

## VESTAS V112-3.3 Gridstreame 3300 112.0 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\VESTAS V112-3.3 Gridstreame 3300 112.0 !O!.wtg

Company VESTAS IEC Class IIA.  
 Type/Version V112-3.3 Gridstreame  
 Rated power 3 300,0 kW  
 Secondary generator 0,0 kW  
 Rotor diameter 112,0 m  
 Tower Tubular  
 Grid connection 50/60 Hz

Origin country DK  
 Blade type Vestas  
 Generator type Variable  
 Rpm, rated power 13,1 rpm  
 Rpm, initial 6,2 rpm  
 Hub height(s) 84,0; 94,0; 119,0; 140,0 m  
 Maximum blade width 4,00 m  
 Blade width for 90% radius 1,04 m  
 Valid Yes  
 Creator EMD  
 Created 2014-05-28 12:10  
 Edited 2014-05-28 12:10



### Power curve: Level 0 - Mode 0 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
					[m/s]	[kg/m3]	[°]		
2013-12-05 00:00	EMD	2009-10-16 13:09	2014-05-28 12:19	Yes	25,0	1,225	0,0	Pitch	User defined

Estimated power curve based on Document no.: 0034-7282 V07.

#### Power curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Power [kW]	22	73	134	209	302	415	552	714	906	1 123	1 370	1 648	1 950	2 268	2 586	2 868	3 071
Ce	0,135	0,282	0,347	0,380	0,400	0,413	0,423	0,431	0,438	0,441	0,443	0,445	0,443	0,438	0,429	0,411	0,382

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Power [kW]	3 201	3 266	3 291	3 298	3 299	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300
Ce	0,349	0,313	0,279	0,249	0,222	0,199	0,179	0,162	0,147	0,134	0,122	0,111	0,102	0,094	0,086	0,080	0,074

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Power [kW]	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300
Ce	0,068	0,063	0,059	0,055	0,051	0,048	0,045	0,042	0,040	0,037	0,035

#### Ct curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Ct	0,904	0,857	0,828	0,819	0,814	0,812	0,807	0,802	0,795	0,788	0,781	0,773	0,763	0,745	0,711	0,657	0,587

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Ct	0,514	0,445	0,385	0,335	0,296	0,263	0,234	0,209	0,189	0,171	0,156	0,142	0,131	0,120	0,111	0,102	0,095

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Ct	0,088	0,082	0,077	0,072	0,068	0,064	0,060	0,056	0,053	0,050	0,048

### Power curve: Level 2 - Mode 2 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
					[m/s]	[kg/m3]	[°]		
2013-12-05 00:00	EMD	2009-10-16 13:09	2014-05-28 12:18	No	25,0	1,225	0,0	Pitch	User defined

Estimated power curve based on Document no.: 0034-7282 V07.

#### Power curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Power [kW]	22	73	134	209	302	415	552	713	904	1 120	1 362	1 626	1 907	2 191	2 464	2 697	2 870
Ce	0,135	0,282	0,347	0,380	0,400	0,413	0,423	0,430	0,437	0,440	0,441	0,439	0,434	0,423	0,408	0,386	0,357

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Power [kW]	3 005	3 106	3 185	3 241	3 270	3 286	3 294	3 298	3 299	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300
Ce	0,327	0,298	0,270	0,244	0,220	0,198	0,179	0,162	0,147	0,134	0,122	0,111	0,102	0,094	0,086	0,080	0,074

## VESTAS V112-3.3 Gridstreame 3300 112.0 !O!

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Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Power [kW]	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300
Ce	0,068	0,063	0,059	0,055	0,051	0,048	0,045	0,042	0,040	0,037	0,035

### Ct curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Ct	0,904	0,856	0,826	0,811	0,807	0,804	0,801	0,794	0,784	0,775	0,759	0,739	0,715	0,684	0,643	0,588	0,526

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Ct	0,466	0,413	0,367	0,327	0,292	0,261	0,234	0,209	0,189	0,171	0,156	0,142	0,131	0,120	0,111	0,102	0,095

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Ct	0,088	0,082	0,077	0,072	0,068	0,064	0,060	0,056	0,053	0,050	0,048

### Power curve: Level 3 - Mode 3 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed [m/s]	Air density [kg/m3]	Tip angle [°]	Power control	CT curve type
2013-12-05 00:00	EMD	2009-10-16 13:09	2014-06-03 13:45	No	25,0	1,225	0,0	Pitch	User defined

Estimated power curve based on Document no.: 0034-7282 V07.

### Power curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Power [kW]	22	73	134	209	302	415	552	714	903	1 109	1 330	1 564	1 795	2 015	2 219	2 416	2 593
Ce	0,135	0,282	0,347	0,380	0,400	0,413	0,423	0,431	0,436	0,436	0,430	0,422	0,408	0,389	0,368	0,346	0,323

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Power [kW]	2 749	2 864	2 944	3 004	3 056	3 099	3 129	3 145	3 158	3 166	3 172	3 175	3 177	3 178	3 178	3 178	3 178
Ce	0,300	0,275	0,250	0,227	0,206	0,187	0,170	0,154	0,141	0,128	0,117	0,107	0,098	0,090	0,083	0,077	0,071

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Power [kW]	3 178	3 178	3 178	3 178	3 178	3 178	3 178	3 178	3 178	3 178	3 178
Ce	0,066	0,061	0,057	0,053	0,049	0,046	0,043	0,041	0,038	0,036	0,034

### Ct curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Ct	0,904	0,857	0,828	0,817	0,814	0,813	0,808	0,802	0,788	0,756	0,717	0,678	0,636	0,591	0,543	0,500	0,458

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Ct	0,418	0,376	0,337	0,301	0,271	0,244	0,221	0,198	0,180	0,164	0,149	0,137	0,126	0,116	0,107	0,098	0,091

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Ct	0,085	0,079	0,074	0,070	0,065	0,061	0,057	0,054	0,051	0,048	0,046

### Power curve: Level 4 - Mode 4 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed [m/s]	Air density [kg/m3]	Tip angle [°]	Power control	CT curve type
2013-12-05 00:00	EMD	2009-10-16 13:09	2014-05-28 14:47	No	25,0	1,225	0,0	Pitch	User defined

Estimated power curve based on Document no.: 0034-7282 V07.

### Power curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Power [kW]	22	73	134	207	293	401	534	693	880	1 085	1 300	1 508	1 700	1 879	2 044	2 201	2 350
Ce	0,135	0,282	0,347	0,376	0,388	0,399	0,410	0,418	0,425	0,426	0,421	0,407	0,386	0,363	0,339	0,315	0,293

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Power [kW]	2 496	2 630	2 744	2 821	2 863	2 893	2 910	2 920	2 926	2 929	2 932	2 933	2 934	2 934	2 934	2 934	2 934
Ce	0,272	0,252	0,233	0,213	0,193	0,175	0,158	0,143	0,130	0,119	0,108	0,099	0,091	0,083	0,077	0,071	0,066

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Power [kW]	2 935	2 935	2 935	2 935	2 935	2 935	2 935	2 935	2 935	2 935	2 935
Ce	0,061	0,056	0,053	0,049	0,046	0,043	0,040	0,037	0,035	0,033	0,031

### Ct curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Ct	0,904	0,857	0,826	0,788	0,745	0,739	0,744	0,748	0,747	0,732	0,699	0,650	0,593	0,539	0,490	0,445	0,406

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Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Ct	0,372	0,340	0,311	0,281	0,253	0,228	0,205	0,184	0,167	0,151	0,138	0,126	0,116	0,107	0,099	0,091	0,084

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Ct	0,078	0,073	0,068	0,064	0,060	0,057	0,053	0,050	0,047	0,045	0,042

Power curve: Level 5 - Mode 5 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed [m/s]	Air density [kg/m3]	Tip angle [°]	Power control	CT curve type
2013-12-05 00:00	EMD	2009-10-16 13:09	2014-05-28 12:24	No	25,0	1,225	0,0	Pitch	User defined

Estimated power curve based on Document no.: 0034-7282 V07.

Power curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Power [kW]	22	73	134	209	302	415	552	714	903	1 112	1 340	1 576	1 817	2 060	2 310	2 562	2 798
Ce	0,135	0,282	0,347	0,380	0,400	0,413	0,423	0,431	0,436	0,437	0,434	0,425	0,413	0,398	0,383	0,367	0,348

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Power [kW]	3 004	3 154	3 239	3 278	3 288	3 295	3 298	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300
Ce	0,327	0,302	0,275	0,247	0,221	0,199	0,179	0,162	0,147	0,134	0,122	0,111	0,102	0,094	0,086	0,080	0,074

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Power [kW]	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300	3 300
Ce	0,068	0,063	0,059	0,055	0,051	0,048	0,045	0,042	0,040	0,037	0,035

Ct curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Ct	0,904	0,857	0,828	0,819	0,814	0,812	0,807	0,802	0,794	0,778	0,748	0,708	0,664	0,622	0,581	0,543	0,504

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Ct	0,464	0,421	0,375	0,332	0,295	0,262	0,234	0,209	0,189	0,171	0,156	0,142	0,131	0,120	0,111	0,102	0,095

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Ct	0,088	0,082	0,077	0,072	0,068	0,064	0,060	0,056	0,053	0,050	0,048

Power curve: Level 8 - Mode 8 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed [m/s]	Air density [kg/m3]	Tip angle [°]	Power control	CT curve type
2013-12-05 00:00	EMD	2009-10-16 13:09	2014-05-28 12:25	No	25,0	1,225	0,0	Pitch	User defined

Estimated power curve based on Document no.: 0034-7282 V07.

Power curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Power [kW]	23	74	135	207	294	403	536	694	876	1 067	1 257	1 434	1 592	1 734	1 861	1 977	2 081
Ce	0,141	0,286	0,350	0,376	0,390	0,401	0,411	0,419	0,423	0,419	0,407	0,387	0,362	0,335	0,308	0,283	0,259

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Power [kW]	2 176	2 254	2 315	2 359	2 389	2 412	2 426	2 434	2 441	2 445	2 449	2 452	2 451	2 453	2 454	2 457	2 458
Ce	0,237	0,216	0,196	0,178	0,161	0,146	0,132	0,120	0,109	0,099	0,090	0,083	0,076	0,070	0,064	0,059	0,055

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Power [kW]	2 458	2 458	2 458	2 457	2 458	2 458	2 458	2 458	2 458	2 458	2 458
Ce	0,051	0,047	0,044	0,041	0,038	0,036	0,033	0,031	0,029	0,028	0,026

Ct curve

Wind speed [m/s]	3,00	3,50	4,00	4,50	5,00	5,50	6,00	6,50	7,00	7,50	8,00	8,50	9,00	9,50	10,00	10,50	11,00
Ct	0,900	0,852	0,823	0,784	0,743	0,739	0,743	0,744	0,733	0,705	0,660	0,605	0,546	0,491	0,440	0,396	0,357

Wind speed [m/s]	11,50	12,00	12,50	13,00	13,50	14,00	14,50	15,00	15,50	16,00	16,50	17,00	17,50	18,00	18,50	19,00	19,50
Ct	0,323	0,291	0,261	0,235	0,212	0,191	0,172	0,155	0,140	0,128	0,117	0,107	0,098	0,090	0,083	0,077	0,071

Wind speed [m/s]	20,00	20,50	21,00	21,50	22,00	22,50	23,00	23,50	24,00	24,50	25,00
Ct	0,066	0,062	0,058	0,054	0,051	0,048	0,045	0,042	0,040	0,038	0,036

## VESTAS V112-3.3 Gridstream 3300 112.0 !O!

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### HP curve comparison

Vmean	[m/s]	5	6	7	8	9	10
HP value	[MWh]	5 070	7 832	10 560	13 033	15 149	16 862
Level 0 - Mode 0 - Estimated - 12-2013	[MWh]	4 961	7 723	10 469	12 960	15 083	16 786
Check value	[%]	2	1	1	1	0	0
Level 2 - Mode 2 - Estimated - 12-2013	[MWh]	4 867	7 536	10 201	12 641	14 739	16 436
Check value	[%]	4	4	4	3	3	3
Level 3 - Mode 3 - Estimated - 12-2013	[MWh]	4 680	7 155	9 628	11 907	13 884	15 499
Check value	[%]	8	9	10	9	9	9
Level 4 - Mode 4 - Estimated - 12-2013	[MWh]	4 472	6 773	9 056	11 153	12 969	14 450
Check value	[%]	13	16	17	17	17	17
Level 5 - Mode 5 - Estimated - 12-2013	[MWh]	4 777	7 391	10 027	12 458	14 560	16 269
Check value	[%]	6	6	5	5	4	4
Level 8 - Mode 8 - Estimated - 12-2013	[MWh]	4 270	6 307	8 259	10 006	11 491	12 682
Check value	[%]	19	24	28	30	32	33

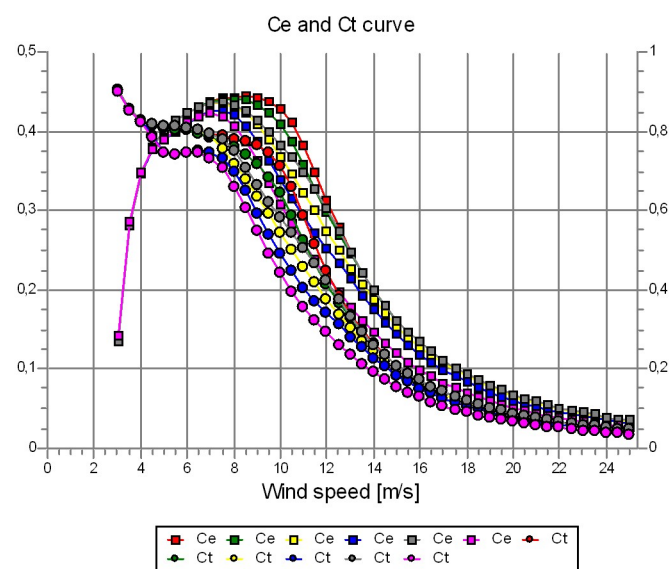
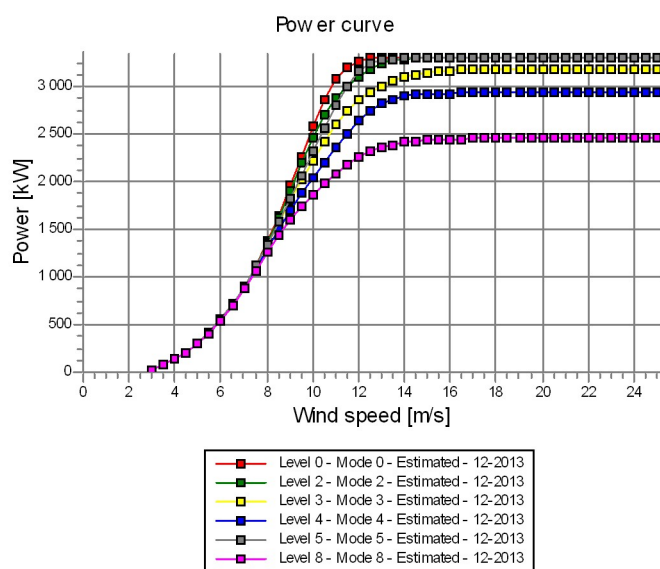
The table shows comparison between annual energy production calculated on basis of simplified "HP-curves" which assume that all WTGs performs quite similar - only specific power loading ( $\text{kW}/\text{m}^2$ ) and single/dual speed or stall/pitch decides the calculated values. Productions are without wake losses.

For further details, ask at the Danish Energy Agency for project report J.nr. 51171/00-0016 or see WindPRO manual chapter 3.5.2.

The method is refined in EMD report "20 Detailed Case Studies comparing Project Design Calculations and actual Energy Productions for Wind Energy Projects worldwide", jan 2003.

Use the table to evaluate if the given power curve is reasonable - if the check value are lower than -5%, the power curve probably is too optimistic due to uncertainty in power curve measurement.

Updated in WindPRO 2.8, Feb. 2012, see details in manual!



Noise: Level 0 - Mode 0 - Estimated - 12-2013

Source Manufacturer

Source date Creator Created Edited Default  
2013-12-05 00:00 EMD 2014-05-28 15:16 2014-05-28 15:18 Yes

Hub height	Wind speed	Lwa,ref	Wind speed dependency	Pure tones
[m]	[m/s]	[dB(A)]	[dB(A)/m/s]	
84,0	3,0	88,7	1,0	No
	4,0	95,2	1,0	No
	5,0	100,7	1,0	No
	6,0	104,7	1,0	No
	7,0	106,5	1,0	No
	8,0	106,5	1,0	No
	9,0	106,5	1,0	No
	10,0	106,5	1,0	No
	11,0	106,5	1,0	No
	12,0	106,5	1,0	No
94,0	13,0	106,5	1,0	No
	3,0	89,1	1,0	No
	4,0	96,6	1,0	No
	5,0	101,4	1,0	No
	6,0	105,1	1,0	No
	7,0	106,5	1,0	No
	8,0	106,5	1,0	No

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## VESTAS V112-3.3 Gridstreame 3300 112.0 !O!

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Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
119,0	9,0	106,5	1,0	No
	10,0	106,5	1,0	No
	11,0	106,5	1,0	No
	12,0	106,5	1,0	No
	13,0	106,5	1,0	No
	3,0	90,0	1,0	No
	4,0	96,5	1,0	No
	5,0	102,0	1,0	No
	6,0	105,6	1,0	No
	7,0	106,5	1,0	No
	8,0	106,5	1,0	No
	9,0	106,5	1,0	No
	10,0	106,5	1,0	No
140,0	11,0	106,5	1,0	No
	12,0	106,5	1,0	No
	13,0	106,5	1,0	No
	3,0	90,5	1,0	No
	4,0	97,3	1,0	No
	5,0	102,7	1,0	No
	6,0	105,9	1,0	No
	7,0	106,5	1,0	No
	8,0	106,5	1,0	No
	9,0	106,5	1,0	No
	10,0	106,5	1,0	No
	11,0	106,5	1,0	No
	12,0	106,5	1,0	No
	13,0	106,5	1,0	No

Based on Document no.: 0034-7282 V07.

Noise: Level 2 - Mode 2 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-12-05 00:00	EMD	2014-05-28 15:16	2014-05-28 15:19	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
84,0	3,0	92,7	1,0	No
	4,0	96,4	1,0	No
	5,0	100,5	1,0	No
	6,0	103,3	1,0	No
	7,0	104,5	1,0	No
	8,0	104,5	1,0	No
	9,0	104,5	1,0	No
	10,0	104,5	1,0	No
	11,0	104,5	1,0	No
	12,0	104,5	1,0	No
	13,0	104,5	1,0	No
94,0	3,0	92,9	1,0	No
	4,0	96,7	1,0	No
	5,0	101,0	1,0	No
	6,0	103,6	1,0	No
	7,0	104,5	1,0	No
	8,0	104,5	1,0	No
	9,0	104,5	1,0	No
	10,0	104,5	1,0	No
	11,0	104,5	1,0	No
	12,0	104,5	1,0	No
	13,0	104,5	1,0	No
119,0	3,0	93,3	1,0	No
	4,0	97,3	1,0	No
	5,0	101,5	1,0	No
	6,0	103,9	1,0	No
	7,0	104,5	1,0	No
	8,0	104,5	1,0	No

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## VESTAS V112-3.3 Gridstreame 3300 112.0 !O!

