: Finnish normal frequency - User defined (304)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	42.06	Yes
25.0	64.00	41.21	Yes
31.5	56.00	40.19	Yes
40.0	49.00	39.44	Yes
50.0	44.00	38.39	Yes
63.0	42.00	36.79	Yes
80.0	40.00	34.37	Yes
100.0	38.00	31.25	Yes
125.0	36.00	27.38	Yes
160.0	34.00	22.18	Yes
200.0	32.00	18.84	Yes

Project:
Junnunmäen tuulivoimahanke

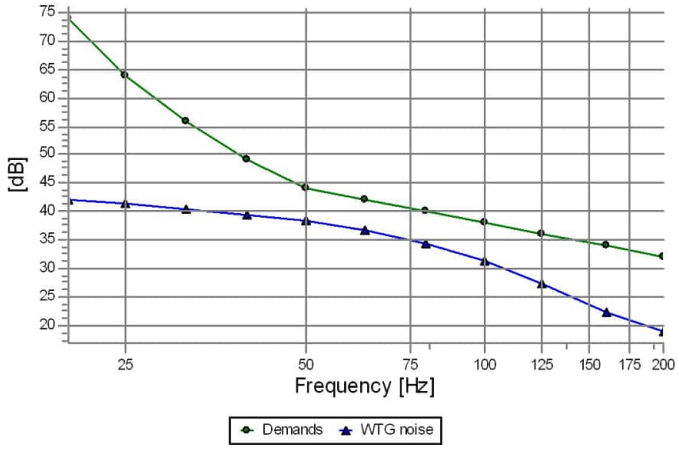
Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Eteläniemi 2 Noise sensitive point: Finnish normal frequency - User defined (284)

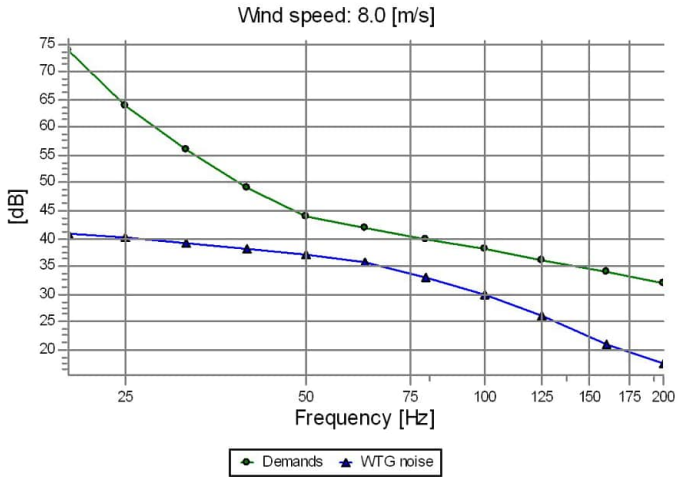
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	42.12	Yes
25.0	64.00	41.27	Yes
31.5	56.00	40.25	Yes
40.0	49.00	39.50	Yes
50.0	44.00	38.45	Yes
63.0	42.00	36.85	Yes
80.0	40.00	34.43	Yes
100.0	38.00	31.31	Yes
125.0	36.00	27.45	Yes
160.0	34.00	22.25	Yes
200.0	32.00	18.92	Yes

HH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (295)

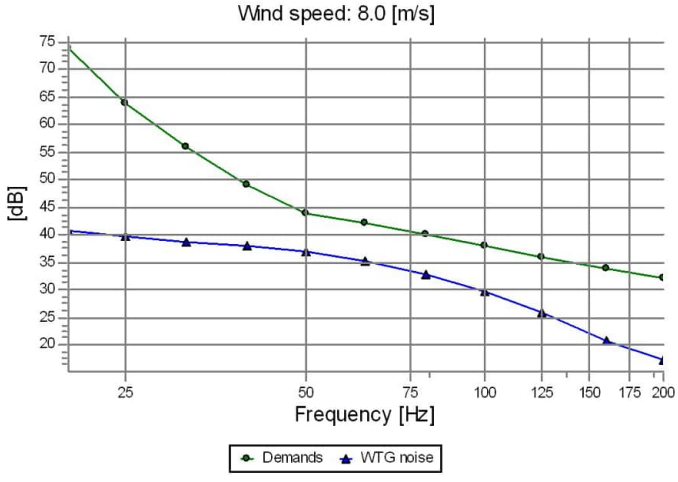
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.87	Yes
25.0	64.00	40.02	Yes
31.5	56.00	38.99	Yes
40.0	49.00	38.23	Yes
50.0	44.00	37.17	Yes
63.0	42.00	35.56	Yes
80.0	40.00	33.12	Yes
100.0	38.00	29.97	Yes
125.0	36.00	26.06	Yes
160.0	34.00	20.80	Yes
200.0	32.00	17.39	Yes

HH Haukijärvi 2 Noise sensitive point: Finnish normal frequency - User defined (296)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.71	Yes
25.0	64.00	39.85	Yes
31.5	56.00	38.82	Yes
40.0	49.00	38.06	Yes
50.0	44.00	37.00	Yes
63.0	42.00	35.39	Yes
80.0	40.00	32.95	Yes
100.0	38.00	29.79	Yes
125.0	36.00	25.88	Yes
160.0	34.00	20.61	Yes
200.0	32.00	17.18	Yes

Project:
Junnunmäen tuulivoimahanke

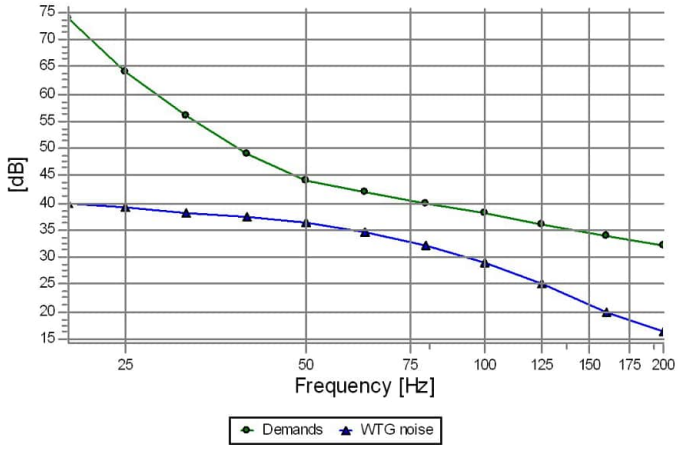
Licensed user:
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Haukijärvi 3 Noise sensitive point: Finnish normal frequency - User defined (294)

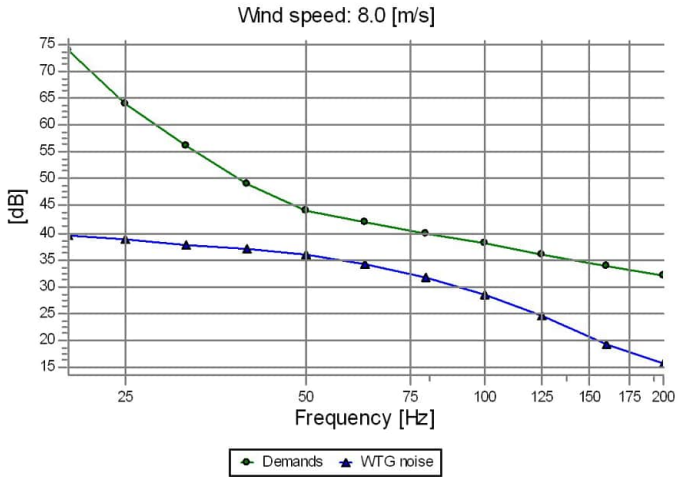
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.02	Yes
25.0	64.00	39.16	Yes
31.5	56.00	38.13	Yes
40.0	49.00	37.36	Yes
50.0	44.00	36.30	Yes
63.0	42.00	34.67	Yes
80.0	40.00	32.22	Yes
100.0	38.00	29.04	Yes
125.0	36.00	25.09	Yes
160.0	34.00	19.77	Yes
200.0	32.00	16.29	Yes

HH Hiekkaranta Noise sensitive point: Finnish normal frequency - User defined (300)

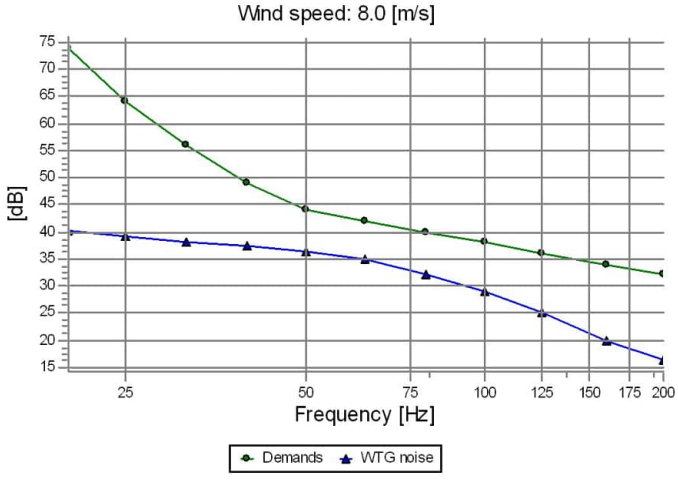
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.58	Yes
25.0	64.00	38.71	Yes
31.5	56.00	37.68	Yes
40.0	49.00	36.91	Yes
50.0	44.00	35.84	Yes
63.0	42.00	34.20	Yes
80.0	40.00	31.74	Yes
100.0	38.00	28.54	Yes
125.0	36.00	24.56	Yes
160.0	34.00	19.19	Yes
200.0	32.00	15.63	Yes

HH Iso Mäkijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (292)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.12	Yes
25.0	64.00	39.25	Yes
31.5	56.00	38.22	Yes
40.0	49.00	37.46	Yes
50.0	44.00	36.39	Yes
63.0	42.00	34.76	Yes
80.0	40.00	32.29	Yes
100.0	38.00	29.10	Yes
125.0	36.00	25.13	Yes
160.0	34.00	19.77	Yes
200.0	32.00	16.22	Yes

Project:
Junnunmäen tuulivoimahanke

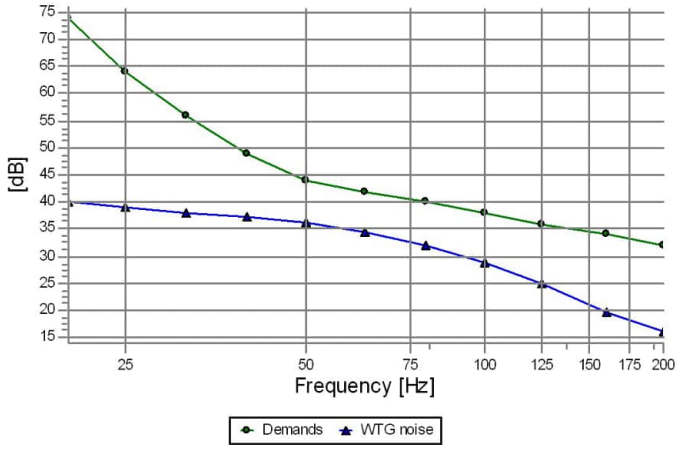
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+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Kallioniemi 2 Noise sensitive point: Finnish normal frequency - User defined (290)

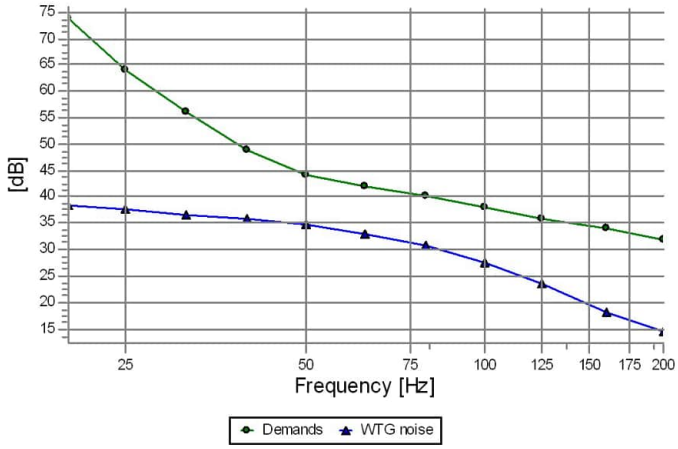
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.92	Yes
25.0	64.00	39.06	Yes
31.5	56.00	38.02	Yes
40.0	49.00	37.26	Yes
50.0	44.00	36.19	Yes
63.0	42.00	34.56	Yes
80.0	40.00	32.09	Yes
100.0	38.00	28.90	Yes
125.0	36.00	24.92	Yes
160.0	34.00	19.56	Yes
200.0	32.00	16.01	Yes

HH Kauvanjärvi 5 Noise sensitive point: Finnish normal frequency - User defined (301)

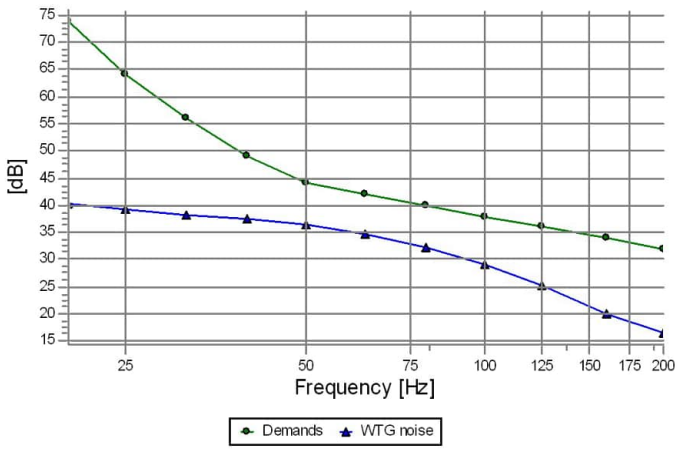
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.50	Yes
25.0	64.00	37.63	Yes
31.5	56.00	36.59	Yes
40.0	49.00	35.82	Yes
50.0	44.00	34.74	Yes
63.0	42.00	33.09	Yes
80.0	40.00	30.61	Yes
100.0	38.00	27.38	Yes
125.0	36.00	23.35	Yes
160.0	34.00	17.93	Yes
200.0	32.00	14.31	Yes

HH Kellarimäentie Noise sensitive point: Finnish normal frequency - User defined (331)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.17	Yes
25.0	64.00	39.31	Yes
31.5	56.00	38.28	Yes
40.0	49.00	37.51	Yes
50.0	44.00	36.45	Yes
63.0	42.00	34.82	Yes
80.0	40.00	32.37	Yes
100.0	38.00	29.19	Yes
125.0	36.00	25.24	Yes
160.0	34.00	19.92	Yes
200.0	32.00	16.42	Yes

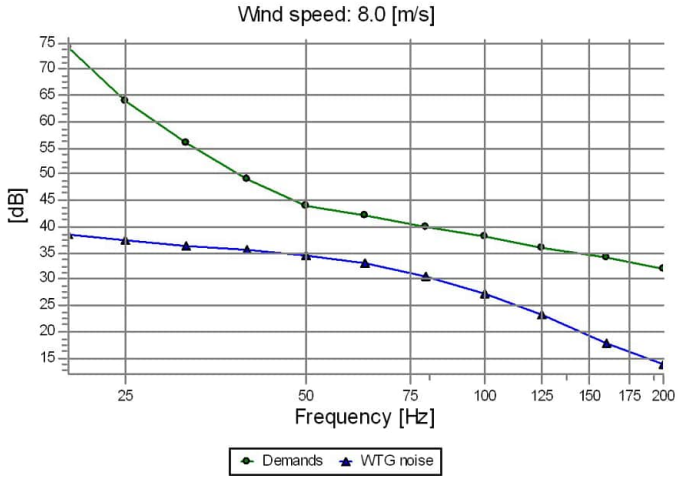
Project:
Junnunmäen tuulivoimahanke

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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
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Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

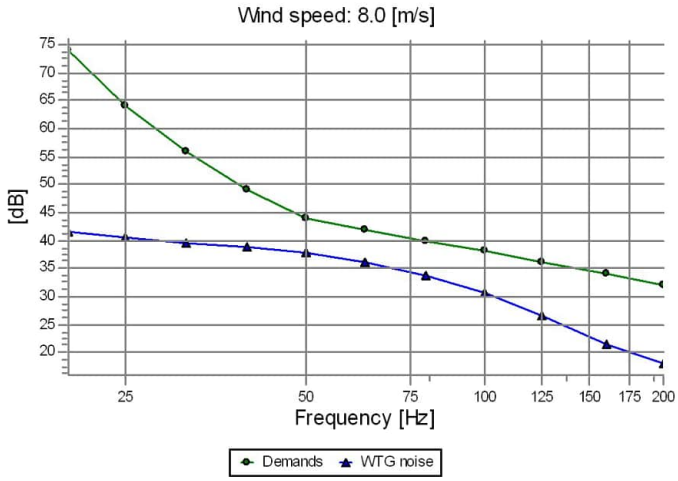
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Koivuharju Noise sensitive point: Finnish normal frequency - User defined (281)



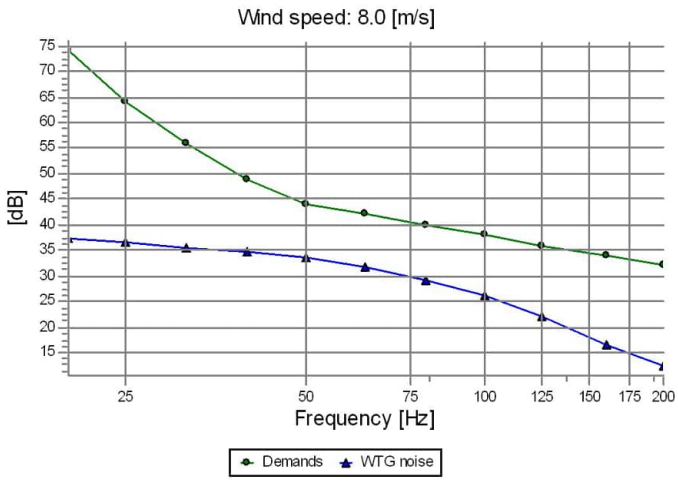
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.40	Yes
25.0	64.00	37.52	Yes
31.5	56.00	36.48	Yes
40.0	49.00	35.70	Yes
50.0	44.00	34.62	Yes
63.0	42.00	32.96	Yes
80.0	40.00	30.46	Yes
100.0	38.00	27.21	Yes
125.0	36.00	23.15	Yes
160.0	34.00	17.66	Yes
200.0	32.00	13.95	Yes

HH Koivula 3 Noise sensitive point: Finnish normal frequency - User defined (291)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	41.43	Yes
25.0	64.00	40.57	Yes
31.5	56.00	39.55	Yes
40.0	49.00	38.79	Yes
50.0	44.00	37.74	Yes
63.0	42.00	36.13	Yes
80.0	40.00	33.69	Yes
100.0	38.00	30.55	Yes
125.0	36.00	26.65	Yes
160.0	34.00	21.40	Yes
200.0	32.00	18.00	Yes

HH Korsu 1 Noise sensitive point: Finnish normal frequency - User defined (299)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.34	Yes
25.0	64.00	36.45	Yes
31.5	56.00	35.41	Yes
40.0	49.00	34.62	Yes
50.0	44.00	33.53	Yes
63.0	42.00	31.85	Yes
80.0	40.00	29.33	Yes
100.0	38.00	26.04	Yes
125.0	36.00	21.92	Yes
160.0	34.00	16.36	Yes
200.0	32.00	12.56	Yes

