

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Company ENERCON For further information like IEC-certifications please contact
 Type/Version E-115 site.assessment@enercon.de
 Rated power 2 500,0 kW
 Secondary generator 0,0 kW
 Rotor diameter 115,7 m
 Tower Tubular
 Grid connection 50 Hz

Origin country DE
 Blade type
 Generator type Variable
 Rpm, rated power 0,0 rpm
 Rpm, initial 0,0 rpm
 Hub height(s) 135,4; 149,0; 92,0 m
 Maximum blade width 4,53 m
 Blade width for 90% radius 1,38 m
 Valid No
 Creator EMD
 Created 2013-01-07 09:52
 Edited 2013-01-07 09:52

Power curve: Level 0 - calculated - Op.Mode I - 2500kW - 06/2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
					[m/s]	[kg/m3]	[°]		
2013-06-26 00:00	EMD	2013-01-08 10:38	2013-10-24 13:16	Yes	25,0	1,225	0,0	Pitch	User defined

According to Enercon specification document "Power Curve E115 2.5MW calculated S0266587-0Vers 2_0_ger-eng.pdf", 2013-06-26

Power curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Power [kW]	0	3	49	155	339	628	1 036	1 549	2 040	2 382	2 490	2 500	2 500	2 500	2 500	2 500	2 500
Ce	0,000	0,058	0,279	0,376	0,421	0,451	0,469	0,470	0,435	0,370	0,291	0,225	0,177	0,141	0,115	0,095	0,079

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Power [kW]	2 500	2 500	2 500	2 500	2 500	2 500	2 500	2 500
Ce	0,067	0,057	0,049	0,042	0,036	0,032	0,028	0,025

Ct curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Ct	0,000	1,000	0,980	0,940	0,910	0,880	0,880	0,870	0,850	0,560	0,390	0,290	0,230	0,180	0,150	0,120	0,100

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Ct	0,090	0,080	0,070	0,060	0,060	0,050	0,050	0,040

Power curve: Level 1 - calculated - 2000kW - 09/2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
					[m/s]	[kg/m3]	[°]		
2013-09-27 00:00	EMD	2013-01-08 10:38	2013-10-24 13:22	No	25,0	1,225	0,0	Pitch	User defined

According to Enercon specification document "Power Curve E115 2.0MW calculated Vers 1_0_ger.pdf", 2013-09-27

Power curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Power [kW]	0	3	49	155	339	628	1 036	1 510	1 840	1 970	2 000	2 000	2 000	2 000	2 000	2 000	2 000
Ce	0,000	0,058	0,279	0,376	0,421	0,451	0,469	0,458	0,392	0,306	0,233	0,180	0,141	0,113	0,092	0,076	0,063

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Power [kW]	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000
Ce	0,053	0,045	0,039	0,034	0,029	0,026	0,022	0,020

Ct curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Ct	0,000	1,000	1,000	0,940	0,910	0,880	0,880	0,870	0,640	0,420	0,300	0,230	0,180	0,140	0,120	0,100	0,080

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Ct	0,070	0,060	0,050	0,050	0,040	0,040	0,030	0,040

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Power curve: Level 2 - calculated - 1500kW - 09/2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
2013-09-27 00:00	EMD	2013-01-08 10:38	2013-10-24 13:54	No	[m/s] 25,0	[kg/m3] 1,225	[°] 0,0	Pitch	User defined
According to Enercon specification document "Power Curve E115 1.5MW calculated Vers 1_0_ger.pdf", 2013-09-27									

Power curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Power [kW]	0	3	49	155	339	628	1 010	1 300	1 470	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500
Ce	0,000	0,058	0,279	0,376	0,421	0,451	0,457	0,394	0,313	0,233	0,175	0,135	0,106	0,085	0,069	0,057	0,047

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Power [kW]	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500
Ce	0,040	0,034	0,029	0,025	0,022	0,019	0,017	0,015

Ct curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Ct	0,000	1,000	1,000	0,940	0,910	0,880	0,880	0,740	0,430	0,300	0,220	0,170	0,130	0,110	0,090	0,080	0,070

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Ct	0,060	0,050	0,050	0,040	0,040	0,030	0,030	0,030

Power curve: Level 3 - calculated - 1000kW - 09/2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
2013-09-27 00:00	EMD	2013-01-08 10:38	2013-10-24 13:57	No	[m/s] 25,0	[kg/m3] 1,225	[°] 0,0	Pitch	User defined
According to Enercon specification document "Power Curve E115 1.0MW calculated Vers 1_0_ger.pdf", 2013-09-27									

Power curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Power [kW]	0	3	49	155	339	615	880	990	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Ce	0,000	0,058	0,279	0,376	0,421	0,442	0,398	0,300	0,213	0,155	0,117	0,090	0,071	0,057	0,046	0,038	0,032

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Power [kW]	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Ce	0,027	0,023	0,019	0,017	0,015	0,013	0,011	0,010

Ct curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Ct	0,000	1,000	1,000	0,940	0,910	0,880	0,750	0,410	0,280	0,200	0,150	0,120	0,090	0,080	0,070	0,060	0,050

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Ct	0,040	0,040	0,030	0,030	0,030	0,030	0,020	0,020

Power curve: Level 4 - calculated - 600kW - 09/2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed	Air density	Tip angle	Power control	CT curve type
2013-09-27 00:00	EMD	2013-01-08 10:38	2013-10-24 13:59	No	[m/s] 25,0	[kg/m3] 1,225	[°] 0,0	Pitch	User defined
According to Enercon specification document "Power Curve E115 0.6MW calculated Vers 1_0_ger.pdf", 2013-09-27									

Power curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Power [kW]	0	3	49	155	339	520	600	600	600	600	600	600	600	600	600	600	600
Ce	0,000	0,058	0,279	0,376	0,421	0,374	0,272	0,182	0,128	0,093	0,070	0,054	0,042	0,034	0,028	0,023	0,019

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Power [kW]	600	600	600	600	600	600	600	600
Ce	0,016	0,014	0,012	0,010	0,009	0,008	0,007	0,006

Ct curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Ct	0,000	1,000	1,000	0,940	0,910	0,680	0,370	0,240	0,160	0,120	0,090	0,080	0,060	0,050	0,050	0,040	0,030

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Wind speed [m/s] 18,00 19,00 20,00 21,00 22,00 23,00 24,00 25,00
 Ct 0,030 0,030 0,030 0,020 0,020 0,020 0,020 0,010

Power curve: Level 5 - calculated - 400kW - 09/2013

Source Manufacturer

Source date	Creator	Created	Edited	Default	Stop windSpeed [m/s]	Air density [kg/m3]	Tip angle [°]	Power control	CT curve type
2013-09-27 00:00	EMD	2013-01-08 10:38	2013-10-24 14:01	No	25,0	1,225	0,0	Pitch	User defined

According to Enercon specification document "Power Curve E115 0.4MW calculated Vers 1_0_ger.pdf", 2013-09-27

Power curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Power [kW]	0	3	49	155	320	388	400	400	400	400	400	400	400	400	400	400	400
Ce	0,000	0,058	0,279	0,376	0,398	0,279	0,181	0,121	0,085	0,062	0,047	0,036	0,028	0,023	0,018	0,015	0,013

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Power [kW]	400	400	400	400	400	400	400	400
Ce	0,011	0,009	0,008	0,007	0,006	0,005	0,004	0,004

Ct curve

Wind speed [m/s]	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	15,00	16,00	17,00
Ct	0,000	1,000	1,000	0,940	0,910	0,400	0,240	0,160	0,120	0,090	0,070	0,060	0,050	0,040	0,040	0,030	0,030

Wind speed [m/s]	18,00	19,00	20,00	21,00	22,00	23,00	24,00	25,00
Ct	0,020	0,020	0,020	0,020	0,020	0,010	0,010	0,010

HP curve comparison

Vmean	[m/s]	5	6	7	8	9	10
HP value	[MWh]	5 076	7 445	9 619	11 480	13 003	14 191

Level 0 - calculated - Op.Mode I - 2500kW - 06/2013	[MWh]	5 220	7 590	9 754	11 599	13 099	14 255
Check value	[%]	-3	-2	-1	-1	-1	0
Level 1 - calculated - 2000kW - 09/2013	[MWh]	4 877	6 866	8 604	10 038	11 177	12 034
Check value	[%]	4	8	12	14	16	18
Level 2 - calculated - 1500kW - 09/2013	[MWh]	4 329	5 861	7 139	8 160	8 950	9 530
Check value	[%]	17	27	35	41	45	49
Level 3 - calculated - 1000kW - 09/2013	[MWh]	3 575	4 600	5 403	6 016	6 475	6 800
Check value	[%]	42	62	78	91	101	109
Level 4 - calculated - 600kW - 09/2013	[MWh]	2 642	3 220	3 647	3 959	4 185	4 338
Check value	[%]	92	131	164	190	211	227
Level 5 - calculated - 400kW - 09/2013	[MWh]	2 010	2 363	2 614	2 793	2 920	3 002
Check value	[%]	153	215	268	311	345	373

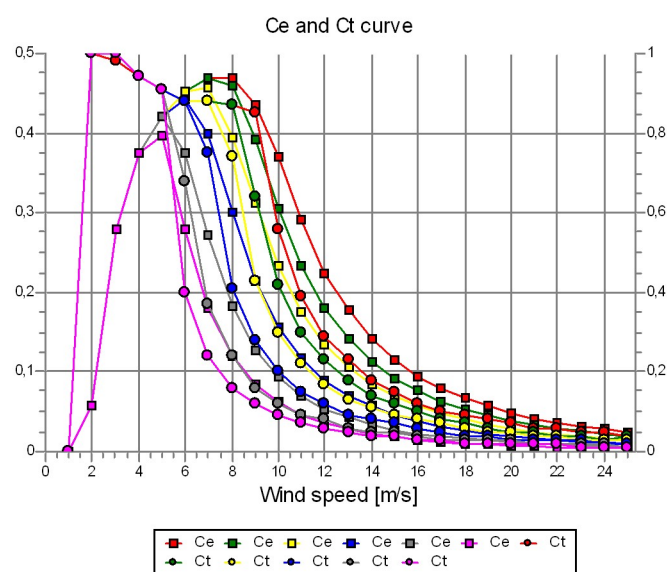
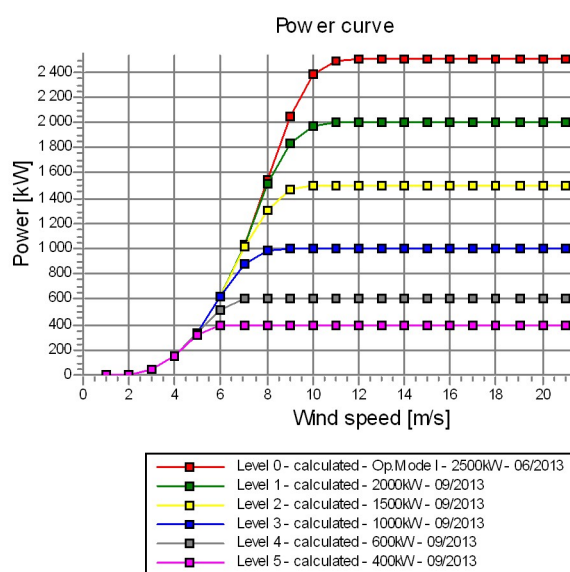
The table shows comparison between annual energy production calculated on basis of simplified "HP-curves" which assume that all WTGs performs quite similar - only specific power loading (kW/m^2) and single/dual speed or stall/pitch decides the calculated values. Productions are without wake losses.

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!



ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Noise: Level 0 - calculated - Rev1_4 - Op.Mode I

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-08-01 00:00	EMD	2013-01-07 10:03	2013-10-24 14:07	Yes

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
92,0	95%	105,6		1,0 No
	3,0	90,9		1,0 No
	4,0	96,5		1,0 No
	5,0	100,5		1,0 No
	6,0	103,1		1,0 No
	7,0	104,7		1,0 No
	8,0	105,4		1,0 No
	9,0	105,6		1,0 No
	10,0	105,6		1,0 No
	135,4	95%	105,6	
3,0		91,9		1,0 No
4,0		97,5		1,0 No
5,0		101,3		1,0 No
6,0		103,7		1,0 No
7,0		105,0		1,0 No
8,0		105,6		1,0 No
9,0		105,6		1,0 No
10,0		105,6		1,0 No
149,0		95%	105,6	
	3,0	92,1		1,0 No
	4,0	97,7		1,0 No
	5,0	101,5		1,0 No
	6,0	103,9		1,0 No
	7,0	105,1		1,0 No
	8,0	105,6		1,0 No
	9,0	105,6		1,0 No
	10,0	105,6		1,0 No

Based on information from ENERCON Site Assessment Department, doc. SPL E-115 OM I 2.5 MW Est Rev1_4-ger-ger, 08/2013

Noise: Level 1 - calculated - Rev. 1_0 - 2000kW

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-09-01 00:00	EMD	2013-09-27 09:04	2013-09-27 09:08	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
All	95%	103,8		1,0 No

Based on information from ENERCON Site Assessment Department, doc. SPL E-115 Red Rev1_0-ger-ger.pdf, 09/2013

Noise: Level 2 - calculated - Rev. 1_0 - 1500kW

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-09-01 00:00	EMD	2013-09-27 09:04	2013-09-27 09:09	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
All	95%	102,0		1,0 No

Based on information from ENERCON Site Assessment Department, doc. SPL E-115 Red Rev1_0-ger-ger.pdf, 09/2013

Noise: Level 3 - calculated - Rev. 1_0 - 1000kW

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-09-01 00:00	EMD	2013-09-27 09:04	2013-09-27 09:09	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
All	95%	100,0		1,0 No

Based on information from ENERCON Site Assessment Department, doc. SPL E-115 Red Rev1_0-ger-ger.pdf, 09/2013

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Noise: Level 4 - calculated - Rev. 1_0 - 600kW

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-09-01 00:00	EMD	2013-09-27 09:04	2013-09-27 09:09	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
All	95%	97,5	1,0	No

Based on information from ENERCON Site Assessment Department, doc. SPL E-115 Red Rev1_0-ger-ger.pdf, 09/2013

Noise: Level 5 - calculated - Rev. 1_0 - 400kW

Source Manufacturer

Source date	Creator	Created	Edited	Default
2013-09-01 00:00	EMD	2013-09-27 09:04	2013-10-24 11:25	No

Hub height [m]	Wind speed [m/s]	Lwa,ref [dB(A)]	Wind speed dependency [dB(A)/m/s]	Pure tones
All	95%	94,0	1,0	No

Based on information from ENERCON Site Assessment Department, doc. SPL E-115 Red Rev1_0-ger-ger.pdf, 09/2013

Visual data

Name	Hub height 135.4 m red tips
Source	ENERCON GmbH

Hub height [m]	Source date	Creator	Created	Edited	Default
135,400	2013-02-27 00:00	EMD	2001-04-11 16:43	2013-03-12 10:10	Yes

Tower

Height [m]	Bottom diameter [m]	Top diameter [m]
22,4	3,8	3,2
19,6	4,3	3,8
3,8	4,4	4,3
3,6	4,5	4,4
3,6	4,6	4,5
3,6	4,8	4,6
3,6	4,9	4,8
3,6	5,0	4,9
3,6	5,2	5,0
3,6	5,3	5,2
3,6	5,5	5,3
3,6	5,7	5,5
3,6	5,8	5,7
3,6	6,1	5,8
3,6	6,3	6,1
3,6	6,5	6,3
3,6	6,8	6,5
3,6	7,1	6,8
3,6	7,4	7,1
3,6	7,7	7,4
3,6	8,1	7,7
3,6	8,4	8,1
3,6	8,8	8,4
3,6	9,3	8,8
3,6	9,7	9,3
3,6	10,2	9,7
3,6	10,7	10,2

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Cabin

Distance cabin front (rotor) to tower center: 40 %

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]
Cylinder	1,50	0,60	1,50	0,60	0,20	0,20	-0,50	-0,50
Cylinder	3,70	1,50	3,70	1,50	1,50	1,50	-0,40	-0,50
Cylinder	5,00	3,70	5,00	3,70	1,80	1,80	-0,25	-0,40
Cylinder	6,00	5,00	6,00	5,00	2,00	2,00	-0,10	-0,25
Cylinder	6,40	6,00	6,40	6,00	2,00	2,00	0,00	-0,10

Rotor and hub

Distance cabin front (rotor) to tower center: 40 %

Number of blades

Blade position (center to cabin)

Chord max

Rotor position relative to tower

Hub length (cabin to spinner tip)

Spinner length (0 = no spinner)

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

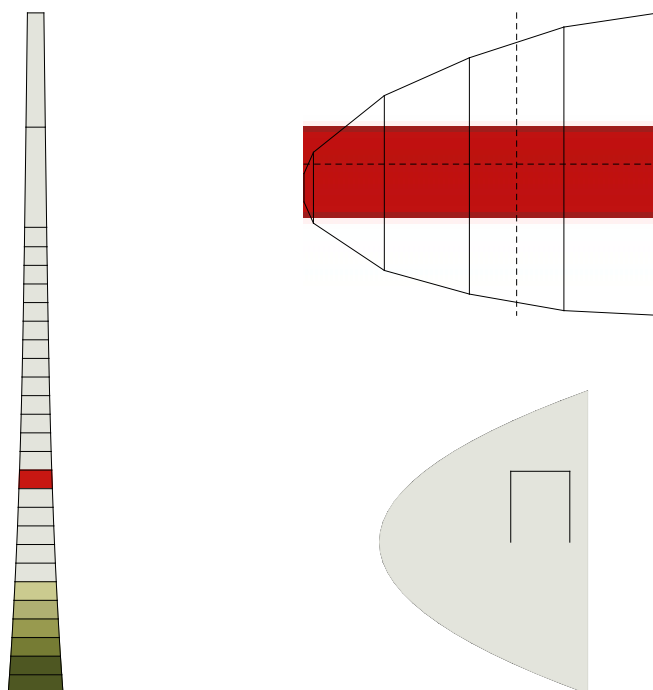
Spinner max diameter

Shaft radius

Hub tilt angle

Blade cone angle

3
1,00 m
5,00 m
Up wind
4,40 m
4,40 m
3,00 m
6,40 m
6,40 m
5,0 °
0,0 °



Visual data

Name Hub height 135.4 m
Source ENERCON GmbH

Hub height [m]	Source date	Creator	Created	Edited	Default
135,400	2013-02-27 00:00	EMD	2001-04-11 16:43	2013-03-12 09:24	No

Tower

Height Bottom diameter Top diameter
[m] [m] [m] [m]
windPRO 3.0.619 by EMD International A/S, Tel. +45 96 35 44 44, www.emd.dk, windpro@emd.dk

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Cabin

Distance cabin front (rotor) to tower center: 40 %

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]
Cylinder	1,50	0,60	1,50	0,60	0,20	0,20	-0,50	-0,50
Cylinder	3,70	1,50	3,70	1,50	1,50	1,50	-0,40	-0,50
Cylinder	5,00	3,70	5,00	3,70	1,80	1,80	-0,25	-0,40
Cylinder	6,00	5,00	6,00	5,00	2,00	2,00	-0,10	-0,25
Cylinder	6,40	6,00	6,40	6,00	2,00	2,00	0,00	-0,10

Rotor and hub

Distance cabin front (rotor) to tower center: 40 %

Number of blades 3

Blade position (center to cabin) 1,00 m

Chord max 5,00 m

Rotor position relative to tower Up wind

Hub length (cabin to spinner tip) 4,40 m

Spinner length (0 = no spinner) 4,40 m

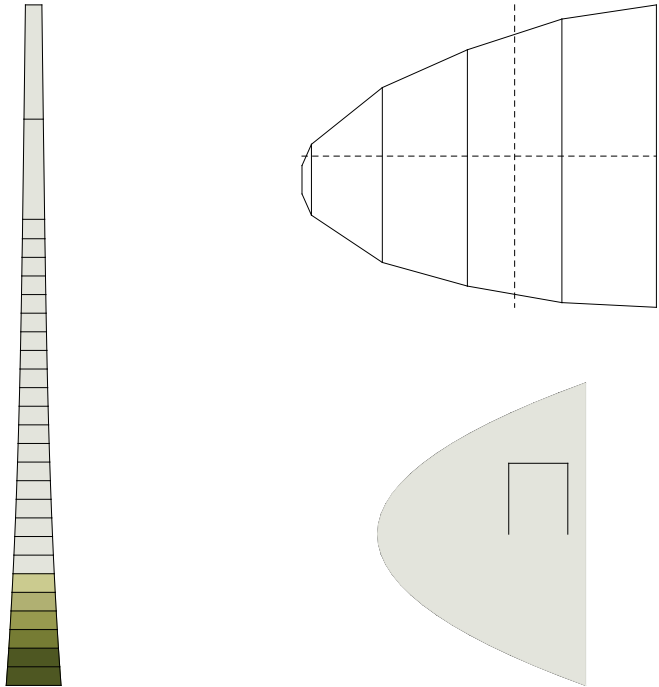
Hub diameter (2xradius from hub center to blade root) 3,00 m

Spinner max diameter 6,40 m

Shaft radius 6,40 m

Hub tilt angle 5,0 °

Blade cone angle 0,0 °



Visual data

Name Hub height 149.0 m red tips

Source ENERCON GmbH

Hub height [m]	Source date	Creator	Created	Edited	Default
149,000	2013-03-11 00:00	EMD	2001-04-11 16:43	2013-03-12 10:10	No