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Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
140,0	9,0	104,5	1,0	No
	10,0	104,5	1,0	No
	11,0	104,5	1,0	No
	12,0	104,5	1,0	No
	13,0	104,5	1,0	No
	3,0	93,5	1,0	No
	4,0	97,9	1,0	No
	5,0	101,9	1,0	No
	6,0	104,1	1,0	No
	7,0	104,5	1,0	No
	8,0	104,5	1,0	No
	9,0	104,5	1,0	No
	10,0	104,5	1,0	No
	11,0	104,5	1,0	No
	12,0	104,5	1,0	No
	13,0	104,5	1,0	No

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Noise: Level 3 - Mode 3 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-12-05 00:00	EMD	2014-05-28 15:16	2014-05-28 15:21	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
84,0	3,0	92,7	1,0	No
	4,0	96,4	1,0	No
	5,0	100,3	1,0	No
	6,0	102,1	1,0	No
	7,0	102,5	1,0	No
	8,0	102,5	1,0	No
	9,0	102,5	1,0	No
	10,0	102,5	1,0	No
	11,0	102,5	1,0	No
	12,0	102,5	1,0	No
94,0	13,0	102,5	1,0	No
	3,0	92,9	1,0	No
	4,0	96,7	1,0	No
	5,0	100,7	1,0	No
	6,0	102,2	1,0	No
	7,0	102,5	1,0	No
	8,0	102,5	1,0	No
	9,0	102,5	1,0	No
	10,0	102,5	1,0	No
	11,0	102,5	1,0	No
119,0	12,0	102,5	1,0	No
	13,0	102,5	1,0	No
	3,0	93,3	1,0	No
	4,0	97,4	1,0	No
	5,0	101,0	1,0	No
	6,0	102,4	1,0	No
	7,0	102,5	1,0	No
	8,0	102,5	1,0	No
	9,0	102,5	1,0	No
	10,0	102,5	1,0	No
140,0	11,0	102,5	1,0	No
	12,0	102,5	1,0	No
	13,0	102,5	1,0	No
	3,0	93,5	1,0	No
	4,0	97,9	1,0	No
	5,0	101,3	1,0	No
	6,0	102,5	1,0	No
	7,0	102,5	1,0	No
	8,0	102,5	1,0	No

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## VESTAS V112-3.3 Gridstreame 3300 112.0 !O!

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Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
	9,0	102,5		1,0 No
	10,0	102,5		1,0 No
	11,0	102,5		1,0 No
	12,0	102,5		1,0 No
	13,0	102,5		1,0 No

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Noise: Level 4 - Mode 4 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-12-05 00:00	EMD	2014-05-28 15:16	2014-05-28 15:22	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
84,0	3,0	92,3		1,0 No
	4,0	94,6		1,0 No
	5,0	98,7		1,0 No
	6,0	100,9		1,0 No
	7,0	101,0		1,0 No
	8,0	101,0		1,0 No
	9,0	101,0		1,0 No
	10,0	101,0		1,0 No
	11,0	101,0		1,0 No
	12,0	101,0		1,0 No
	13,0	101,0		1,0 No
94,0	3,0	92,4		1,0 No
	4,0	94,9		1,0 No
	5,0	99,1		1,0 No
	6,0	101,0		1,0 No
	7,0	101,0		1,0 No
	8,0	101,0		1,0 No
	9,0	101,0		1,0 No
	10,0	101,0		1,0 No
	11,0	101,0		1,0 No
	12,0	101,0		1,0 No
	13,0	101,0		1,0 No
119,0	3,0	92,6		1,0 No
	4,0	95,4		1,0 No
	5,0	99,6		1,0 No
	6,0	101,0		1,0 No
	7,0	101,0		1,0 No
	8,0	101,0		1,0 No
	9,0	101,0		1,0 No
	10,0	101,0		1,0 No
	11,0	101,0		1,0 No
	12,0	101,0		1,0 No
	13,0	101,0		1,0 No
140,0	3,0	92,7		1,0 No
	4,0	96,0		1,0 No
	5,0	100,0		1,0 No
	6,0	101,0		1,0 No
	7,0	101,0		1,0 No
	8,0	101,0		1,0 No
	9,0	101,0		1,0 No
	10,0	101,0		1,0 No
	11,0	101,0		1,0 No
	12,0	101,0		1,0 No
	13,0	101,0		1,0 No