Project:
Junnunmäen tuulivoimahanke

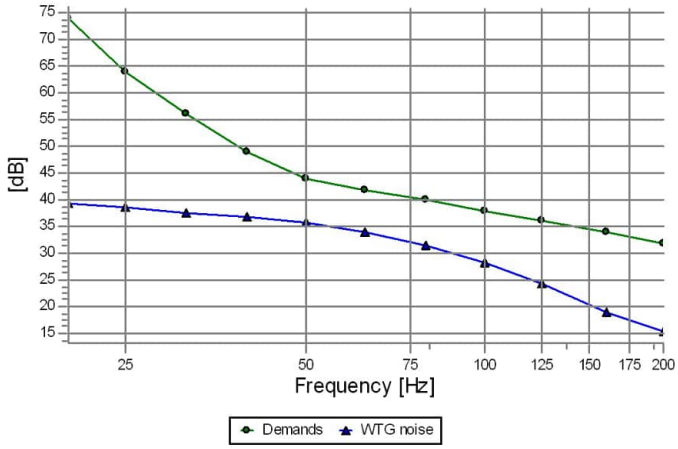
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Kuusela Noise sensitive point: Finnish normal frequency - User defined (298)

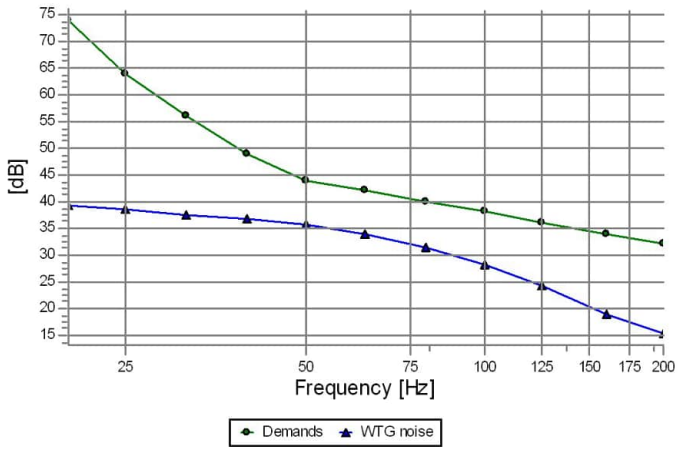
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.37	Yes
25.0	64.00	38.50	Yes
31.5	56.00	37.46	Yes
40.0	49.00	36.69	Yes
50.0	44.00	35.62	Yes
63.0	42.00	33.98	Yes
80.0	40.00	31.51	Yes
100.0	38.00	28.30	Yes
125.0	36.00	24.31	Yes
160.0	34.00	18.92	Yes
200.0	32.00	15.34	Yes

HH Lammaslahti 2 Noise sensitive point: Finnish normal frequency - User defined (283)

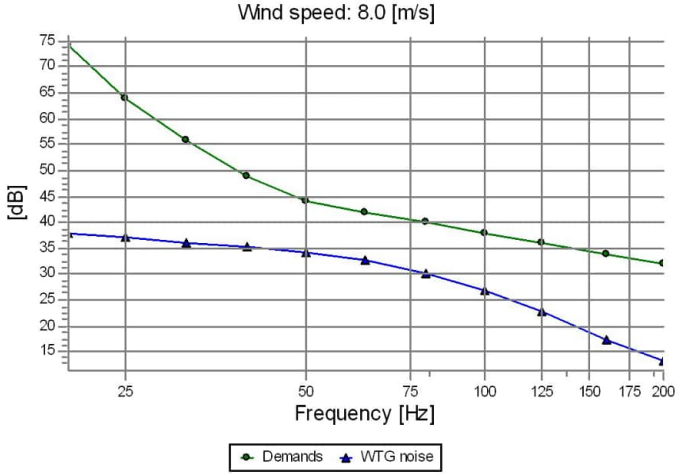
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.24	Yes
25.0	64.00	38.37	Yes
31.5	56.00	37.33	Yes
40.0	49.00	36.56	Yes
50.0	44.00	35.49	Yes
63.0	42.00	33.85	Yes
80.0	40.00	31.37	Yes
100.0	38.00	28.15	Yes
125.0	36.00	24.14	Yes
160.0	34.00	18.73	Yes
200.0	32.00	15.11	Yes

HH Lehtoharju 2 Noise sensitive point: Finnish normal frequency - User defined (293)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.03	Yes
25.0	64.00	37.15	Yes
31.5	56.00	36.11	Yes
40.0	49.00	35.33	Yes
50.0	44.00	34.24	Yes
63.0	42.00	32.58	Yes
80.0	40.00	30.07	Yes
100.0	38.00	26.80	Yes
125.0	36.00	22.72	Yes
160.0	34.00	17.21	Yes
200.0	32.00	13.46	Yes

Project:
Junnunmäen tuulivoimahanke

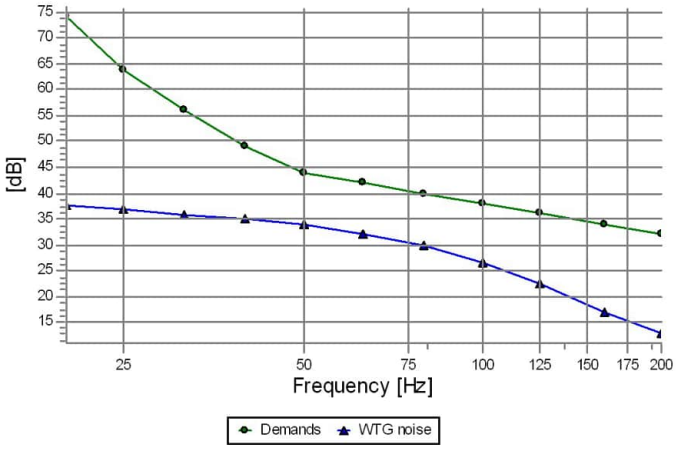
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Leinolanlahti Noise sensitive point: Finnish normal frequency - User defined (297)

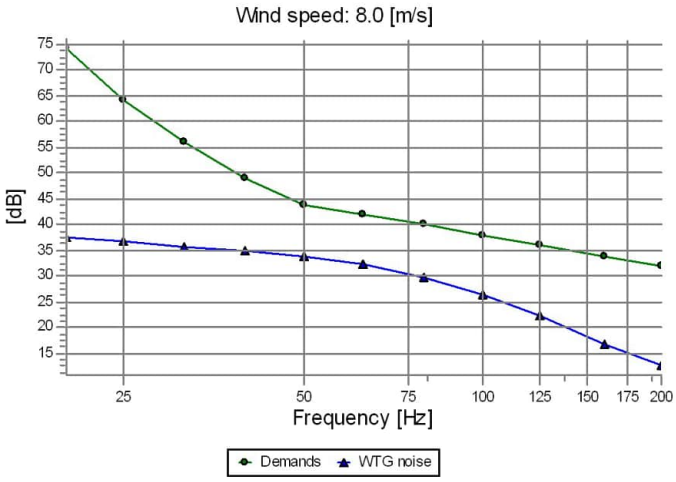
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.72	Yes
25.0	64.00	36.83	Yes
31.5	56.00	35.79	Yes
40.0	49.00	35.00	Yes
50.0	44.00	33.92	Yes
63.0	42.00	32.25	Yes
80.0	40.00	29.73	Yes
100.0	38.00	26.45	Yes
125.0	36.00	22.36	Yes
160.0	34.00	16.82	Yes
200.0	32.00	13.04	Yes

HH Mustalahti 1 Noise sensitive point: Finnish normal frequency - User defined (280)

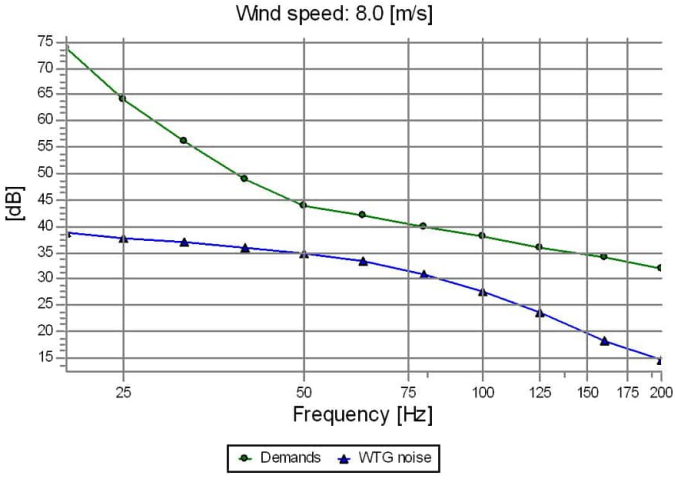
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.66	Yes
25.0	64.00	36.78	Yes
31.5	56.00	35.73	Yes
40.0	49.00	34.95	Yes
50.0	44.00	33.86	Yes
63.0	42.00	32.18	Yes
80.0	40.00	29.67	Yes
100.0	38.00	26.38	Yes
125.0	36.00	22.28	Yes
160.0	34.00	16.72	Yes
200.0	32.00	12.92	Yes

HH Mustalahti 6 Noise sensitive point: Finnish normal frequency - User defined (282)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.76	Yes
25.0	64.00	37.88	Yes
31.5	56.00	36.84	Yes
40.0	49.00	36.07	Yes
50.0	44.00	34.99	Yes
63.0	42.00	33.34	Yes
80.0	40.00	30.85	Yes
100.0	38.00	27.61	Yes
125.0	36.00	23.57	Yes
160.0	34.00	18.12	Yes
200.0	32.00	14.45	Yes

Project:
Junnunmäen tuulivoimahanke

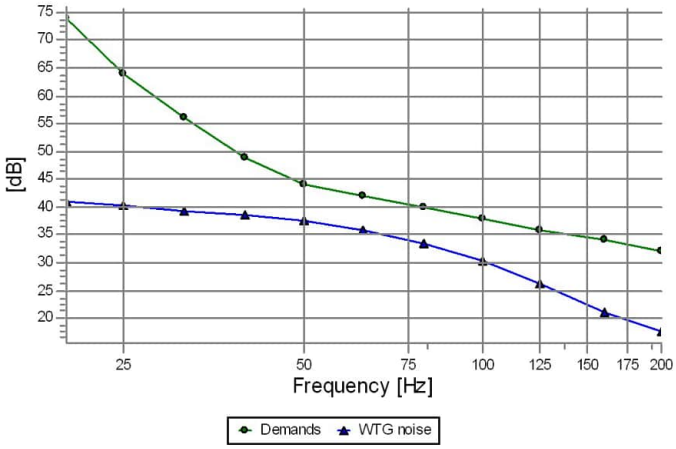
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Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Pajaniemi 1 Noise sensitive point: Finnish normal frequency - User defined (289)

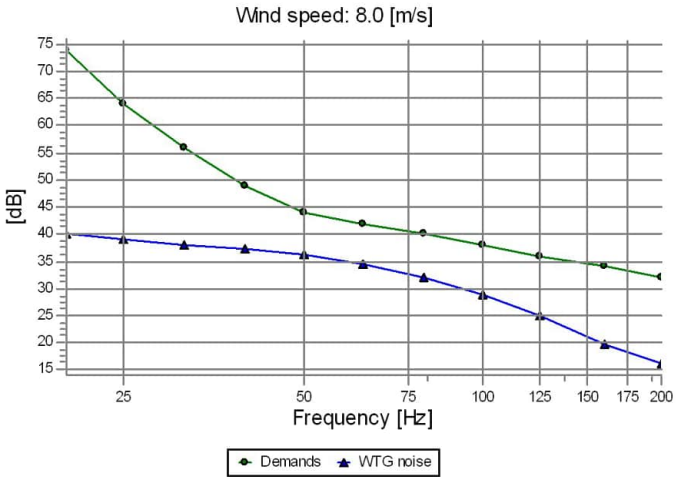
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	41.15	Yes
25.0	64.00	40.30	Yes
31.5	56.00	39.27	Yes
40.0	49.00	38.51	Yes
50.0	44.00	37.45	Yes
63.0	42.00	35.84	Yes
80.0	40.00	33.40	Yes
100.0	38.00	30.24	Yes
125.0	36.00	26.33	Yes
160.0	34.00	21.05	Yes
200.0	32.00	17.60	Yes

HH Pieni Mäkijärvi Noise sensitive point: Finnish normal frequency - User defined (287)

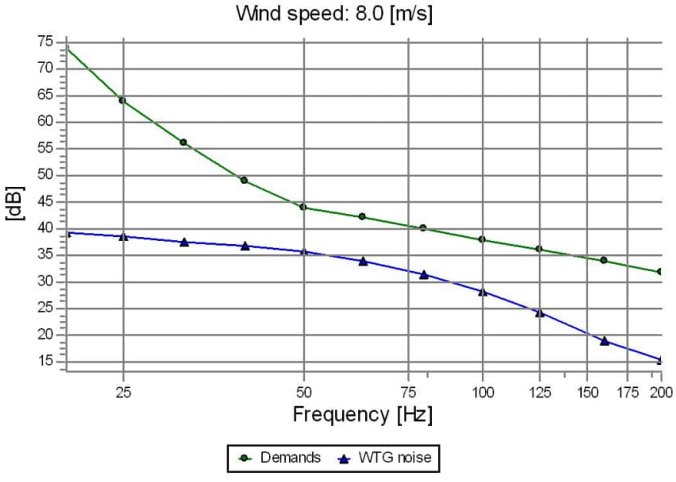
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.98	Yes
25.0	64.00	39.11	Yes
31.5	56.00	38.08	Yes
40.0	49.00	37.32	Yes
50.0	44.00	36.25	Yes
63.0	42.00	34.62	Yes
80.0	40.00	32.15	Yes
100.0	38.00	28.96	Yes
125.0	36.00	24.98	Yes
160.0	34.00	19.62	Yes
200.0	32.00	16.06	Yes

HH Pohjoispäänsuo Noise sensitive point: Finnish normal frequency - User defined (285)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.39	Yes
25.0	64.00	38.52	Yes
31.5	56.00	37.49	Yes
40.0	49.00	36.72	Yes
50.0	44.00	35.64	Yes
63.0	42.00	34.00	Yes
80.0	40.00	31.53	Yes
100.0	38.00	28.32	Yes
125.0	36.00	24.32	Yes
160.0	34.00	18.92	Yes
200.0	32.00	15.32	Yes

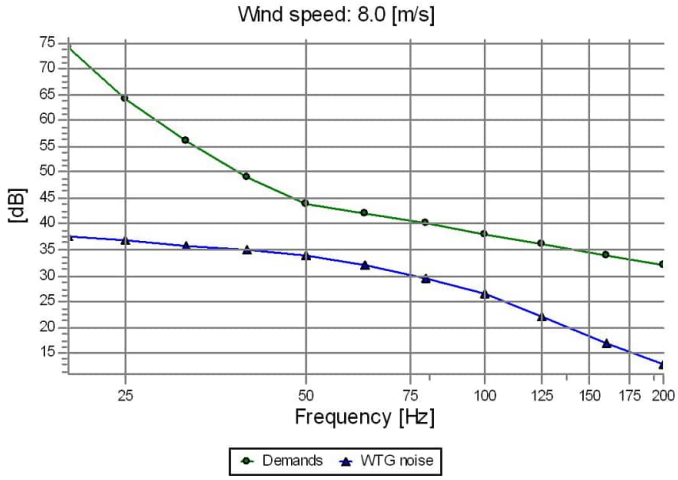
Project:
Junnunmäen tuulivoimahanke

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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

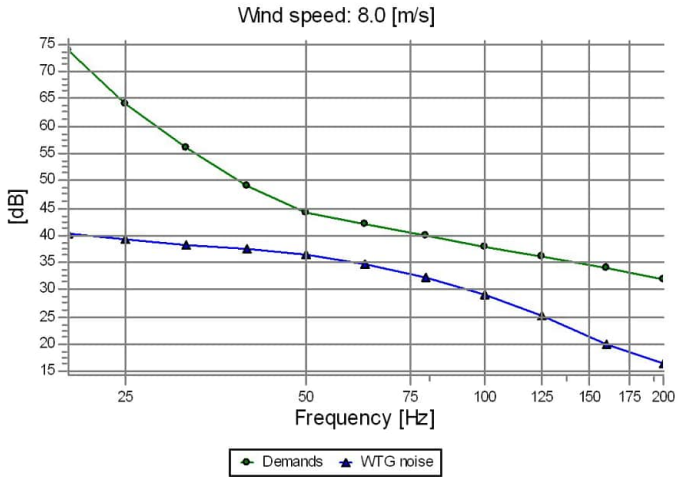
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Rampsunniemi Noise sensitive point: Finnish normal frequency - User defined (302)



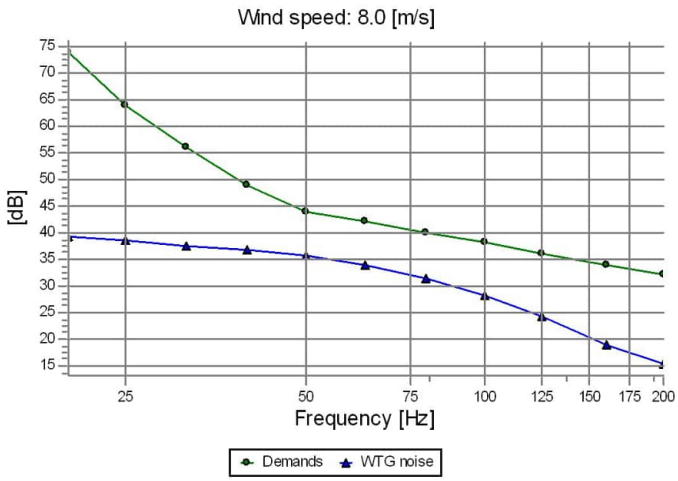
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.58	Yes
25.0	64.00	36.70	Yes
31.5	56.00	35.66	Yes
40.0	49.00	34.87	Yes
50.0	44.00	33.78	Yes
63.0	42.00	32.12	Yes
80.0	40.00	29.61	Yes
100.0	38.00	26.33	Yes
125.0	36.00	22.25	Yes
160.0	34.00	16.73	Yes
200.0	32.00	12.99	Yes

HH Rantala 1 Noise sensitive point: Finnish normal frequency - User defined (288)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.15	Yes
25.0	64.00	39.29	Yes
31.5	56.00	38.26	Yes
40.0	49.00	37.50	Yes
50.0	44.00	36.43	Yes
63.0	42.00	34.81	Yes
80.0	40.00	32.35	Yes
100.0	38.00	29.18	Yes
125.0	36.00	25.23	Yes
160.0	34.00	19.92	Yes
200.0	32.00	16.43	Yes

HH Suonpää 1 Noise sensitive point: Finnish normal frequency - User defined (286)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.25	Yes
25.0	64.00	38.38	Yes
31.5	56.00	37.34	Yes
40.0	49.00	36.57	Yes
50.0	44.00	35.50	Yes
63.0	42.00	33.86	Yes
80.0	40.00	31.38	Yes
100.0	38.00	28.17	Yes
125.0	36.00	24.17	Yes
160.0	34.00	18.77	Yes
200.0	32.00	15.17	Yes

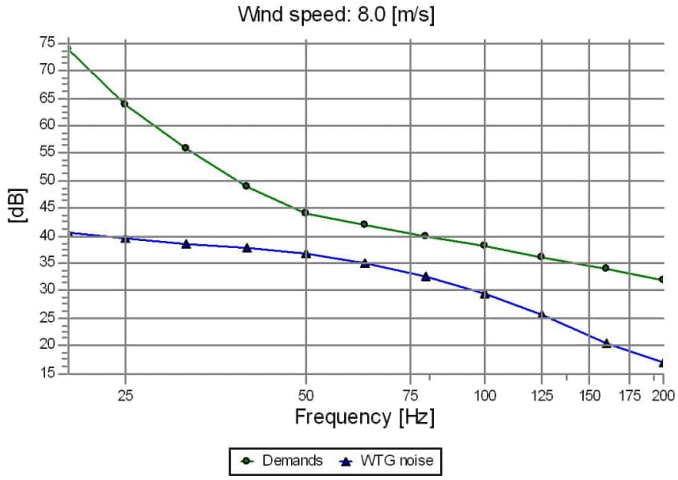
Project:
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+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

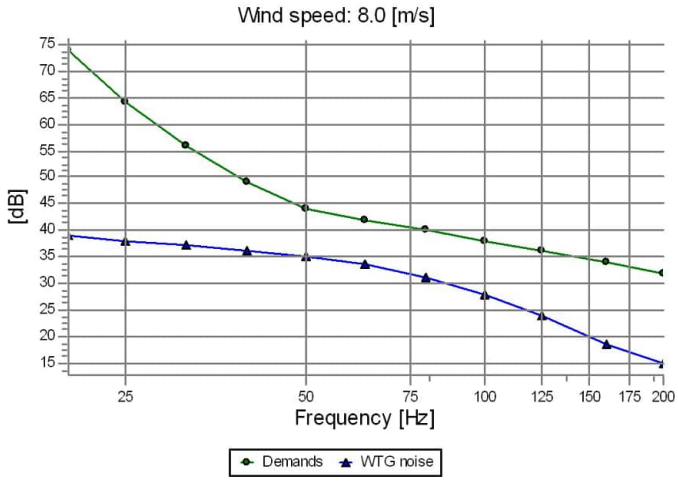
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

HH Viitajärvi 3 Noise sensitive point: Finnish normal frequency - User defined (306)



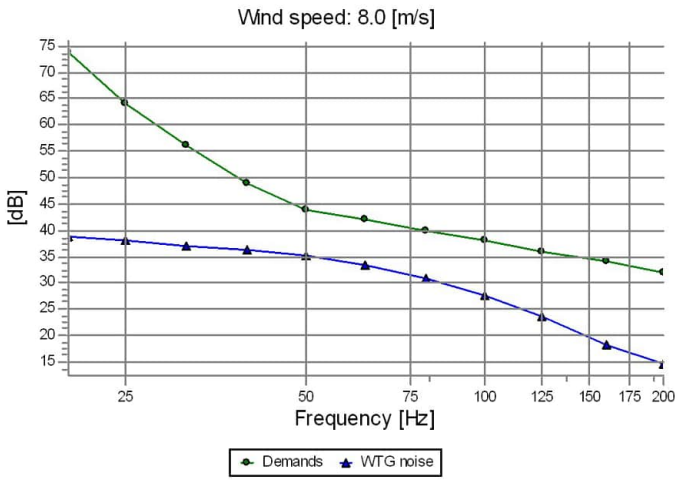
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.49	Yes
25.0	64.00	39.63	Yes
31.5	56.00	38.60	Yes
40.0	49.00	37.84	Yes
50.0	44.00	36.78	Yes
63.0	42.00	35.16	Yes
80.0	40.00	32.71	Yes
100.0	38.00	29.55	Yes
125.0	36.00	25.62	Yes
160.0	34.00	20.32	Yes
200.0	32.00	16.86	Yes

RH Haukijärvi 1 Noise sensitive point: Finnish normal frequency - User defined (322)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.98	Yes
25.0	64.00	38.10	Yes
31.5	56.00	37.07	Yes
40.0	49.00	36.29	Yes
50.0	44.00	35.22	Yes
63.0	42.00	33.57	Yes
80.0	40.00	31.09	Yes
100.0	38.00	27.87	Yes
125.0	36.00	23.86	Yes
160.0	34.00	18.44	Yes
200.0	32.00	14.83	Yes

RH Hiekkala Noise sensitive point: Finnish normal frequency - User defined (311)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.79	Yes
25.0	64.00	37.91	Yes
31.5	56.00	36.87	Yes
40.0	49.00	36.09	Yes
50.0	44.00	35.02	Yes
63.0	42.00	33.36	Yes
80.0	40.00	30.87	Yes
100.0	38.00	27.63	Yes
125.0	36.00	23.59	Yes
160.0	34.00	18.12	Yes
200.0	32.00	14.44	Yes

Project:
Junnunmäen tuulivoimahanke

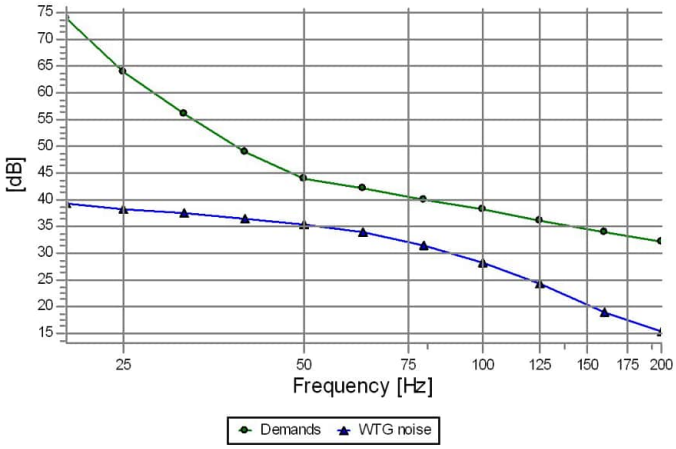
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Honkala Noise sensitive point: Finnish normal frequency - User defined (329)

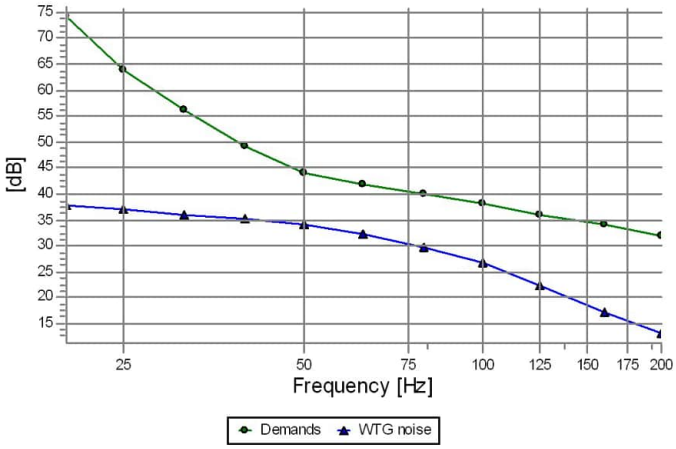
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.17	Yes
25.0	64.00	38.30	Yes
31.5	56.00	37.26	Yes
40.0	49.00	36.49	Yes
50.0	44.00	35.42	Yes
63.0	42.00	33.78	Yes
80.0	40.00	31.30	Yes
100.0	38.00	28.09	Yes
125.0	36.00	24.10	Yes
160.0	34.00	18.71	Yes
200.0	32.00	15.13	Yes

RH Kauvanjärvi 2 Noise sensitive point: Finnish normal frequency - User defined (324)

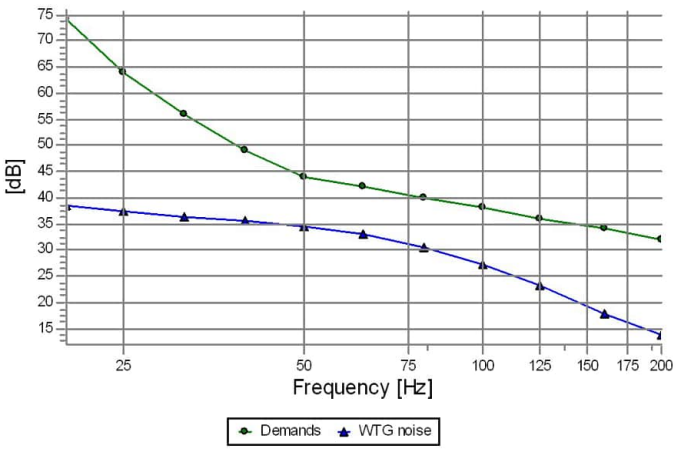
Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.80	Yes
25.0	64.00	36.91	Yes
31.5	56.00	35.87	Yes
40.0	49.00	35.09	Yes
50.0	44.00	34.00	Yes
63.0	42.00	32.34	Yes
80.0	40.00	29.84	Yes
100.0	38.00	26.58	Yes
125.0	36.00	22.51	Yes
160.0	34.00	17.02	Yes
200.0	32.00	13.31	Yes

RH Kirnumäki Noise sensitive point: Finnish normal frequency - User defined (307)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.39	Yes
25.0	64.00	37.51	Yes
31.5	56.00	36.47	Yes
40.0	49.00	35.69	Yes
50.0	44.00	34.61	Yes
63.0	42.00	32.95	Yes
80.0	40.00	30.45	Yes
100.0	38.00	27.20	Yes
125.0	36.00	23.14	Yes
160.0	34.00	17.66	Yes
200.0	32.00	13.95	Yes

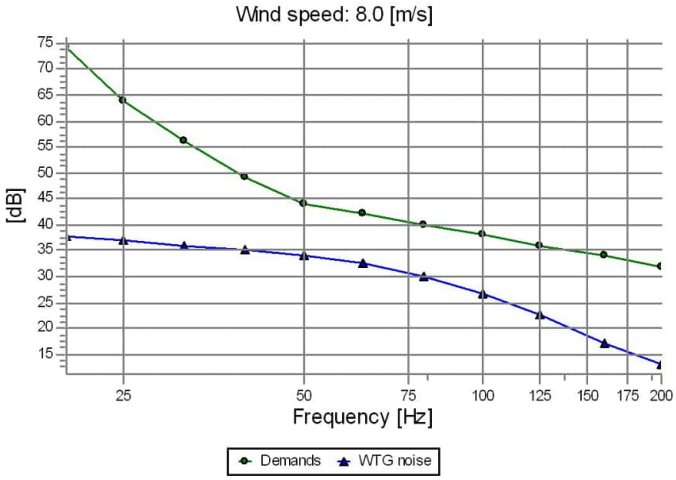
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

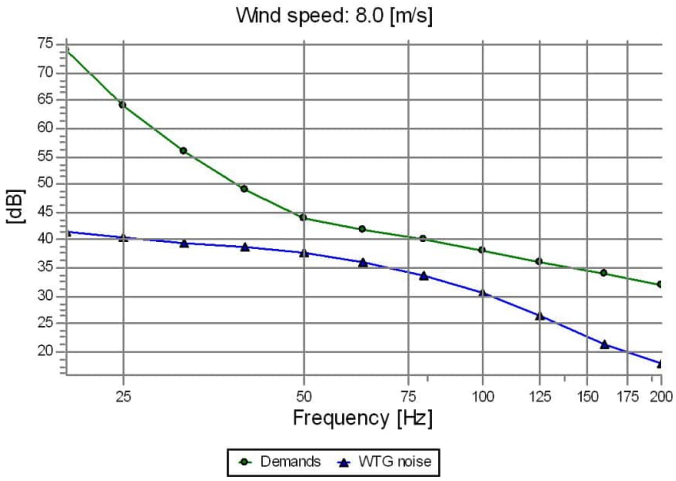
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Koivuniemi Noise sensitive point: Finnish normal frequency - User defined (330)



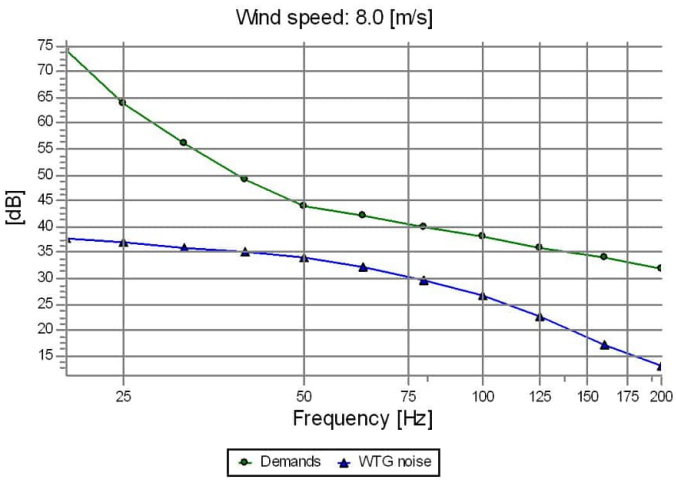
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.92	Yes
25.0	64.00	37.03	Yes
31.5	56.00	35.99	Yes
40.0	49.00	35.21	Yes
50.0	44.00	34.12	Yes
63.0	42.00	32.45	Yes
80.0	40.00	29.95	Yes
100.0	38.00	26.67	Yes
125.0	36.00	22.58	Yes
160.0	34.00	17.05	Yes
200.0	32.00	13.28	Yes

RH Kotiranta Noise sensitive point: Finnish normal frequency - User defined (312)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	41.40	Yes
25.0	64.00	40.55	Yes
31.5	56.00	39.52	Yes
40.0	49.00	38.76	Yes
50.0	44.00	37.70	Yes
63.0	42.00	36.09	Yes
80.0	40.00	33.65	Yes
100.0	38.00	30.51	Yes
125.0	36.00	26.60	Yes
160.0	34.00	21.33	Yes
200.0	32.00	17.91	Yes

RH Leväniemi Noise sensitive point: Finnish normal frequency - User defined (325)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.74	Yes
25.0	64.00	36.86	Yes
31.5	56.00	35.82	Yes
40.0	49.00	35.03	Yes
50.0	44.00	33.95	Yes
63.0	42.00	32.28	Yes
80.0	40.00	29.78	Yes
100.0	38.00	26.51	Yes
125.0	36.00	22.43	Yes
160.0	34.00	16.93	Yes
200.0	32.00	13.20	Yes

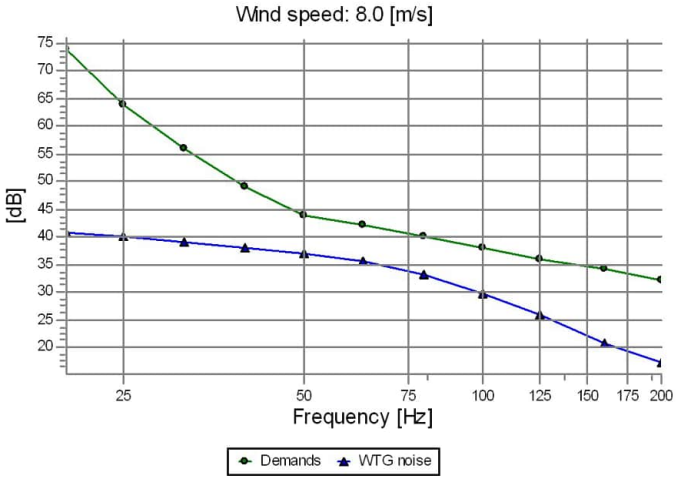
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
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DECIBEL - Detailed results, graphic

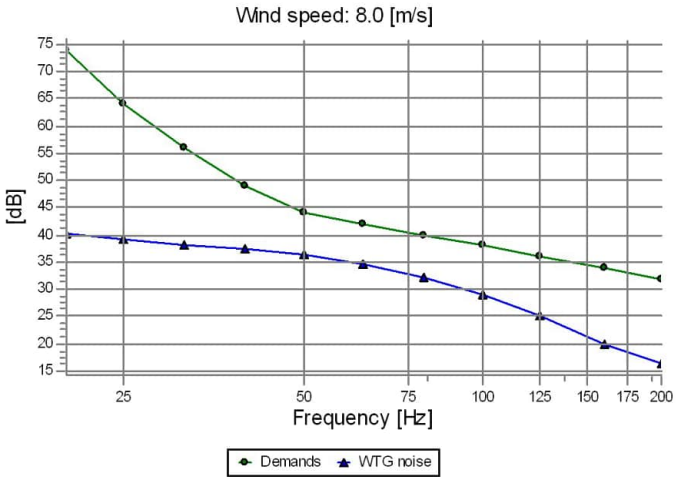
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Mäkelä Noise sensitive point: Finnish normal frequency - User defined (315)



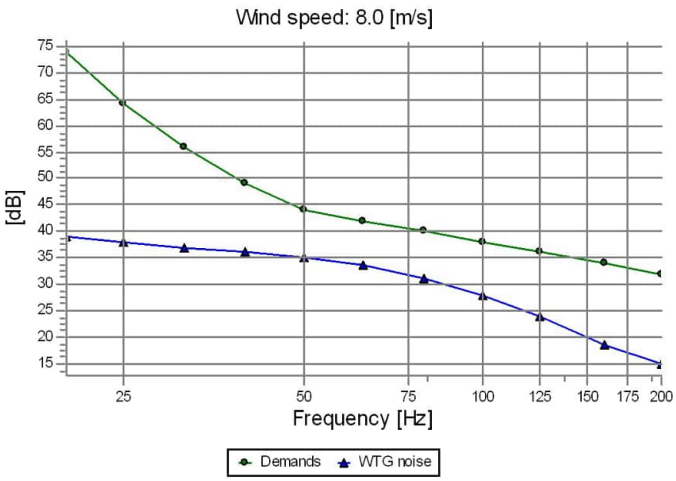
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.75	Yes
25.0	64.00	39.89	Yes
31.5	56.00	38.87	Yes
40.0	49.00	38.11	Yes
50.0	44.00	37.05	Yes
63.0	42.00	35.43	Yes
80.0	40.00	32.98	Yes
100.0	38.00	29.82	Yes
125.0	36.00	25.90	Yes
160.0	34.00	20.61	Yes
200.0	32.00	17.15	Yes

RH Mäntylä Noise sensitive point: Finnish normal frequency - User defined (317)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.08	Yes
25.0	64.00	39.21	Yes
31.5	56.00	38.18	Yes
40.0	49.00	37.42	Yes
50.0	44.00	36.35	Yes
63.0	42.00	34.73	Yes
80.0	40.00	32.27	Yes
100.0	38.00	29.09	Yes
125.0	36.00	25.13	Yes
160.0	34.00	19.80	Yes
200.0	32.00	16.30	Yes

RH Mikkola Noise sensitive point: Finnish normal frequency - User defined (328)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.92	Yes
25.0	64.00	38.05	Yes
31.5	56.00	37.02	Yes
40.0	49.00	36.24	Yes
50.0	44.00	35.17	Yes
63.0	42.00	33.53	Yes
80.0	40.00	31.05	Yes
100.0	38.00	27.83	Yes
125.0	36.00	23.83	Yes
160.0	34.00	18.43	Yes
200.0	32.00	14.84	Yes

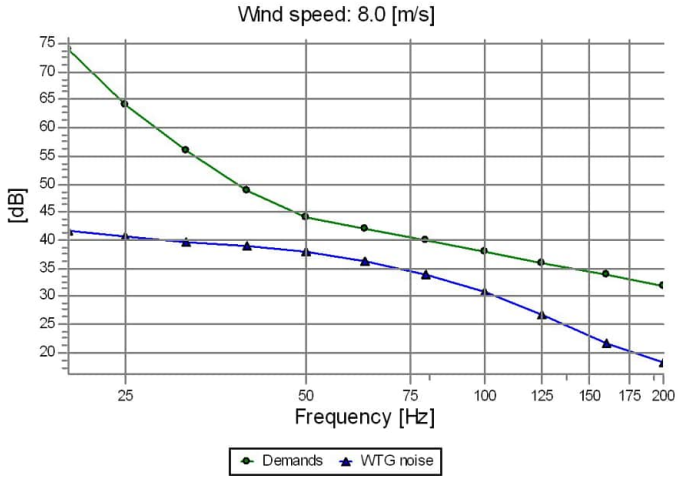
Project:
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Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
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DECIBEL - Detailed results, graphic

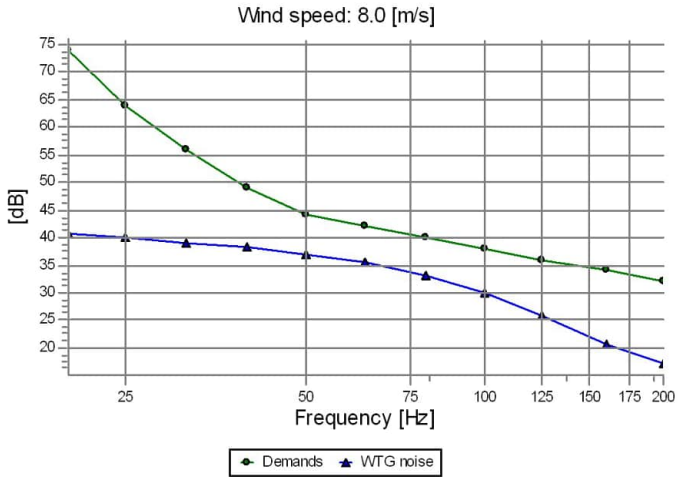
Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Niskala Noise sensitive point: Finnish normal frequency - User defined (326)



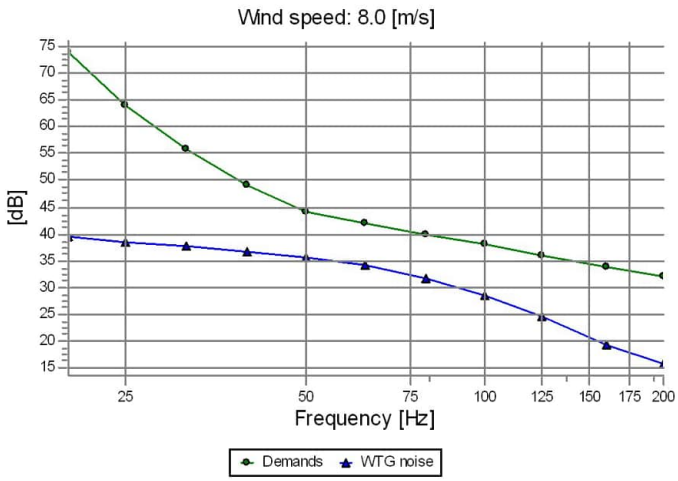
Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	41.59	Yes
25.0	64.00	40.73	Yes
31.5	56.00	39.71	Yes
40.0	49.00	38.95	Yes
50.0	44.00	37.90	Yes
63.0	42.00	36.29	Yes
80.0	40.00	33.86	Yes
100.0	38.00	30.73	Yes
125.0	36.00	26.85	Yes
160.0	34.00	21.62	Yes
200.0	32.00	18.25	Yes

RH Pajaniemi Noise sensitive point: Finnish normal frequency - User defined (316)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	40.78	Yes
25.0	64.00	39.92	Yes
31.5	56.00	38.89	Yes
40.0	49.00	38.13	Yes
50.0	44.00	37.07	Yes
63.0	42.00	35.45	Yes
80.0	40.00	33.00	Yes
100.0	38.00	29.83	Yes
125.0	36.00	25.90	Yes
160.0	34.00	20.59	Yes
200.0	32.00	17.11	Yes

RH Purola Noise sensitive point: Finnish normal frequency - User defined (319)



Frequency [Hz]	Demands [dB]	Sound level WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.51	Yes
25.0	64.00	38.64	Yes
31.5	56.00	37.61	Yes
40.0	49.00	36.84	Yes
50.0	44.00	35.78	Yes
63.0	42.00	34.15	Yes
80.0	40.00	31.69	Yes
100.0	38.00	28.50	Yes
125.0	36.00	24.54	Yes
160.0	34.00	19.21	Yes
200.0	32.00	15.72	Yes

Project:
Junnunmäen tuulivoimahanke

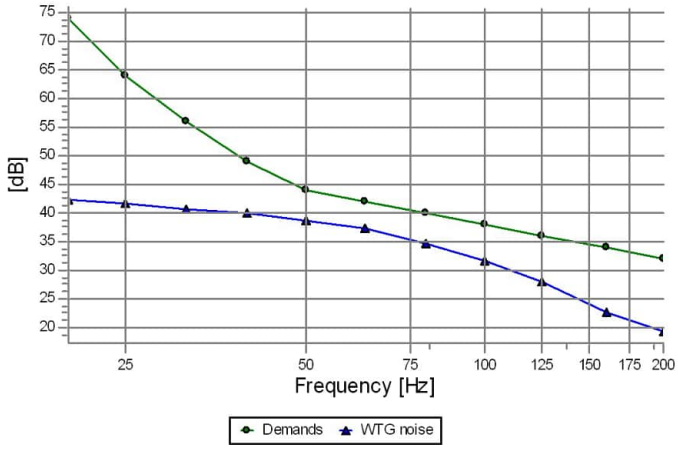
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DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
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DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Rinne 1 Noise sensitive point: Finnish normal frequency - User defined (314)

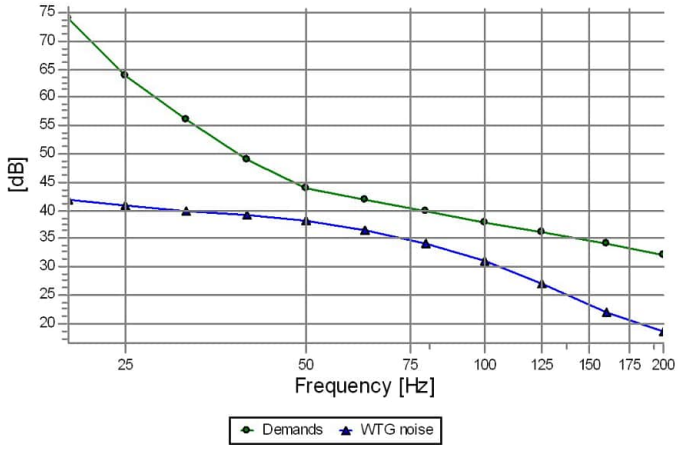
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	42.37	Yes
25.0	64.00	41.52	Yes
31.5	56.00	40.50	Yes
40.0	49.00	39.75	Yes
50.0	44.00	38.70	Yes
63.0	42.00	37.10	Yes
80.0	40.00	34.68	Yes
100.0	38.00	31.56	Yes
125.0	36.00	27.70	Yes
160.0	34.00	22.50	Yes
200.0	32.00	19.16	Yes

RH Rinne 2 Noise sensitive point: Finnish normal frequency - User defined (313)

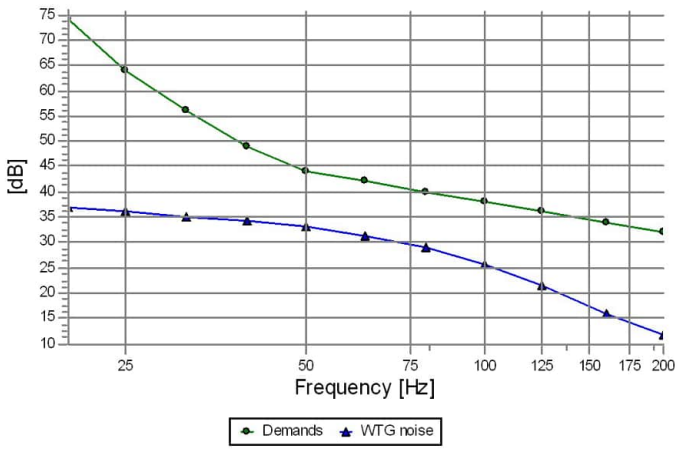
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	41.90	Yes
25.0	64.00	41.05	Yes
31.5	56.00	40.02	Yes
40.0	49.00	39.27	Yes
50.0	44.00	38.22	Yes
63.0	42.00	36.61	Yes
80.0	40.00	34.19	Yes
100.0	38.00	31.06	Yes
125.0	36.00	27.17	Yes
160.0	34.00	21.95	Yes
200.0	32.00	18.57	Yes

RH Riuttalantie 2 Noise sensitive point: Finnish normal frequency - User defined (323)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	36.92	Yes
25.0	64.00	36.02	Yes
31.5	56.00	34.98	Yes
40.0	49.00	34.18	Yes
50.0	44.00	33.09	Yes
63.0	42.00	31.40	Yes
80.0	40.00	28.86	Yes
100.0	38.00	25.54	Yes
125.0	36.00	21.38	Yes
160.0	34.00	15.75	Yes
200.0	32.00	11.85	Yes

Project:
Junnunmäen tuulivoimahanke

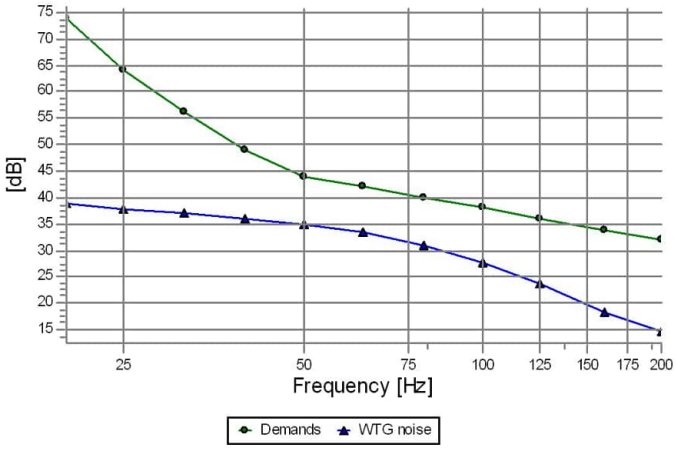
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DE-28211 Bremen
+49 7142 77810
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DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Riuttasjärvi Noise sensitive point: Finnish normal frequency - User defined (308)

