Project:
Analiza hałasu

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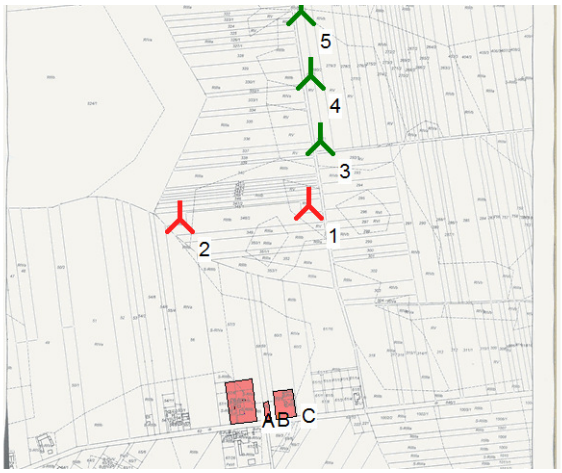
Calculated:
2014-04-04 21:19/2.9.207

DECIBEL - Main Result

Calculation: Analiza hałasu - oddziaływanie skumulowane

Noise calculation model:
ISO 9613-2 General
Wind speed:
6,0 m/s
Ground attenuation:
General, Ground factor: 0,0
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 and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
4,0 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0,0 dB(A)



Scale 1:20 000

New WTG Noise sensitive area

WTGs

	Geo [deg,min,sec]-WGS84 Longitude	Latitude	Z [m]	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data Creator	Name	Wind speed [m/s]	Status	LwA,ref [dB(A)]	Pure tones
1	18°42'23,00" East	52°12'19,00" North	111,5	E1	No	ENERCON	E-40/6.44-600	600	44,0	78,0	EMD	Level 0 - guaranteed - - 07-2003	6,0	ExtraPolated	99,0	0 dB g
2	18°42'05,00" East	52°12'18,00" North	117,4	E2	No	ENERCON	E-40/6.44-600	600	44,0	78,0	EMD	Level 0 - guaranteed - - 07-2003	6,0	ExtraPolated	99,0	0 dB g
3	18°42'24,76" East	52°12'24,64" North	111,0	E1	No	ENERCON	E-40/5.40-500	500	40,3	65,0	EMD	8m/s Man. guaranteed Hub55m 12/98	6,0	From slope	97,0	0 dB g
4	18°42'23,48" East	52°12'30,35" North	111,1	E2	No	ENERCON	E-40/5.40-500	500	40,3	65,0	EMD	8m/s Man. guaranteed Hub55m 12/98	6,0	From slope	97,0	0 dB g
5	18°42'22,26" East	52°12'36,00" North	109,6	E3	No	ENERCON	E-40/5.40-500	500	40,3	65,0	EMD	8m/s Man. guaranteed Hub55m 12/98	6,0	From slope	97,0	0 dB g

g) Data calculated from data for other wind speed (uncertain)

Calculation Results

Sound Level

Noise sensitive area No.	Name	Geo [deg,min,sec]-WGS84 Longitude	Latitude	Z [m]	Imission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Distance to noise demand [m]	Demands fulfilled ? Noise
A	R1	18°42'14,84" East	52°12'03,92" North	116,9	4,0	45,0	39,8	249	Yes
B	R2	18°42'17,13" East	52°12'01,97" North	116,9	4,0	45,0	38,7	309	Yes
C	R3	18°42'19,15" East	52°12'02,92" North	116,5	4,0	45,0	39,2	278	Yes

Distances (m)

WTG	A	B	C
1	491	538	497
2	458	544	527
3	668	715	674
4	833	885	848
5	1002	1056	1021

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DECIBEL - Detailed results

Calculation: Analiza hałasu - oddziaływanie skumulowane**Noise calculation model:** ISO 9613-2 General 6,0 m/s

Assumptions

Calculated L(DW) = LWA,ref + K + Dc - (Adiv + Aatm + Agr + Abar + Amisc) - Cmet
(when calculated with ground attenuation, then Dc = Domega)

LWA,ref:	Sound pressure level at WTG
K:	Pure tone
Dc:	Directivity correction
Adiv:	the attenuation due to geometrical divergence
Aatm:	the attenuation due to atmospheric absorption
Agr:	the attenuation due to ground effect
Abar:	the attenuation due to a barrier
Amisc:	the attenuation due to miscellaneous other effects
Cmet:	Meteorological correction

