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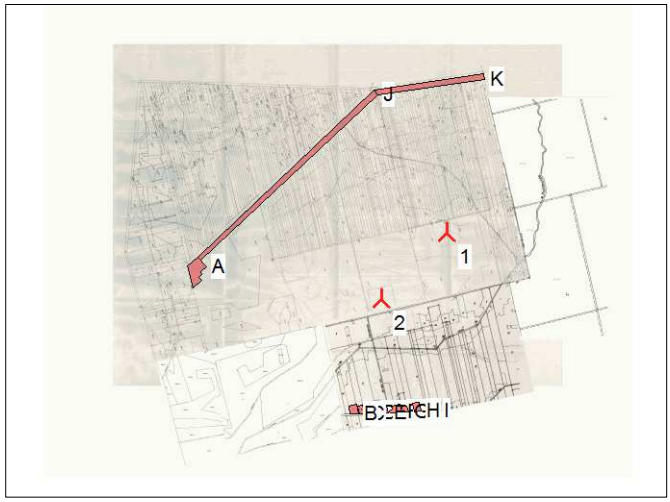
Calculated:
2015-06-28 08:44/3.0.578

DECIBEL - Main Result

Calculation: Analiza akustyczna - wariant proponowany H=143 m, z=0,0[-], 2 WTG

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power else 10,0 m/s
Ground attenuation:
General, fixed, 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 1:40 000
New WTG
Noise sensitive area

WTGs

	Longitude	Latitude	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Noise data Creator	Name	Wind speed	Status	LwA,ref	Pure tones
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]	
1	20°27'56,79" E	51°03'55,26" N	254,7	EW3	No	REpower	3.0M122-3 000	3 000	122,0	143,0	USER	Level 0 - Guaranteed - - 07-2013	(95%)	From other hub height	104,5	No h
2	20°27'39,07" E	51°03'43,63" N	253,8	EW2	No	REpower	3.0M122-3 000	3 000	122,0	143,0	USER	Level 0 - Guaranteed - - 07-2013	(95%)	From other hub height	104,5	No h

h) Generic octave distribution used

Calculation Results

Sound Level

Noise sensitive area						Demands	Sound Level		Demands fulfilled ?
No.	Name	Longitude	Latitude	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
A	R1	20°26'50,95" E	51°03'49,40" N	254,3	4,0	45,0	35,8	629	Yes
B	R2	20°27'31,99" E	51°03'25,25" N	250,0	4,0	45,0	40,0	267	Yes
C	R3	20°27'33,80" E	51°03'25,23" N	250,4	4,0	45,0	40,1	259	Yes
D	R4	20°27'37,14" E	51°03'25,00" N	251,1	4,0	45,0	40,2	257	Yes
E	R5	20°27'40,41" E	51°03'25,14" N	252,8	4,0	45,0	40,3	251	Yes
F	R6	20°27'43,95" E	51°03'25,27" N	254,3	4,0	45,0	40,3	253	Yes
G	R7	20°27'44,47" E	51°03'25,03" N	254,4	4,0	45,0	40,2	262	Yes
H	R8	20°27'47,29" E	51°03'25,52" N	255,6	4,0	45,0	40,3	258	Yes
I	R9	20°27'51,25" E	51°03'25,72" N	255,6	4,0	45,0	40,1	275	Yes
J	RM/MN	20°27'20,18" E	51°04'08,91" N	266,7	4,0	40,0	38,4	132	Yes
K	RM/MN	20°27'46,63" E	51°04'20,30" N	269,7	4,0	40,0	37,5	195	Yes

Distances (m)

	WTG	
NSA	1	2
A	1294	953
B	1045	584
C	1030	578
D	1010	577
E	983	572
F	960	575
G	956	584
H	925	582
I	912	602
J	797	819
K	794	1108

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DECIBEL - Detailed results

Calculation: Analiza akustyczna - wariant proponowany H=143 m, z=0,0[-], 2 WTG**Noise calculation model:** ISO 9613-2 General 10,0 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			95% rated power								
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	1 294	1 302	**30,80**	104,5	0,00	73,29	-	-	0,00	0,00	-	0,00
2	953	963	**34,08**	104,5	0,00	70,68	-	-	0,00	0,00	-	0,00

Sum 35,75

- Data undefined due to calculation with octave data

Noise sensitive area: B R2

WTG			95% rated power								
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	1 045	1 055	**33,11**	104,5	0,00	71,46	-	-	0,00	0,00	-	0,00
2	584	602	**38,99**	104,5	0,00	66,59	-	-	0,00	0,00	-	0,00

Sum 39,99

- Data undefined due to calculation with octave data

Noise sensitive area: C R3

WTG			95% rated power								
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	1 030	1 040	**33,26**	104,5	0,00	71,34	-	-	0,00	0,00	-	0,00
2	578	595	**39,10**	104,5	0,00	66,49	-	-	0,00	0,00	-	0,00

Sum 40,11

- Data undefined due to calculation with octave data

Noise sensitive area: D R4

WTG			95% rated power								
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	1 010	1 020	**33,47**	104,5	0,00	71,17	-	-	0,00	0,00	-	0,00
2	577	594	**39,13**	104,5	0,00	66,47	-	-	0,00	0,00	-	0,00

Sum 40,17

- Data undefined due to calculation with octave data

Noise sensitive area: E R5

WTG			95% rated power								
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	983	993	**33,75**	104,5	0,00	70,94	-	-	0,00	0,00	-	0,00
2	572	589	**39,21**	104,5	0,00	66,40	-	-	0,00	0,00	-	0,00

Sum 40,30

- Data undefined due to calculation with octave data

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DECIBEL - Detailed results

Calculation: Analiza akustyczna - wariant proponowany H=143 m, z=0,0[-], 2 WTG**Noise calculation model:** ISO 9613-2 General 10,0 m/s

Noise sensitive area: F R6

WTG			95% rated power								
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	960	970	**34,02**	104,5	0,00	70,73	-	-	0,00	0,00	-	0,00
2	575	592	**39,16**	104,5	0,00	66,44	-	-	0,00	0,00	-	0,00

Sum 40,32

- Data undefined due to calculation with octave data

Noise sensitive area: G R7

WTG			95% rated power								
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	964	974	**33,97**	104,5	0,00	70,77	-	-	0,00	0,00	-	0,00
2	584	600	**39,01**	104,5	0,00	66,57	-	-	0,00	0,00	-	0,00

Sum 40,19

- Data undefined due to calculation with octave data

Noise sensitive area: H R8

WTG			95% rated power								
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	937	947	**34,27**	104,5	0,00	70,53	-	-	0,00	0,00	-	0,00
2	582	598	**39,05**	104,5	0,00	66,53	-	-	0,00	0,00	-	0,00

Sum 40,30

- Data undefined due to calculation with octave data

Noise sensitive area: I R9

WTG			95% rated power								
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	919	929	**34,47**	104,5	0,00	70,36	-	-	0,00	0,00	-	0,00
2	602	617	**38,73**	104,5	0,00	66,81	-	-	0,00	0,00	-	0,00

Sum 40,11

- Data undefined due to calculation with octave data

Noise sensitive area: J RM/MN

WTG			95% rated power								
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	828	837	**35,57**	104,5	0,00	69,46	-	-	0,00	0,00	-	0,00
2	863	872	**35,15**	104,5	0,00	69,81	-	-	0,00	0,00	-	0,00

Sum 38,38

- Data undefined due to calculation with octave data

Noise sensitive area: K RM/MN

WTG			95% rated power								
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	798	808	**35,95**	104,5	0,00	69,15	-	-	0,00	0,00	-	0,00
2	1 142	1 149	**32,18**	104,5	0,00	72,20	-	-	0,00	0,00	-	0,00

Sum 37,47

- Data undefined due to calculation with octave data

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DECIBEL - Assumptions for noise calculation

Calculation: Analiza akustyczna - wariant proponowany H=143 m, z=0,0[-], 2 WTG**Noise calculation model:** ISO 9613-2 General 10,0 m/s

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power else 10,0 m/s
Ground attenuation:
General, fixed, 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: REpower 3.0M122 3000 122.0 !O!
Noise: Level 0 - Guaranteed - - 07-2013

Source	Source/Date	Creator	Edited
Manufacturer	2013-07-10	USER	2013-12-23 10:16

Based on document SD-3.5-WT.PC-00-A-C-EN.

						Octave data							
Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones		63 [dB]	125 [dB]	250 [dB]	500 [dB]	1000 [dB]	2000 [dB]	4000 [dB]	8000 [dB]
From other hub height	143,0	95% rated power	104,5	No	Generic data	86,1	93,1	96,5	99,1	98,9	96,0	91,2	81,7

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

Noise demand: 45,0 dB(A)
No 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)
No distance demand

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

Noise demand: 45,0 dB(A)
No distance demand

NSA: R4-D
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
No distance demand

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DECIBEL - Assumptions for noise calculation

Calculation: Analiza akustyczna - wariant proponowany H=143 m, z=0,0[-], 2 WTG**Noise calculation model:** ISO 9613-2 General 10,0 m/s

NSA: R5-E
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
No distance demand

NSA: R6-F
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
No distance demand

NSA: R7-G
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
No distance demand

NSA: R8-H
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
No distance demand

NSA: R9-I
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)
No distance demand

NSA: RM/MN-J
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40,0 dB(A)
No distance demand

NSA: RM/MN-K
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40,0 dB(A)
No distance demand