

Project: <b>Borkowo-Falenta</b>	Printed/Page: 2014-03-25 07:40 / 1
	Licensed user: <b>Enerko Przedsiębiorstwo Rozwoju Energii Odnawialnej Michal Kubecki</b> ul. Armii Krajowej 47a PL-26060 Checiny +48 41 301 00 23 ENERKO / biuro@enerko.pl
	Calculated: 2014-03-24 15:40/2.8.552

### DECIBEL - Main Result

Calculation: G97 90m poprawione

**Noise calculation model:**

ISO 9613-2 General

**Wind speed:**

8,0 m/s

**Ground attenuation:**

General, Ground factor: 0,9

**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:**

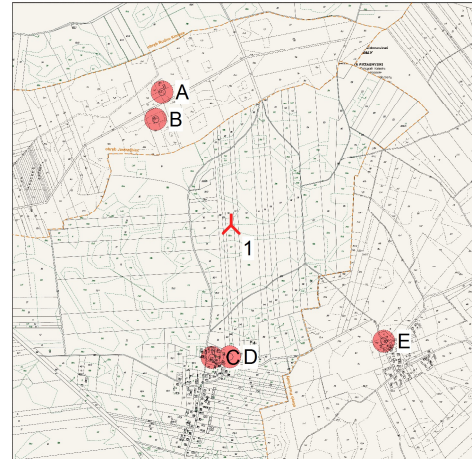
Pure and Impulse tone penalty are added to WTG source noise

**Height above ground level, when no value in NSA object:**

4,0 m Don't 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)



New WTG

Noise sensitive area

### WTGs

Geo [deg,min,sec]-WGS84		Z	Row data/Description	WTG type			Power rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data		Wind speed [m/s]	Status	LwA,ref [dB(A)]	Pure tones		
Longitude	Latitude			Valid	Manufact.	Type-generator				Creator	Name						
1	20°45'46,56" East	53°05'29,53" North	158,2	GAMESA G97 2000 97,0 IO!	hu...	Yes	GAMESA	G97-2 000	2 000	97,0	90,0	EMD	Level 0 - Estimated - - 07-2012	8,0	User value	105,8	0 dB h

h) Generic octave distribution used

Calculation Results

### Sound Level

Noise sensitive area No.	Name	Geo [deg,min,sec]-WGS84		Z	Imission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Demands fulfilled ? Noise
		Longitude	Latitude					
A	Noise sensitive point: (1)	20°45'26,79" East	53°05'52,60" North	160,0	4,0	45,0	34,0	Yes
B	Noise sensitive point: (2)	20°45'25,01" East	53°05'47,80" North	160,0	4,0	45,0	35,5	Yes
C	Noise sensitive point: (3)	20°45'41,13" East	53°05'06,59" North	150,0	4,0	45,0	35,2	Yes
D	Noise sensitive point: (4)	20°45'46,17" East	53°05'06,67" North	150,0	4,0	45,0	35,3	Yes
E	Noise sensitive point: (5)	20°46'30,10" East	53°05'09,53" North	150,0	4,0	45,0	31,4	Yes

### Distances (m)

NSA	WTG	Distance (m)
1	1	802
A	1	692
B	1	716
C	1	707
D	1	1019

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**DECIBEL - Detailed results****Calculation:** G97 90m poprawione **Noise calculation model:** ISO 9613-2 General 8,0 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 Noise sensitive point: (1)**

WTG		Wind speed: 8,0 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	802	806	<b>34,00</b>	105,8	0,00	69,13	-	-	0,00	0,00	-	0,00
Sum	34,00											

- Data undefined due to calculation with octave data

**Noise sensitive area: B Noise sensitive point: (2)**

WTG		Wind speed: 8,0 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	692	697	<b>35,54</b>	105,8	0,00	67,87	-	-	0,00	0,00	-	0,00
Sum	35,54											

- Data undefined due to calculation with octave data

**Noise sensitive area: C Noise sensitive point: (3)**

WTG		Wind speed: 8,0 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	716	722	<b>35,17</b>	105,8	0,00	68,18	-	-	0,00	0,00	-	0,00
Sum	35,17											

- Data undefined due to calculation with octave data

**Noise sensitive area: D Noise sensitive point: (4)**

WTG		Wind speed: 8,0 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	707	713	<b>35,31</b>	105,8	0,00	68,06	-	-	0,00	0,00	-	0,00
Sum	35,31											

- Data undefined due to calculation with octave data

**Noise sensitive area: E Noise sensitive point: (5)**

WTG		Wind speed: 8,0 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	1 019	1 023	<b>31,42</b>	105,8	0,00	71,20	-	-	0,00	0,00	-	0,00
Sum	31,42											

- Data undefined due to calculation with octave data

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**DECIBEL - Assumptions for noise calculation****Calculation:** G97 90m poprawione **Noise calculation model:** ISO 9613-2 General 8,0 m/s**Noise calculation model:**

ISO 9613-2 General

**Wind speed:**

8,0 m/s

**Ground attenuation:**

General, Ground factor: 0,9

**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 Don't 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:** GAMESA G97 2000 97.0 !O!**Noise:** Level 0 - Estimated - - 07-2012

Source	Source/Date	Creator	Edited
Manufacturer	2012-07-30	EMD	2013-07-18 10:08

Based on document GD161807-en, Rev.0.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones	Octave data									
					Generic data	63	125	250	500	1000	2000	4000	8000	
					[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
User value	90,0	8,0	105,8	No	Generic data	87,4	94,4	97,8	100,4	100,2	97,3	92,5	83,0	

**NSA:** Noise sensitive point: (1)-A**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:****NSA:** Noise sensitive point: (2)-B**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:****NSA:** Noise sensitive point: (3)-C**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 45,0 dB(A)**Distance demand:****NSA:** Noise sensitive point: (4)-D**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:** G97 90m poprawione **Noise calculation model:** ISO 9613-2 General 8,0 m/s

**NSA:** Noise sensitive point: (5)-E

**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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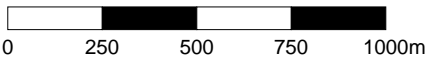
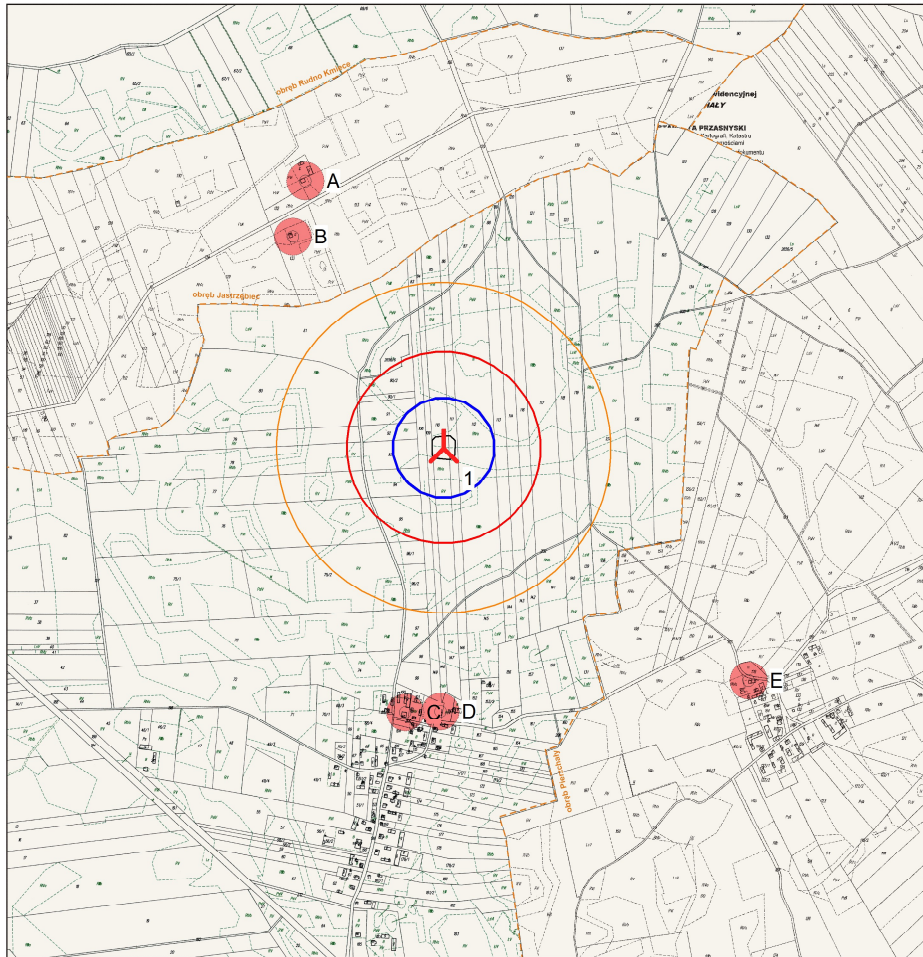
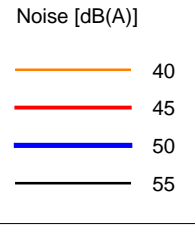
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### DECIBEL - Map 8,0 m/s

Calculation: G97 90m poprawione Noise calculation model: ISO 9613-2 General 8,0 m/s



Map: mapa falenty , Print scale 1:20 000, Map center Geo WGS84 East: 20°45'46,63" East North: 53°05'29,51" North

 New WTG

 Noise sensitive area

Noise calculation model: ISO 9613-2 General. Wind speed: 8,0 m/s

Height above sea level from active line object