Calculation Results

Noise sensitive area: A R1

WTG **Wind speed: 6,0 m/s**

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	491	496	**35,44**	99,0	0,00	64,91	-	-	0,00	0,00	-	0,00
2	474	480	**35,78**	99,0	0,00	64,62	-	-	0,00	0,00	-	0,00
3	668	670	**30,40**	97,0	0,00	67,52	-	-	0,00	0,00	-	0,00
4	833	835	**28,11**	97,0	0,00	69,44	-	-	0,00	0,00	-	0,00
5	1 002	1 003	**26,16**	97,0	0,00	71,03	-	-	0,00	0,00	-	0,00

Sum 39,75

- Data undefined due to calculation with octave data

Noise sensitive area: B R2

WTG **Wind speed: 6,0 m/s**

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	538	542	**34,55**	99,0	0,00	65,68	-	-	0,00	0,00	-	0,00
2	546	551	**34,39**	99,0	0,00	65,83	-	-	0,00	0,00	-	0,00
3	715	718	**29,70**	97,0	0,00	68,12	-	-	0,00	0,00	-	0,00
4	885	887	**27,48**	97,0	0,00	69,96	-	-	0,00	0,00	-	0,00
5	1 056	1 058	**25,59**	97,0	0,00	71,49	-	-	0,00	0,00	-	0,00

Sum 38,72

- Data undefined due to calculation with octave data

Noise sensitive area: C R3

WTG **Wind speed: 6,0 m/s**

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	502	507	**35,22**	99,0	0,00	65,10	-	-	0,00	0,00	-	0,00
2	538	543	**34,53**	99,0	0,00	65,70	-	-	0,00	0,00	-	0,00
3	680	682	**30,22**	97,0	0,00	67,68	-	-	0,00	0,00	-	0,00
4	852	854	**27,88**	97,0	0,00	69,63	-	-	0,00	0,00	-	0,00
5	1 024	1 026	**25,92**	97,0	0,00	71,22	-	-	0,00	0,00	-	0,00

Sum 39,15

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DECIBEL - Assumptions for noise calculation

Calculation: Analiza hałasu - oddziaływanie skumulowane**Noise calculation model:** ISO 9613-2 General 6,0 m/s

Noise calculation model:
ISO 9613-2 General
Wind speed:
6,0 m/s
Ground attenuation:
General, Ground factor: 0,0
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 and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
4,0 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0,0 dB(A)
Octave data required
Air absorption

63 [db/km]	125 [db/km]	250 [db/km]	500 [db/km]	1 000 [db/km]	2 000 [db/km]	4 000 [db/km]	8 000 [db/km]
0,1	0,4	1,0	1,9	3,7	9,7	32,8	117,0

WTG: ENERCON E-40/6.44 600 44.0 !O!
Noise: Level 0 - guaranteed - - 07-2003

Source	Source/Date	Creator	Edited
Manufacturer	2003-07-01	EMD	2006-07-12 12:25

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones		Octave data 63 [dB]	125 [dB]	250 [dB]	500 [dB]	1000 [dB]	2000 [dB]	4000 [dB]	8000 [dB]
ExtraPolated	78,0	6,0	99,0	No	Generic data	80,6	87,6	91,0	93,6	93,4	90,5	85,7	76,2

WTG: ENERCON E-40/5.40 500 40.3 !O!
Noise: 8m/s Man. guaranteed Hub55m 12/98

Source	Source/Date	Creator	Edited
Manufacturer	1998-12-01	EMD	2003-08-08 16:40

Refers to measuring report KÖTTER 23554-2.002 from 03.03.1998
For older turbines, there may be a tonality due to a different generator type. If in doubt, please ask Enercon.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones		Octave data 63 [dB]	125 [dB]	250 [dB]	500 [dB]	1000 [dB]	2000 [dB]	4000 [dB]	8000 [dB]
From slope	65,0	6,0	97,0	No	Generic data	78,6	85,6	89,0	91,6	91,4	88,5	83,7	74,2

NSA: R1-A
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
Distance demand:

NSA: R2-B
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
Distance demand:

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DECIBEL - Assumptions for noise calculation

Calculation: Analiza hałasu - oddziaływanie skumulowane**Noise calculation model:** ISO 9613-2 General 6,0 m/s

NSA: R3-C
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
Distance demand: