

DECIBEL - Main Result

Calculation: Analiza akustyczna - wariant proponowany H=99 m, z=0,8[-]

Noise calculation model:

ISO 9613-2 General

Wind speed:

95% rated power else 10,0 m/s

Ground attenuation:

General, fixed, Ground factor: 0,8

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:

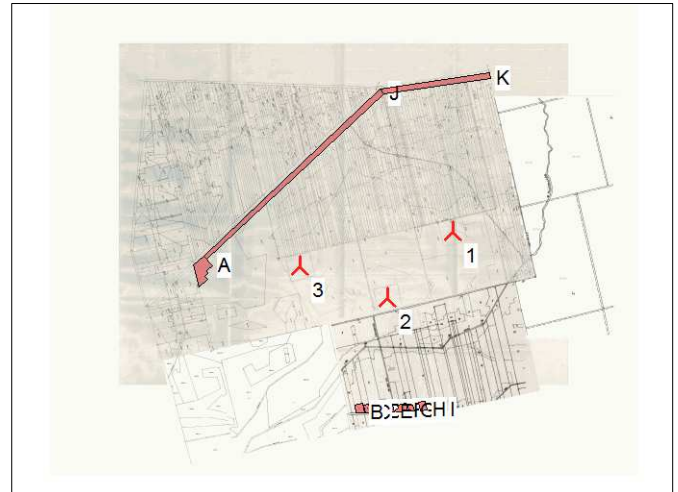
Pure and Impulse tone penalty are added to WTG source noise

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 [m]	Row data/Description	WTG type				Noise data				Status	Lwa,ref [dB(A)]	Pure tones	
				Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Creator	Name				Wind speed [m/s]
1 20°27'56,79" E	51°03'55,26" N	254,7	EW3	No	REpower	3.0M122-3 000	3 000	122,0	99,0	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	99,0	USER	Level 0 - Guaranteed - - 07-2013	(95%)	From other hub height	104,5	No h
3 20°27'15,07" E	51°03'49,15" N	254,8	EW1	No	REpower	3.0M122-3 000	3 000	122,0	99,0	USER	Level 0 - Guaranteed - - 07-2013	(95%)	From other hub height	104,5	No h

h) Generic octave distribution used

Calculation Results

Sound Level

No.	Name	Longitude	Latitude	Z [m]	Imission height [m]	Noise [dB(A)]	Sound Level		Distance to noise demand [m]	Demands fulfilled ? Noise
							From WTGs [dB(A)]	Distance to noise demand [m]		
A	R1	20°26'50,95" E	51°03'49,40" N	254,3	4,0	45,0	39,5	228	Yes	
B	R2	20°27'31,99" E	51°03'25,25" N	250,0	4,0	45,0	38,6	330	Yes	
C	R3	20°27'33,80" E	51°03'25,23" N	250,4	4,0	45,0	38,6	323	Yes	
D	R4	20°27'37,14" E	51°03'25,00" N	251,1	4,0	45,0	38,6	323	Yes	
E	R5	20°27'40,41" E	51°03'25,14" N	252,8	4,0	45,0	38,6	320	Yes	
F	R6	20°27'42,92" E	51°03'25,16" N	254,3	4,0	45,0	38,5	323	Yes	
G	R7	20°27'44,47" E	51°03'25,03" N	254,4	4,0	45,0	38,4	332	Yes	
H	R8	20°27'47,29" E	51°03'25,52" N	255,6	4,0	45,0	38,4	330	Yes	
I	R9	20°27'51,25" E	51°03'25,72" N	255,6	4,0	45,0	38,2	350	Yes	
J	RM/MN	20°27'02,49" E	51°03'58,31" N	266,7	4,0	40,0	41,6	-77	No	
K	RM/MN	20°27'37,80" E	51°04'19,48" N	269,7	4,0	40,0	35,8	337	Yes	

Distances (m)

WTG

NSA	1	2	3
A	1294	953	469
B	1045	584	800
C	1030	578	817
D	1010	577	852
E	983	572	879
F	960	575	907
G	956	584	940
H	925	582	962
I	912	602	1010
J	797	819	374
K	794	1108	1036

DECIBEL - Detailed results

Calculation: Analiza akustyczna - wariant proponowany H=99 m, z=0,8[-] **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

No.	Distance [m]	Sound distance [m]	95% rated power									
			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	1 298	27,82	104,5	0,00	73,26	-	-	0,00	0,00	-	0,00
2	953	958	31,19	104,5	0,00	70,63	-	-	0,00	0,00	-	0,00
3	469	479	38,45	104,5	0,00	64,61	-	-	0,00	0,00	-	0,00

Sum 39,50

- Data undefined due to calculation with octave data

Noise sensitive area: B R2

No.	Distance [m]	Sound distance [m]	95% rated power									
			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	1 050	30,19	104,5	0,00	71,42	-	-	0,00	0,00	-	0,00
2	584	593	36,28	104,5	0,00	66,46	-	-	0,00	0,00	-	0,00
3	808	815	32,94	104,5	0,00	69,22	-	-	0,00	0,00	-	0,00

