

Project:

FW Cierpice

Description:

Farma wiatrowa Cierpice w gminie Przeworno
5 turbin wiatrowych o mocy 3MW każda

Printed/Page

2014-11-11 21:38 / 1

Licensed user:

ProSilence Krzysztof Kreciproch

Ul. Spychalskiego 13/207

PL-45 716 Opole

+48 77 550 11 43

Krzysztof Kręciproch / prosilence@prosilence.pl

Calculated:

2014-11-11 21:37/2.9.285

DECIBEL - Main Result**Calculation:** ZAŁĄCZNIK TEKSTOWY 11 - oddziaływanie akustyczne wariant 1**Noise calculation model:**

ISO 9613-2 Poland

Wind speed:

10,0 m/s

Ground attenuation:

General, Ground factor: 0,5

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)

WTGs

Polish GK 1992/19-ETRS89				WTG type								Noise data				
East	North	Z	Row	data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	LwA,ref	Pure tones	
		[m]							[kW]	[m]	[m]			[m/s]	[dB(A)]	
1	369 035	311 963	230,0	EW1	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	117,0	USER	Level -- Mode 2 - 106,5dB	10,0	106,5	0 dB h	
2	369 480	312 108	225,8	EW2	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	117,0	USER	Level -- Mode 2 - 106,5dB	10,0	106,5	0 dB h	
3	369 947	312 060	216,3	EW3	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	117,0	USER	Level -- Mode 2 - 106,5dB	10,0	106,5	0 dB h	
4	370 203	311 996	206,6	EW4	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	117,0	USER	Level -- Mode 2 - 106,5dB	10,0	106,5	0 dB h	
5	370 551	311 950	195,7	EW5	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	117,0	USER	Level -- Mode 2 - 106,5dB	10,0	106,5	0 dB h	

h) Generic octave distribution used

Calculation Results**Sound Level**

Noise sensitive area		Polish GK 1992/19-ETRS89			Demands		Sound Level	Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	
A 01	Cierpice 1	370 168	312 912	200,0	4,0	45,0	40,5	Yes
B 02	Cierpice 2	370 396	312 888	194,1	4,0	45,0	40,2	Yes
C 03	Gołaczów 1	371 090	311 567	190,0	4,0	45,0	40,4	Yes
D 04	Konary 1	369 304	311 316	220,3	4,0	45,0	41,7	Yes
E 05	Konary 2	369 849	311 509	209,8	4,0	45,0	44,7	Yes

Distances (m)

WTG					
NSA	1	2	3	4	5
A	1448	1034	877	909	967
B	1638	1196	940	913	917
C	2094	1699	1245	986	662
D	660	811	982	1125	1397
E	926	703	560	602	815

Project: **FW Cierpice**
 Description: **Farma wiatrowa Cierpice w gminie Przeworno**
 5 turbin wiatrowych o mocy 3MW każda

Printed/Page
 2014-11-11 21:38 / 2
 Licensed user:
ProSilence Krzysztof Kreciproch
 Ul. Spychalskiego 13/207
 PL-45 716 Opole
 +48 77 550 11 43
 Krzysztof Kręciproch / prosilence@prosilence.pl
 Calculated:
 2014-11-11 21:37/2.9.285

DECIBEL - Detailed results

Calculation: ZAŁĄCZNIK TEKSTOWY 11 - oddziaływanie akustyczne wariant 1 **Noise calculation model:** ISO 9613-2 Poland 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 01 Cierpice 1

WTG		Wind speed: 10,0 m/s										
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]
1	1 478	1 485	29,37	106,5	0,00	74,44	-	-	0,00	0,00	-	0,00
2	1 058	1 067	33,09	106,5	0,00	71,56	-	-	0,00	0,00	-	0,00
3	880	889	35,07	106,5	0,00	69,98	-	-	0,00	0,00	-	0,00
4	917	924	34,65	106,5	0,00	70,32	-	-	0,00	0,00	-	0,00
5	1 035	1 041	33,36	106,5	0,00	71,35	-	-	0,00	0,00	-	0,00
Sum	40,49											

- Data undefined due to calculation with octave data

Noise sensitive area: B 02 Cierpice 2

WTG		Wind speed: 10,0 m/s										
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]
1	1 647	1 653	28,12	106,5	0,00	75,37	-	-	0,00	0,00	-	0,00
2	1 203	1 212	31,68	106,5	0,00	72,67	-	-	0,00	0,00	-	0,00
3	942	951	34,34	106,5	0,00	70,57	-	-	0,00	0,00	-	0,00
4	913	921	34,69	106,5	0,00	70,29	-	-	0,00	0,00	-	0,00
5	951	957	34,27	106,5	0,00	70,62	-	-	0,00	0,00	-	0,00
Sum	40,19											

- Data undefined due to calculation with octave data

Noise sensitive area: C 03 Gołaczów 1

WTG		Wind speed: 10,0 m/s										
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]
1	2 094	2 100	25,26	106,5	0,00	77,44	-	-	0,00	0,00	-	0,00
2	1 699	1 706	27,75	106,5	0,00	75,64	-	-	0,00	0,00	-	0,00
3	1 245	1 253	31,30	106,5	0,00	72,96	-	-	0,00	0,00	-	0,00
4	986	994	33,86	106,5	0,00	70,95	-	-	0,00	0,00	-	0,00
5	662	672	38,02	106,5	0,00	67,55	-	-	0,00	0,00	-	0,00
Sum	40,43											

- Data undefined due to calculation with octave data

Noise sensitive area: D 04 Konary 1

WTG		Wind speed: 10,0 m/s										
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]
1	701	712	37,42	106,5	0,00	68,05	-	-	0,00	0,00	-	0,00
2	812	821	35,93	106,5	0,00	69,28	-	-	0,00	0,00	-	0,00

To be continued on next page...

Project:

FW Cierpice

Description:

Farma wiatrowa Cierpice w gminie Przeworno
5 turbin wiatrowych o mocy 3MW każda

Printed/Page

2014-11-11 21:38 / 3

Licensed user:

ProSilence Krzysztof Kreciproch

Ul. Spychalskiego 13/207

PL-45 716 Opole

+48 77 550 11 43

Krzysztof Kręciproch / prosilence@prosilence.pl

Calculated:

2014-11-11 21:37/2.9.285

DECIBEL - Detailed results**Calculation:** ZAŁĄCZNIK TEKSTOWY 11 - oddziaływanie akustyczne wariant 1 **Noise calculation model:** ISO 9613-2 Poland 10,0 m/s

...continued from previous page

WTG**Wind speed: 10,0 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]
3	984	990	33,91	106,5	0,00	70,91	-	-	0,00	0,00	-	0,00
4	1 127	1 132	32,44	106,5	0,00	72,08	-	-	0,00	0,00	-	0,00
5	1 399	1 402	30,03	106,5	0,00	73,93	-	-	0,00	0,00	-	0,00

Sum 41,66

- Data undefined due to calculation with octave data

Noise sensitive area: E 05 Konary 2**WTG****Wind speed: 10,0 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	933	942	34,44	106,5	0,00	70,48	-	-	0,00	0,00	-	0,00
2	704	716	37,37	106,5	0,00	68,09	-	-	0,00	0,00	-	0,00
3	560	573	39,68	106,5	0,00	66,16	-	-	0,00	0,00	-	0,00
4	602	612	38,99	106,5	0,00	66,74	-	-	0,00	0,00	-	0,00
5	829	835	35,74	106,5	0,00	69,44	-	-	0,00	0,00	-	0,00

Sum 44,65

- Data undefined due to calculation with octave data

Project:

FW Cierpice

Description:

Farma wiatrowa Cierpice w gminie Przeworno
5 turbin wiatrowych o mocy 3MW każda

Printed/Page

2014-11-11 21:38 / 4

Licensed user:

ProSilence Krzysztof Kreciproch

Ul. Spychalskiego 13/207

PL-45 716 Opole

+48 77 550 11 43

Krzysztof Kręciproch / prosilence@prosilence.pl

Calculated:

2014-11-11 21:37/2.9.285

DECIBEL - Assumptions for noise calculation**Calculation:** ZAŁĄCZNIK TEKSTOWY 11 - oddziaływanie akustyczne wariant 1 **Noise calculation model:** ISO 9613-2 Poland 10,0 m/s**Noise calculation model:**

ISO 9613-2 Poland

Wind speed:

10,0 m/s

Ground attenuation:

General, Ground factor: 0,5

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: VESTAS V126-3.3 GridStreame 3300 126.0 !O!**Noise:** Level - - Mode 2 - 106,5dB

Source Source/Date Creator Edited

Manufacturer 2013-05-04 USER 2014-03-21 09:38

Based on Document no.: 0034-7616 V06 2013-04-05.

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 Windcat	117,0	10,0	106,5	No	Generic data 88,1	95,1	98,5	101,1	100,9	98,0	93,2	83,7

NSA: 01 Cierpice 1-A**Predefined calculation standard:** Night: Multi-family houses, agricultural, mixed**Emission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:****NSA:** 02 Cierpice 2-B**Predefined calculation standard:** Night: Multi-family houses, agricultural, mixed**Emission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:****NSA:** 03 Gołaczów 1-C**Predefined calculation standard:** Night: Multi-family houses, agricultural, mixed**Emission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:****NSA:** 04 Konary 1-D**Predefined calculation standard:** Night: Multi-family houses, agricultural, mixed**Emission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:**

Project:

FW Cierpice

Description:

Farma wiatrowa Cierpice w gminie Przeworno
5 turbin wiatrowych o mocy 3MW każda

Printed/Page

2014-11-11 21:38 / 5

Licensed user:

ProSilence Krzysztof Kreciproch

Ul. Spychalskiego 13/207

PL-45 716 Opole

+48 77 550 11 43

Krzysztof Kręciproch / prosilence@prosilence.pl

Calculated:

2014-11-11 21:37/2.9.285

DECIBEL - Assumptions for noise calculation

Calculation: ZAŁĄCZNIK TEKSTOWY 11 - oddziaływanie akustyczne wariant 1 **Noise calculation model:** ISO 9613-2 Poland 10,0 m/s

NSA: 05 Konary 2-E

Predefined calculation standard: Night: Multi-family houses, agricultural, mixed

Immission height(a.g.l.): Use standard value from calculation model

Noise demand: 45,0 dB(A)

Distance demand: