Assessment of the impact of the RBE on the power curve - interim report

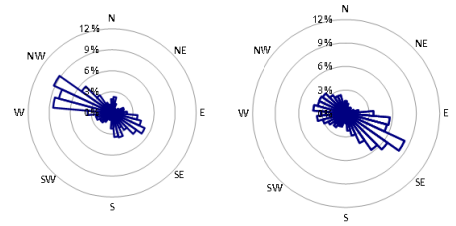
Reference air density: 1.225 kg/m³			Power curve				Power curve With RBE				Electrical Power difference [%]
Bin											
Bin nr. i	from [m/s]	to [m/s]	Wind speed U_i [m/s]	Electric power P_i [kW]	c_p [-]	Nr. of data sets [-]	Wind speed U_i [m/s]	Electric power P_i [kW]	c_p [-]	Nr. of data sets [-]	
1	0.25	0.75	0.66	0.00	0.00	48	0.67	0.00	0.00	223	-
2	0.75	1.25	1.04	-0.02	-0.01	308	1.03	-0.06	-0.03	801	-
3	1.25	1.75	1.53	-0.21	-0.03	435	1.53	-0.16	-0.02	933	-
4	1.75	2.25	1.99	-0.51	-0.03	578	2.00	-0.45	-0.03	1036	-
5	2.25	2.75	2.48	0.64	0.02	550	2.48	1.97	0.07	1134	-
6	2.75	3.25	3.01	7.85	0.16	584	3.00	12.01	0.24	1340	-
7	3.25	3.75	3.52	21.74	0.27	593	3.52	29.37	0.36	1585	35%
8	3.75	4.25	3.99	42.23	0.36	547	4.00	49.39	0.42	1633	17%
9	4.25	4.75	4.49	64.44	0.38	696	4.50	72.33	0.43	1804	12%
10	4.75	5.25	5.00	94.06	0.41	781	5.00	100.62	0.44	2021	7%
11	5.25	5.75	5.50	129.28	0.42	801	5.50	137.64	0.45	2105	6%
12	5.75	6.25	6.00	172.18	0.43	701	6.00	185.52	0.47	1903	8%
13	6.25	6.75	6.49	228.75	0.45	589	6.50	245.42	0.48	1750	7%
14	6.75	7.25	7.00	295.62	0.47	535	7.00	312.10	0.49	1533	6%
15	7.25	7.75	7.49	360.64	0.47	539	7.49	385.07	0.50	1418	7%
16	7.75	8.25	8.00	439.05	0.46	512	7.99	464.31	0.49	1315	6%
17	8.25	8.75	8.50	516.01	0.45	468	8.49	556.39	0.49	1296	8%
18	8.75	9.25	8.99	598.22	0.45	405	8.99	649.09	0.48	1151	9%
19	9.25	9.75	9.50	689.43	0.43	381	9.50	750.89	0.47	1124	9%
20	9.75	10.25	9.99	780.19	0.42	346	10.00	854.47	0.46	928	10%
21	10.25	10.75	10.49	881.62	0.41	300	10.49	957.55	0.45	828	9%
22	10.75	11.25	10.99	968.97	0.39	266	11.00	1057.39	0.43	613	9%
23	11.25	11.75	11.49	1048.25	0.37	246	11.50	1141.43	0.41	642	9%
24	11.75	12.25	12.01	1132.94	0.35	213	12.00	1209.72	0.38	528	7%
25	12.25	12.75	12.51	1187.71	0.33	209	12.50	1255.12	0.35	499	6%
26	12.75	13.25	12.98	1234.01	0.30	149	12.99	1285.89	0.32	436	4%
27	13.25	13.75	13.51	1277.07	0.28	161	13.50	1304.54	0.29	411	2%
28	13.75	14.25	13.95	1300.09	0.26	129	14.00	1317.42	0.26	436	1%
29	14.25	14.75	14.50	1317.76	0.23	133	14.51	1322.79	0.23	346	0%
30	14.75	15.25	15.01	1319.74	0.21	101	15.02	1326.13	0.21	339	0%
31	15.25	15.75	15.51	1325.66	0.19	97	15.51	1327.93	0.19	374	0%
32	15.75	16.25	15.99	1326.76	0.18	98	15.99	1329.24	0.18	337	0%
33	16.25	16.75	16.51	1328.82	0.16	78	16.49	1329.63	0.16	285	0%
34	16.75	17.25	17.01	1328.74	0.15	91	16.98	1329.79	0.15	264	0%
35	17.25	17.75	17.49	1327.63	0.13	89	17.50	1329.93	0.13	194	0%
36	17.75	18.25	17.98	1327.41	0.12	71	17.97	1329.91	0.12	200	0%
37	18.25	18.75	18.49	1328.99	0.11	53	18.48	1329.88	0.11	167	0%
38	18.75	19.25	18.99	1327.29	0.10	37	18.96	1329.64	0.11	133	0%
39	19.25	19.75	19.50	1327.31	0.10	29	19.48	1329.46	0.10	112	0%
40	19.75	20.25	19.91	1328.84	0.09	8	19.98	1329.79	0.09	95	0%
41	20.25	20.75	20.45	1329.73	0.08	8	20.50	1330.11	0.08	66	0%
42	20.75	21.25	21.01	1330.18	0.08	5	20.94	1330.03	0.08	35	0%
43	21.25	21.75	21.53	1330.20	0.07	3	21.49	1329.93	0.07	24	0%
44	21.75	22.25	-	-	-	0	21.96	1329.92	0.07	11	-
45	22.25	22.75	-	-	-	0	22.32	1328.90	0.06	1	-
46	22.75	23.25	-	-	-	0	-	-	-	0	-
47	23.25	23.75	-	-	-	0	-	-	-	0	-
48	23.75	24.25	-	-	-	0	-	-	-	0	-
49	24.25	24.75	-	-	-	0	-	-	-	0	-
50	24.75	25.25	-	-	-	0	-	-	-	0	-
Sum of valid 10 min data sets						**12971**				**34409**	

Client:	EnergieKontor
Period under appreciation:	
Without RBE:	17Mr15 - 24Jn15
With RBE:	17Jl15 - 30Ap16
Report's release date:	11-05-2016
Prepared by:	SG
Approved by:	JCM

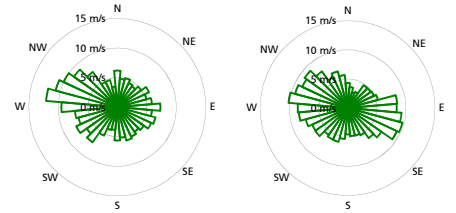
The wind speed figures correspond to the readings taken by the nacelle anemometers without the application of any correction apart from their normalization.

WT3 original — WT3 with RBE

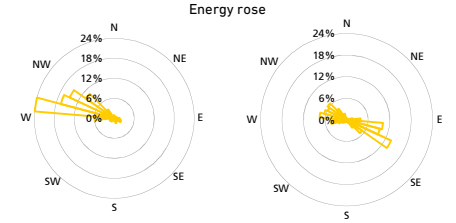
Wind Rose



Average wind speed



Energy rose



Observations:

Wind distribution		AEP - Measured [MWh]	AEP - Extrapolated [MWh	AEP - Measured WithRBE [MWh]	AEP - Extrapolated WithRBE [MWh]	AEP - Measured [MWh] and difference [%]	AEP - Extrapolated [MWh] and difference [%]
Rayleigh distribution	V_{annual} = 4 m/s	822	822	895	895	8.8%	8.8%
	V_{annual} = 5 m/s	1588	1588	1715	1715	8.0%	8.0%
	V_{annual} = 6 m/s	2518	2518	2700	2701	7.2%	7.2%
	V_{annual} = 7 m/s	3494	3499	3720	3724	6.5%	6.4%
	V_{annual} = 8 m/s	4412	4441	4666	4689	5.8%	5.6%
	V_{annual} = 9 m/s	5192	5284	5466	5539	5.3%	4.8%
	V_{annual} = 10 m/s	5792	5989	6079	6242	5.0%	4.2%
	V_{annual} = 11 m/s	6198*	6536	6497	6780	-	3.7%
	V_{annual} = 12 m/s	6428*	6923	6733*	7153	-	3.3%
	V_{annual} = 13 m/s	6507*	7160	6818*	7375	-	3.0%
Local distribution (A=7.5; k=2.3)		**3050**	**3050**	**3270**	**3270**	**7.2%**	**7.2%**

* Incomplete

Rua Doutor Roberto Frias, 400 | 4200-465 Porto | Portugal | Tlf: +351 229 578 710 | Fax: +351 229 537 352 | e-mail: inegi@inegi.up.pt | www.inegi.up.pt

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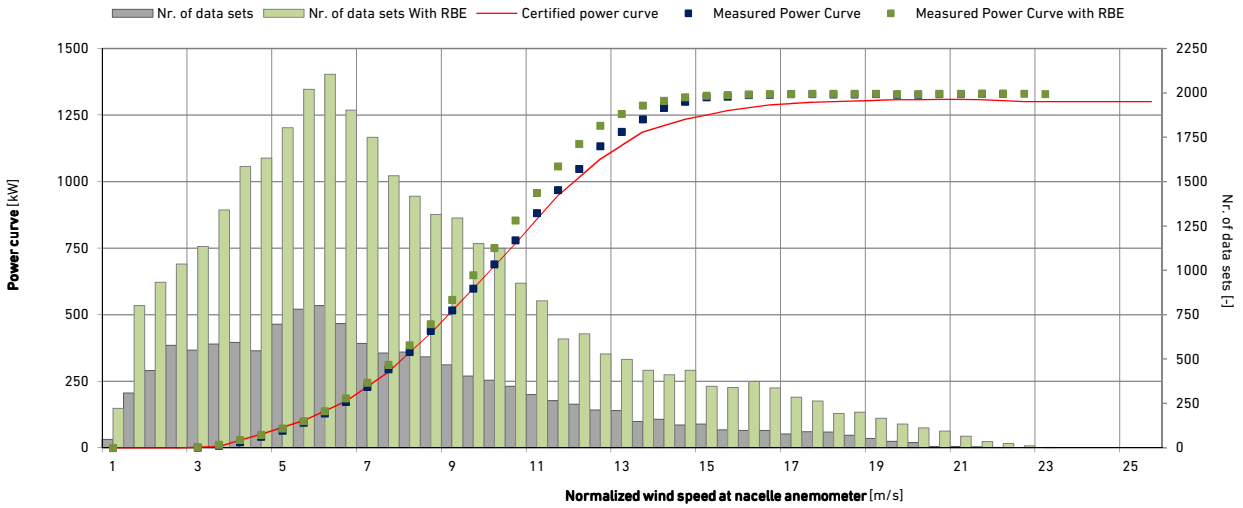