Tower

Height Bottom diameter Top diameter
[m] [m] [m] [m]

windPRO 3.0.619 by EMD International A/S, Tel. +45 96 35 44 44, www.emd.dk, windpro@emd.dk

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Cabin

Distance cabin front (rotor) to tower center: 40 %

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]
Cylinder	1,50	0,60	1,50	0,60	0,20	0,20	-0,50	-0,50
Cylinder	3,70	1,50	3,70	1,50	1,50	1,50	-0,40	-0,50
Cylinder	5,00	3,70	5,00	3,70	1,80	1,80	-0,25	-0,40
Cylinder	6,00	5,00	6,00	5,00	2,00	2,00	-0,10	-0,25
Cylinder	6,40	6,00	6,40	6,00	2,00	2,00	0,00	-0,10

Rotor and hub

Distance cabin front (rotor) to tower center: 40 %

Number of blades

Blade position (center to cabin)

Chord max

Rotor position relative to tower

Hub length (cabin to spinner tip)

Spinner length (0 = no spinner)

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

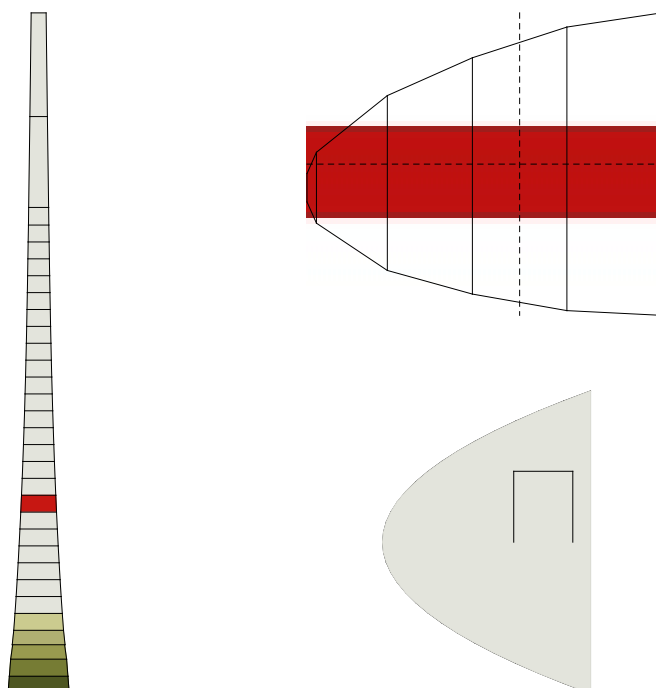
Spinner max diameter

Shaft radius

Hub tilt angle

Blade cone angle

3
1,00 m
5,00 m
Up wind
4,40 m
4,40 m
3,00 m
6,40 m
6,40 m
5,0 °
0,0 °

**Visual data**

Name Hub height 149.0 m
Source ENERCON GmbH

Hub height [m]	Source date	Creator	Created	Edited	Default
149,000	2013-03-11 00:00	EMD	2001-04-11 16:43	2013-03-12 09:24	No

Tower

Height Bottom diameter Top diameter
[m] [m] [m] [m]
149,0 4,0 10,0 10,0
147,0 4,0 10,0 10,0
145,0 4,0 10,0 10,0
143,0 4,0 10,0 10,0
141,0 4,0 10,0 10,0
139,0 4,0 10,0 10,0
137,0 4,0 10,0 10,0
135,0 4,0 10,0 10,0
133,0 4,0 10,0 10,0
131,0 4,0 10,0 10,0
129,0 4,0 10,0 10,0
127,0 4,0 10,0 10,0
125,0 4,0 10,0 10,0
123,0 4,0 10,0 10,0
121,0 4,0 10,0 10,0
119,0 4,0 10,0 10,0
117,0 4,0 10,0 10,0
115,0 4,0 10,0 10,0
113,0 4,0 10,0 10,0
111,0 4,0 10,0 10,0
109,0 4,0 10,0 10,0
107,0 4,0 10,0 10,0
105,0 4,0 10,0 10,0
103,0 4,0 10,0 10,0
101,0 4,0 10,0 10,0
99,0 4,0 10,0 10,0
97,0 4,0 10,0 10,0
95,0 4,0 10,0 10,0
93,0 4,0 10,0 10,0
91,0 4,0 10,0 10,0
89,0 4,0 10,0 10,0
87,0 4,0 10,0 10,0
85,0 4,0 10,0 10,0
83,0 4,0 10,0 10,0
81,0 4,0 10,0 10,0
79,0 4,0 10,0 10,0
77,0 4,0 10,0 10,0
75,0 4,0 10,0 10,0
73,0 4,0 10,0 10,0
71,0 4,0 10,0 10,0
69,0 4,0 10,0 10,0
67,0 4,0 10,0 10,0
65,0 4,0 10,0 10,0
63,0 4,0 10,0 10,0
61,0 4,0 10,0 10,0
59,0 4,0 10,0 10,0
57,0 4,0 10,0 10,0
55,0 4,0 10,0 10,0
53,0 4,0 10,0 10,0
51,0 4,0 10,0 10,0
49,0 4,0 10,0 10,0
47,0 4,0 10,0 10,0
45,0 4,0 10,0 10,0
43,0 4,0 10,0 10,0
41,0 4,0 10,0 10,0
39,0 4,0 10,0 10,0
37,0 4,0 10,0 10,0
35,0 4,0 10,0 10,0
33,0 4,0 10,0 10,0
31,0 4,0 10,0 10,0
29,0 4,0 10,0 10,0
27,0 4,0 10,0 10,0
25,0 4,0 10,0 10,0
23,0 4,0 10,0 10,0
21,0 4,0 10,0 10,0
19,0 4,0 10,0 10,0
17,0 4,0 10,0 10,0
15,0 4,0 10,0 10,0
13,0 4,0 10,0 10,0
11,0 4,0 10,0 10,0
9,0 4,0 10,0 10,0
7,0 4,0 10,0 10,0
5,0 4,0 10,0 10,0
3,0 4,0 10,0 10,0
1,0 4,0 10,0 10,0

windPRO 3.0.619 by EMD International A/S, Tel. +45 96 35 44 44, www.emd.dk, windpro@emd.dk

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Cabin

Distance cabin front (rotor) to tower center: 40 %

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]
Cylinder	1,50	0,60	1,50	0,60	0,20	0,20	-0,50	-0,50
Cylinder	3,70	1,50	3,70	1,50	1,50	1,50	-0,40	-0,50
Cylinder	5,00	3,70	5,00	3,70	1,80	1,80	-0,25	-0,40
Cylinder	6,00	5,00	6,00	5,00	2,00	2,00	-0,10	-0,25
Cylinder	6,40	6,00	6,40	6,00	2,00	2,00	0,00	-0,10

Rotor and hub

Distance cabin front (rotor) to tower center: 40 %

Number of blades 3

Blade position (center to cabin) 1,00 m

Chord max 5,00 m

Rotor position relative to tower Up wind

Hub length (cabin to spinner tip) 4,40 m

Spinner length (0 = no spinner) 4,40 m

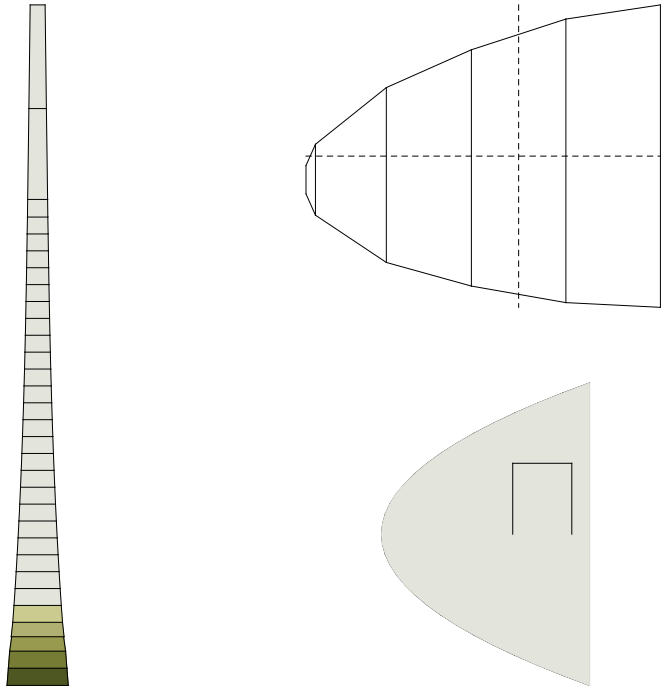
Hub diameter (2xradius from hub center to blade root) 3,00 m