Sum 38,61

- Data undefined due to calculation with octave data

Noise sensitive area: C R3

No.	Distance [m]	Sound distance [m]	95% rated power									
			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	1 035	30,35	104,5	0,00	71,30	-	-	0,00	0,00	-	0,00
2	578	586	36,39	104,5	0,00	66,36	-	-	0,00	0,00	-	0,00
3	824	830	32,74	104,5	0,00	69,38	-	-	0,00	0,00	-	0,00

Sum 38,65

- Data undefined due to calculation with octave data

Noise sensitive area: D R4

No.	Distance [m]	Sound distance [m]	95% rated power									
			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	1 014	30,57	104,5	0,00	71,12	-	-	0,00	0,00	-	0,00
2	577	585	36,42	104,5	0,00	66,34	-	-	0,00	0,00	-	0,00
3	861	866	32,29	104,5	0,00	69,75	-	-	0,00	0,00	-	0,00

Sum 38,58

- Data undefined due to calculation with octave data

Noise sensitive area: E R5

No.	Distance [m]	Sound distance [m]	95% rated power									
			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	988	30,86	104,5	0,00	70,90	-	-	0,00	0,00	-	0,00

To be continued on next page...

DECIBEL - Detailed results

Calculation: Analiza akustyczna - wariant proponowany H=99 m, z=0,8[-] **Noise calculation model:** ISO 9613-2 General 10,0 m/s

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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]
2	572	580	36,50	104,5	0,00	66,27	-	-	0,00	0,00	-	0,00
3	891	896	31,92	104,5	0,00	70,04	-	-	0,00	0,00	-	0,00

Sum 38,60

- Data undefined due to calculation with octave data

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	968	973	31,03	104,5	0,00	70,76	-	-	0,00	0,00	-	0,00
2	575	583	36,45	104,5	0,00	66,31	-	-	0,00	0,00	-	0,00
3	918	923	31,60	104,5	0,00	70,30	-	-	0,00	0,00	-	0,00

Sum 38,53

- 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	969	31,07	104,5	0,00	70,72	-	-	0,00	0,00	-	0,00
2	584	592	36,29	104,5	0,00	66,44	-	-	0,00	0,00	-	0,00
3	940	944	31,35	104,5	0,00	70,50	-	-	0,00	0,00	-	0,00

Sum 38,39

- 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	942	31,38	104,5	0,00	70,48	-	-	0,00	0,00	-	0,00
2	582	589	36,33	104,5	0,00	66,41	-	-	0,00	0,00	-	0,00
3	962	967	31,09	104,5	0,00	70,71	-	-	0,00	0,00	-	0,00

Sum 38,43

- 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	924	31,59	104,5	0,00	70,31	-	-	0,00	0,00	-	0,00
2	602	609	35,99	104,5	0,00	66,70	-	-	0,00	0,00	-	0,00
3	1 010	1 014	30,57	104,5	0,00	71,12	-	-	0,00	0,00	-	0,00

Sum 38,17

- 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	1 061	1 065	30,03	104,5	0,00	71,54	-	-	0,00	0,00	-	0,00
2	844	849	32,51	104,5	0,00	69,57	-	-	0,00	0,00	-	0,00
3	374	385	40,63	104,5	0,00	62,70	-	-	0,00	0,00	-	0,00

Sum 41,57

- Data undefined due to calculation with octave data

DECIBEL - Detailed results

Calculation: Analiza akustyczna - wariant proponowany H=99 m, z=0,8[-] **Noise calculation model:** ISO 9613-2 General 10,0 m/s

Noise sensitive area: K RM/MN

WTG			95% rated power										
	No.	Distance	Sound distance	Calculated	LwA,ref	Dc	Adiv	Aatm	Agr	Abar	Amisc	A	Cmet
	[m]	[m]	[dB(A)]	[dB(A)]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
1	835	838	32,64	104,5	0,00	69,46	-	-	0,00	0,00	-	0,00	
2	1 108	1 110	29,57	104,5	0,00	71,91	-	-	0,00	0,00	-	0,00	
3	1 036	1 039	30,31	104,5	0,00	71,33	-	-	0,00	0,00	-	0,00	

Sum 35,82

- Data undefined due to calculation with octave data

Project:

Elektrownie wiatrowe Smyków

Licensed user:

ENVO
ul.Sikorskiego 25/20
PL-62 030 Lubon
0048 662 643 300
ENVO / envo-i.nowicki@wp.pl
Calculated:
2015-06-28 20:26/3.0.578

DECIBEL - Assumptions for noise calculation

Calculation: Analiza akustyczna - wariant proponowany H=99 m, z=0,8[-] **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: 0,8

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	125	250	500	1 000	2 000	4 000	8 000
[db/km]	[db/km]	[db/km]	[db/km]	[db/km]	[db/km]	[db/km]	[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.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones	Octave data								
					63	125	250	500	1000	2000	4000	8000	
					[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From other hub height	99,0	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

DECIBEL - Assumptions for noise calculation

Calculation: Analiza akustyczna - wariant proponowany H=99 m, z=0,8[-] **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