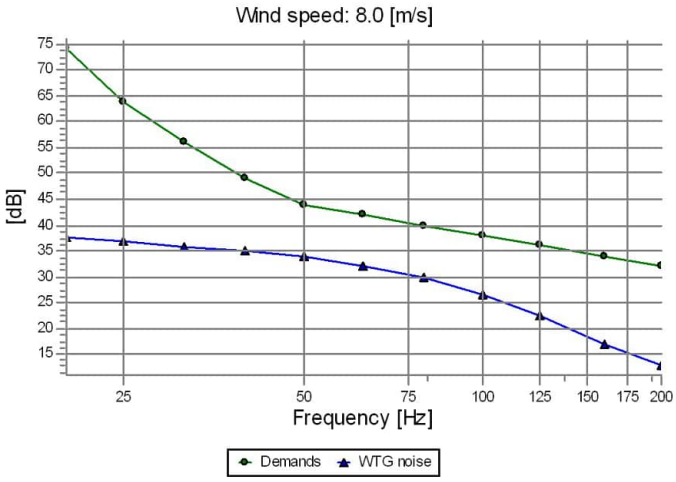
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.83	Yes
25.0	64.00	37.96	Yes
31.5	56.00	36.92	Yes
40.0	49.00	36.15	Yes
50.0	44.00	35.07	Yes
63.0	42.00	33.42	Yes
80.0	40.00	30.93	Yes
100.0	38.00	27.70	Yes
125.0	36.00	23.66	Yes
160.0	34.00	18.22	Yes
200.0	32.00	14.56	Yes

RH Ruunaharju Noise sensitive point: Finnish normal frequency - User defined (321)

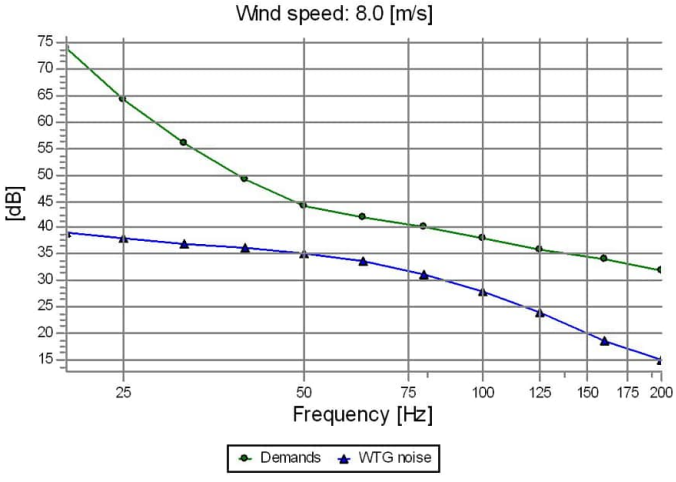
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.71	Yes
25.0	64.00	36.82	Yes
31.5	56.00	35.78	Yes
40.0	49.00	35.00	Yes
50.0	44.00	33.91	Yes
63.0	42.00	32.24	Yes
80.0	40.00	29.73	Yes
100.0	38.00	26.45	Yes
125.0	36.00	22.36	Yes
160.0	34.00	16.84	Yes
200.0	32.00	13.08	Yes

RH Suoniemi Noise sensitive point: Finnish normal frequency - User defined (327)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	38.96	Yes
25.0	64.00	38.09	Yes
31.5	56.00	37.06	Yes
40.0	49.00	36.29	Yes
50.0	44.00	35.21	Yes
63.0	42.00	33.57	Yes
80.0	40.00	31.10	Yes
100.0	38.00	27.89	Yes
125.0	36.00	23.89	Yes
160.0	34.00	18.50	Yes
200.0	32.00	14.93	Yes

Project:
Junnunmäen tuulivoimahanke

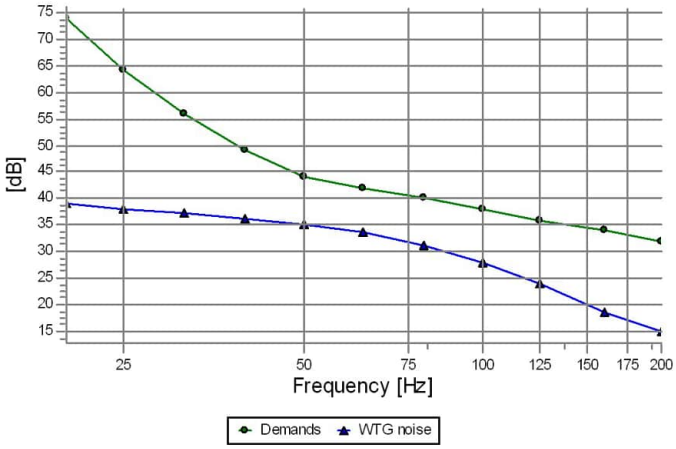
Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Suonpää Noise sensitive point: Finnish normal frequency - User defined (309)

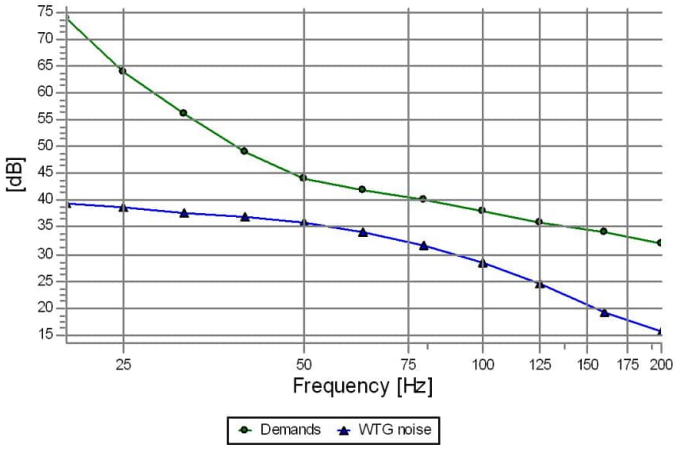
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.05	Yes
25.0	64.00	38.17	Yes
31.5	56.00	37.14	Yes
40.0	49.00	36.37	Yes
50.0	44.00	35.29	Yes
63.0	42.00	33.65	Yes
80.0	40.00	31.17	Yes
100.0	38.00	27.95	Yes
125.0	36.00	23.93	Yes
160.0	34.00	18.52	Yes
200.0	32.00	14.90	Yes

RH Törmäharju 2 Noise sensitive point: Finnish normal frequency - User defined (318)

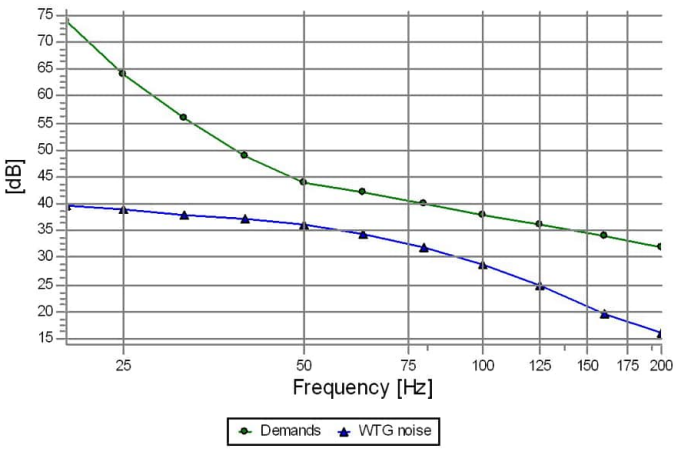
Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.48	Yes
25.0	64.00	38.61	Yes
31.5	56.00	37.58	Yes
40.0	49.00	36.81	Yes
50.0	44.00	35.74	Yes
63.0	42.00	34.10	Yes
80.0	40.00	31.64	Yes
100.0	38.00	28.43	Yes
125.0	36.00	24.44	Yes
160.0	34.00	19.07	Yes
200.0	32.00	15.50	Yes

RH Tuomaala Noise sensitive point: Finnish normal frequency - User defined (310)

Wind speed: 8.0 [m/s]



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	39.75	Yes
25.0	64.00	38.88	Yes
31.5	56.00	37.85	Yes
40.0	49.00	37.09	Yes
50.0	44.00	36.02	Yes
63.0	42.00	34.39	Yes
80.0	40.00	31.93	Yes
100.0	38.00	28.74	Yes
125.0	36.00	24.78	Yes
160.0	34.00	19.45	Yes
200.0	32.00	15.94	Yes

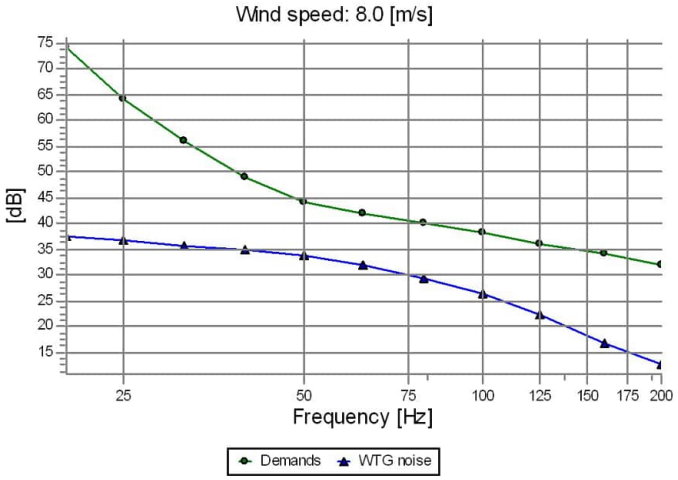
Project:
Junnunmäen tuulivoimahanke

Licensed user:
wpd AG
Stephanitorsbollwerk 3 (Haus LUV)
DE-28211 Bremen
+49 7142 77810
Emma Berkovits / e.berkovits@wpd.fi
Calculated:
07-Oct-24 11:21/3.6.377

DECIBEL - Detailed results, graphic

Calculation: VE2 24xF200 N175 STE +2dB LF Indoor (Keränen et al. 2019) Noise calculation model: Finland Low frequency

RH Yläpelto Noise sensitive point: Finnish normal frequency - User defined (320)



Frequency [Hz]	Sound level Demands [dB]	WTG noise [dB]	Demands fulfilled ?
20.0	74.00	37.45	Yes
25.0	64.00	36.56	Yes
31.5	56.00	35.52	Yes
40.0	49.00	34.73	Yes
50.0	44.00	33.64	Yes
63.0	42.00	31.97	Yes
80.0	40.00	29.45	Yes
100.0	38.00	26.17	Yes
125.0	36.00	22.06	Yes
160.0	34.00	16.52	Yes
200.0	32.00	12.74	Yes