Spinner max diameter 6,40 m

Shaft radius 6,40 m

Hub tilt angle 5,0 °

Blade cone angle 0,0 °



Visual data

Name	Hub height 92.0 m red tips
Source	ENERCON GmbH

Hub height [m]	Source date	Creator	Created	Edited	Default
92,000	2013-08-28 00:00	EMD	2001-04-11 16:43	2013-08-29 10:31	No

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Cabin

Distance cabin front (rotor) to tower center: 40 %

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]
Cylinder	1,50	0,60	1,50	0,60	0,20	0,20	-0,50	-0,50
Cylinder	3,70	1,50	3,70	1,50	1,50	1,50	-0,40	-0,50
Cylinder	5,00	3,70	5,00	3,70	1,80	1,80	-0,25	-0,40
Cylinder	6,00	5,00	6,00	5,00	2,00	2,00	-0,10	-0,25
Cylinder	6,40	6,00	6,40	6,00	2,00	2,00	0,00	-0,10

Rotor and hub

Distance cabin front (rotor) to tower center: 40 %

Number of blades 3

Blade position (center to cabin) 1,00 m

Chord max 5,00 m

Rotor position relative to tower Up wind

Hub length (cabin to spinner tip) 4,40 m

Spinner length (0 = no spinner) 4,40 m

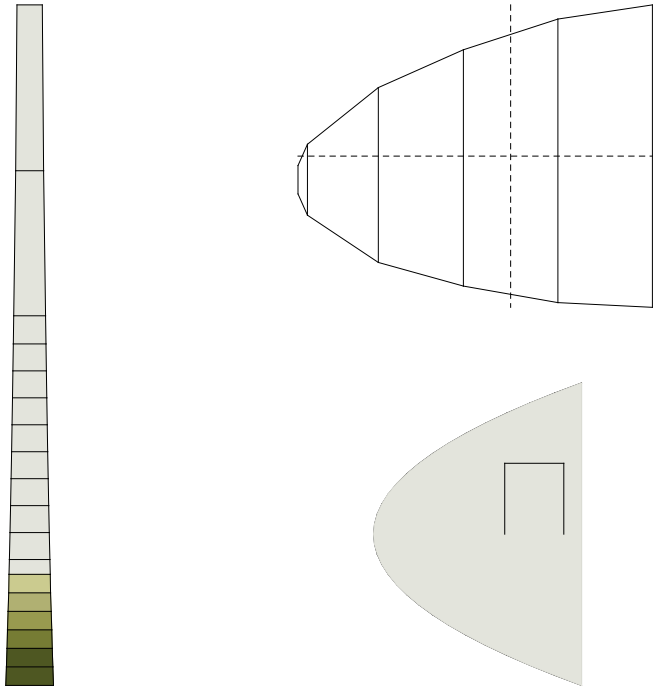
Hub diameter (2xradius from hub center to blade root) 3,00 m

Spinner max diameter 6,40 m

Shaft radius 6,40 m

Hub tilt angle 5,0 °

Blade cone angle 0,0 °



Visual data

Name Hub height 92.0 m

Source ENERCON GmbH

Hub height [m]	Source date	Creator	Created	Edited	Default
92,000	2013-08-28 00:00	EMD	2001-04-11 16:43	2013-08-29 10:32	No

Tower

ENERCON E-115 2500 115.7 !O!

File C:\Users\Kuczynski\Documents\WindPRO Data\WTG Data\ENERCON E-115 2500 115.7 !O!.wtg

Cabin

Distance cabin front (rotor) to tower center: 40 %

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]
Cylinder	1,50	0,60	1,50	0,60	0,20	0,20	-0,50	-0,50
Cylinder	3,70	1,50	3,70	1,50	1,50	1,50	-0,40	-0,50
Cylinder	5,00	3,70	5,00	3,70	1,80	1,80	-0,25	-0,40
Cylinder	6,00	5,00	6,00	5,00	2,00	2,00	-0,10	-0,25
Cylinder	6,40	6,00	6,40	6,00	2,00	2,00	0,00	-0,10

Rotor and hub

Distance cabin front (rotor) to tower center: 40 %

Number of blades

3

Blade position (center to cabin)

1,00 m

Chord max

5,00 m

Rotor position relative to tower

Up wind

Hub length (cabin to spinner tip)

4,40 m

Spinner length (0 = no spinner)

4,40 m

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

3,00 m

Spinner max diameter

6,40 m

Shaft radius

6,40 m

Hub tilt angle

5,0 °

Blade cone angle

0,0 °