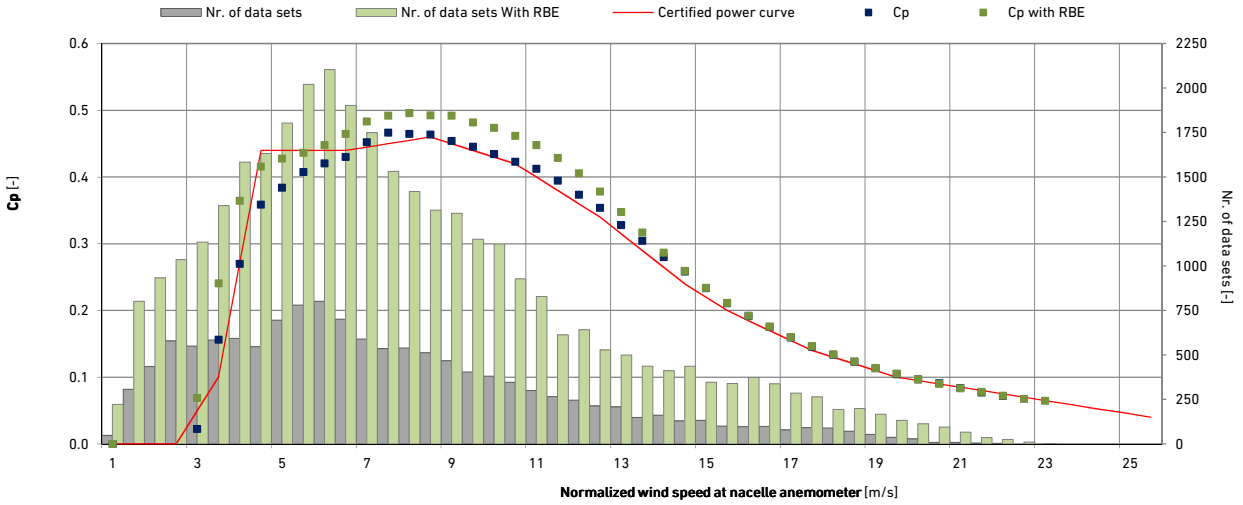

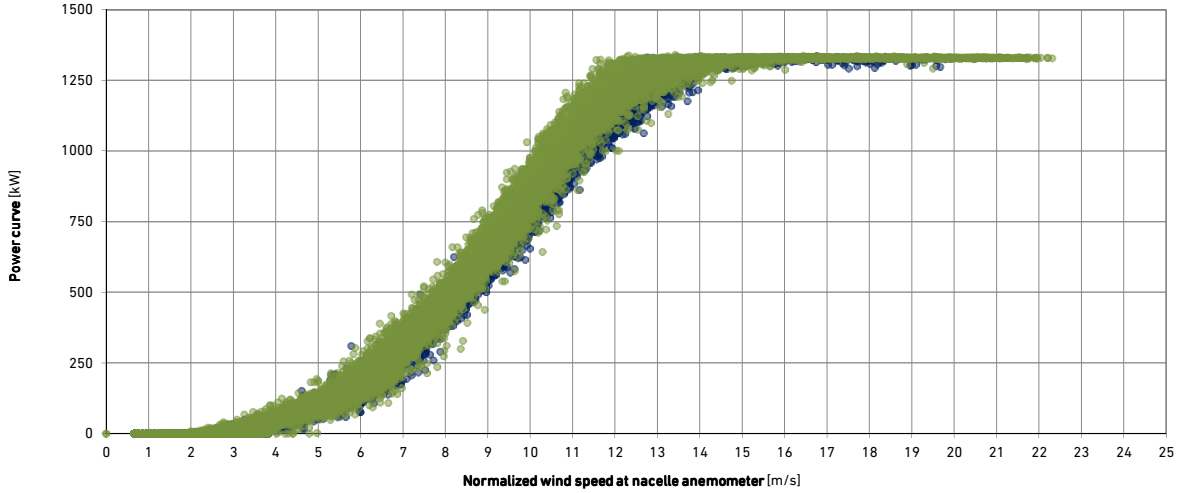

Rua Doutor Roberto Frias, 400 | 4200-465 Porto | Portugal | Tlf: +351 229 578 710 | Fax: +351 229 537 352 | e-mail: inegi@inegi.up.pt | www.inegi.up.pt