

Project:

**Elektrownie wiatrowe Galewice**

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2015-03-07 09:29 / 1

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**ENVO**

ul.Sikorskiego 25/20

PL-62 030 Lubon

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Calculated:

2015-03-07 09:26/2.9.285

## DECIBEL - Main Result

**Calculation:** Analiza akustyczna wariant alternatywny

### Noise calculation model:

ISO 9613-2 General

### Wind speed:

10,0 m/s

### Ground attenuation:

General, Ground factor: 0,3

### 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:

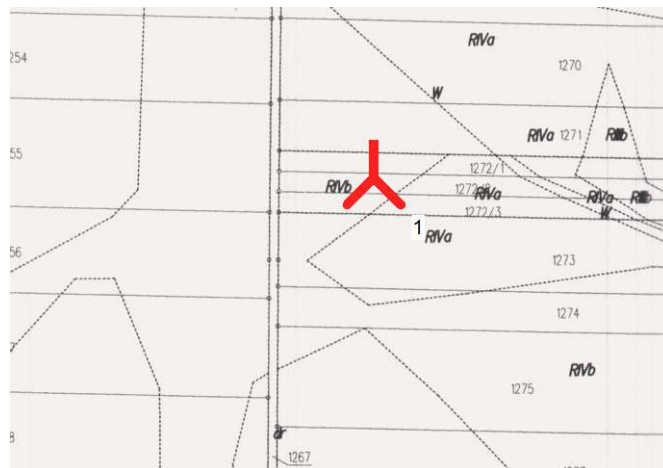
Pure and Impulse tone penalty are added to WTG source noise

### 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 1:5 000

New WTG

Noise sensitive area

## WTGs

Geo [deg,min,sec]-WGS84	Longitude	Latitude	Z [m]	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data				
					Valid	Manufact.	Type-generator				Creator	Name	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
1	18°15'49,48" East	51°20'08,14" North	162,0	E1	No	ENERCON	E-58/10.58-1 000	1 000	58,0	67,0	USER	Level	10,0	100,0	0 dB h
2	18°15'25,27" East	51°19'57,30" North	164,6	E2	No	ENERCON	E-58/10.58-1 000	1 000	60,0	89,0	USER	Level	10,0	101,5	0 dB h

h) Generic octave distribution used

## Calculation Results

### Sound Level

Noise sensitive area No.	Name	Geo [deg,min,sec]-WGS84		Z [m]	Imission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Distance to noise demand [m]	Demands fulfilled ? Noise
		Longitude	Latitude						
A	RN1	18°16'05,51" East	51°20'11,68" North	163,0	4,0	40,0	39,8	7	Yes
B	RN2	18°16'09,36" East	51°20'12,85" North	163,4	4,0	40,0	37,8	90	Yes
C	RN3	18°16'07,96" East	51°20'12,87" North	163,0	4,0	40,0	38,4	66	Yes
D	RN4	18°16'07,84" East	51°20'12,89" North	163,0	4,0	40,0	38,4	64	Yes
E	RN5	18°16'07,41" East	51°20'14,53" North	164,1	4,0	40,0	38,1	79	Yes
F	RH6	18°16'07,71" East	51°20'13,60" North	163,0	4,0	40,0	38,3	71	Yes

### Distances (m)

WTG		
NSA	1	2
A	329	897
B	411	980
C	386	956
D	385	955
E	399	974
F	391	964

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**DECIBEL - Detailed results****Calculation:** Analiza akustyczna wariant alternatywny **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 RN1**

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	329	335	<b>39,23</b>	100,0	0,00	61,49	-	-	0,00	0,00	-	0,00
2	897	901	<b>30,66</b>	101,5	0,00	70,09	-	-	0,00	0,00	-	0,00
Sum	39,79											

- Data undefined due to calculation with octave data

**Noise sensitive area: B RN2**

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	411	416	<b>37,10</b>	100,0	0,00	63,38	-	-	0,00	0,00	-	0,00
2	980	983	<b>29,72</b>	101,5	0,00	70,85	-	-	0,00	0,00	-	0,00
Sum	37,83											

- Data undefined due to calculation with octave data

**Noise sensitive area: C RN3**

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	386	391	<b>37,70</b>	100,0	0,00	62,85	-	-	0,00	0,00	-	0,00
2	956	960	<b>29,98</b>	101,5	0,00	70,65	-	-	0,00	0,00	-	0,00
Sum	38,38											

- Data undefined due to calculation with octave data

**Noise sensitive area: D RN4**

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	385	390	<b>37,75</b>	100,0	0,00	62,81	-	-	0,00	0,00	-	0,00
2	955	959	<b>29,99</b>	101,5	0,00	70,63	-	-	0,00	0,00	-	0,00
Sum	38,42											

- Data undefined due to calculation with octave data

**Noise sensitive area: E RN5**

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	399	404	<b>37,39</b>	100,0	0,00	63,13	-	-	0,00	0,00	-	0,00
2	974	978	<b>29,78</b>	101,5	0,00	70,81	-	-	0,00	0,00	-	0,00
Sum	38,08											

- Data undefined due to calculation with octave data

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WindPRO is developed by EMD International A/S, Niels Jernesvej 10, DK-9220 Aalborg Ø, Tel. +45 96 35 44 44, Fax +45 96 35 44 46, e-mail: windpro@emrd.dk

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**DECIBEL - Detailed results****Calculation:** Analiza akustyczna wariant alternatywny **Noise calculation model:** ISO 9613-2 General 10,0 m/s**Noise sensitive area: F RH6****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	391	396	<b>37,59</b>	100,0	0,00	62,96	-	-	0,00	0,00	-	0,00
2	964	968	<b>29,89</b>	101,5	0,00	70,72	-	-	0,00	0,00	-	0,00

Sum 38,27

*- Data undefined due to calculation with octave data*

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**DECIBEL - Assumptions for noise calculation****Calculation:** Analiza akustyczna wariant alternatywny **Noise calculation model:** ISO 9613-2 General 10,0 m/s**Noise calculation model:**

ISO 9613-2 General

**Wind speed:**

10,0 m/s

**Ground attenuation:**

General, Ground factor: 0,3

**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:** ENERCON E-58/10.58 1000 58.0 !O!**Noise:** Level

Source Source/Date Creator Edited

Enercon 2015-02-22 USER 2015-02-22 16:17

Noise data at 10m/s are dated from 05-2002.

Status	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 Windcat	10,0	100,0	No	Generic data	81,6	88,6	92,0	94,6	94,4	91,5	86,7	77,2

**WTG:** ENERCON E-58/10.58 1000 60.0 !O!**Noise:** Level

Source Source/Date Creator Edited

Enercon 2015-02-22 USER 2015-02-23 21:31

Noise data at 10m/s are dated from 05-2002.

Status	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 Windcat	10,0	101,5	No	Generic data	83,1	90,1	93,5	96,1	95,9	93,0	88,2	78,7

**NSA:** RN1-A**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40,0 dB(A)**Distance demand:****NSA:** RN2-B**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40,0 dB(A)**Distance demand:**

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**DECIBEL - Assumptions for noise calculation****Calculation:** Analiza akustyczna wariant alternatywny **Noise calculation model:** ISO 9613-2 General 10,0 m/s**NSA:** RN3-C**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40,0 dB(A)**Distance demand:****NSA:** RN4-D**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40,0 dB(A)**Distance demand:****NSA:** RN5-E**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40,0 dB(A)**Distance demand:****NSA:** RH6-F**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40,0 dB(A)**Distance demand:**