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Noise: Level 5 - Mode 5 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-12-05 00:00	EMD	2014-05-28 15:16	2014-05-28 15:23	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
84,0	3,0	92,7	1,0	No
	4,0	96,5	1,0	No
	5,0	100,2	1,0	No
	6,0	101,9	1,0	No
	7,0	102,9	1,0	No
	8,0	103,9	1,0	No
	9,0	104,0	1,0	No
	10,0	104,0	1,0	No
	11,0	104,0	1,0	No
	12,0	104,0	1,0	No
	13,0	104,0	1,0	No
94,0	3,0	92,9	1,0	No
	4,0	96,8	1,0	No
	5,0	100,6	1,0	No
	6,0	102,0	1,0	No
	7,0	103,0	1,0	No
	8,0	104,0	1,0	No
	9,0	104,0	1,0	No
	10,0	104,0	1,0	No
	11,0	104,0	1,0	No
	12,0	104,0	1,0	No
	13,0	104,0	1,0	No

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Noise: Level 8 - Mode 8 - Estimated - 12-2013

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-12-05 00:00	EMD	2014-05-28 15:16	2014-05-28 15:24	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
119,0	3,0	92,5	1,0	No
	4,0	95,4	1,0	No
	5,0	99,0	1,0	No
	6,0	99,9	1,0	No
	7,0	100,0	1,0	No
	8,0	100,0	1,0	No
	9,0	100,0	1,0	No
	10,0	100,0	1,0	No
	11,0	100,0	1,0	No
	12,0	100,0	1,0	No
	13,0	100,0	1,0	No

Based on Document no.: 0034-7282 V07.

### Visual data

Name Visual  
Source Manufacturer

Hub height [m]	Source date	Creator	Created	Edited	Default
119,000	2010-04-29 13:41	EMD	2010-04-29 09:35	2014-06-03 13:49	Yes

### Tower

Height [m]	Bottom diameter [m]	Top diameter [m]
75,0	3,9	3,2
4,0	3,9	3,9
40,0	4,2	3,9



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Cabin

Distance cabin front (rotor) to tower center: 20 %

Shape	Height front [m]	Height back [m]	Width front [m]	Width back [m]	Length bottom [m]	Length top [m]	Front offset [m]	Rear offset [m]
Box	4,00	0,60	3,90	3,90	0,90	0,90	0,00	0,00
Box	4,00	4,00	3,90	3,90	0,89	0,89	0,00	0,00
Box	6,77	6,77	3,90	3,90	1,95	1,95	1,40	1,40
Box	4,00	6,77	3,90	3,90	2,00	2,00	0,00	1,40
Box	4,00	4,00	3,90	3,90	5,18	5,18	0,00	0,00
Box	4,11	4,00	3,90	3,90	1,22	0,83	0,05	0,00
Box	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Rotor and hub

Distance cabin front (rotor) to tower center: 20 %

Number of blades

3

Blade position (center to cabin)

1,70 m

Chord max

4,00 m

Rotor position relative to tower

Up wind

Hub length (cabin to spinner tip)

5,00 m

Spinner length (0 = no spinner)

3,30 m

Hub diameter (2xradius from hub center to blade root)

3,30 m

Spinner max diameter

4,80 m

Shaft radius

4,50 m

Hub tilt angle

6,0 °

Blade cone angle

-2,0 °

