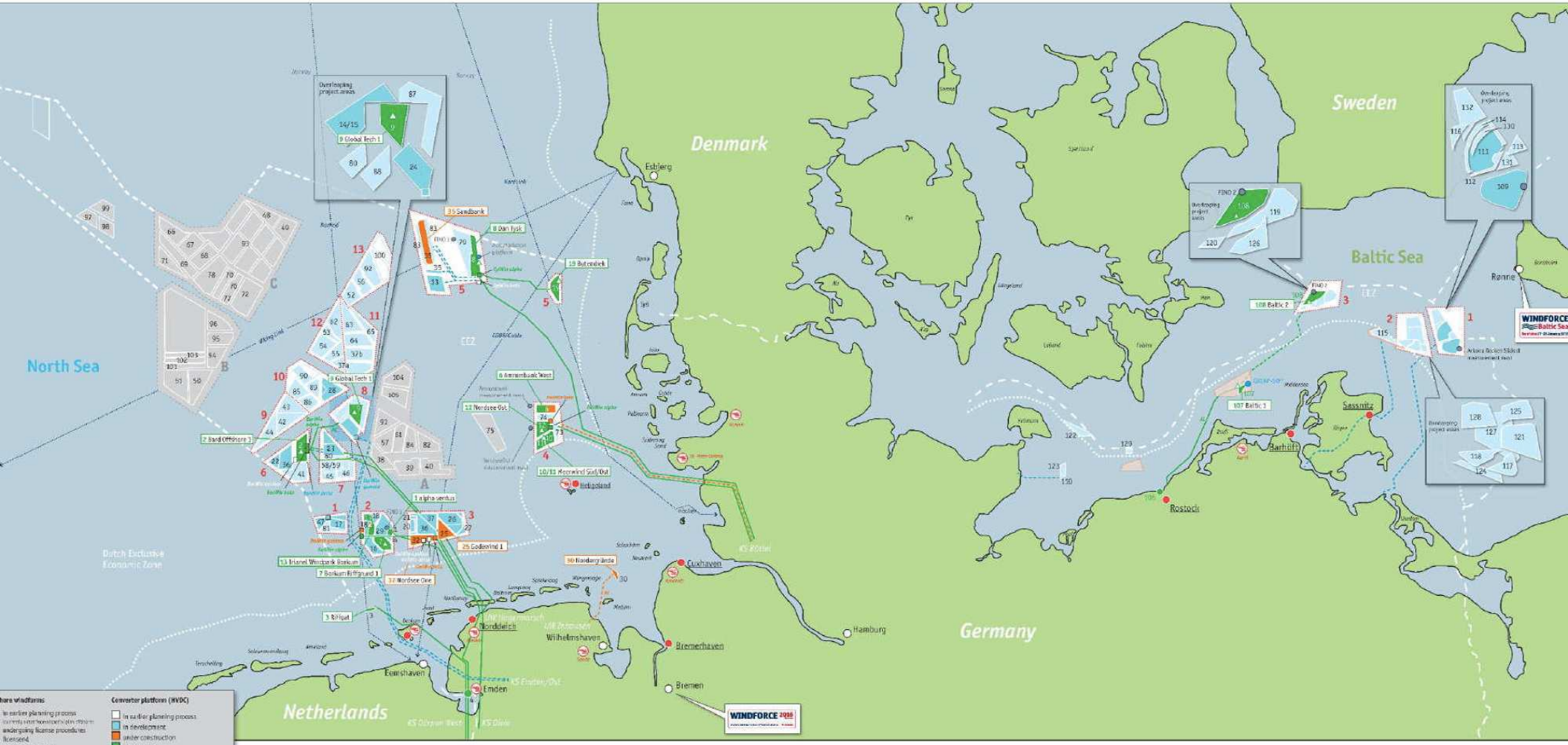
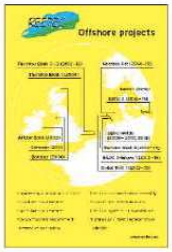
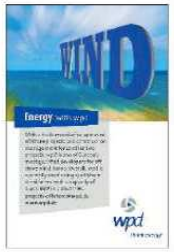


OFFSHORE WIND FARMS IN THE GERMAN NORTH SEA / BALTIC SEA





LEGAL NOTICE

Publisher:
WAB e.V.
Eichhalde Str. 2
D-79183 Dreisamtal
T +49 (0)761/203 1-15
F +49 (0)761/203 1-10
info@wab.net
www.wab.net

Editorial staff:
Steffen Schröder, WAB

Layout:
Marc Pabler, marcpabler.de

May 2015

www.wab.net

wab

OFFSHORE WIND FARMS IN THE GERMAN NORTH SEA / BALTIC SEA

North Sea

No.	Project name	Cluster on map/ Cluster Review	Location	Developer/Operator	Turbine Type	Number of WTG	Total output [MW]	Commissioning	Distance to nearest coast [km]	Water depth [m]
Operational (12)										
1	alpha ventus	1	EEZ	DOTI (Deutsche Offshore Testfeld- und Infrastruktur GmbH & Co. KG) (E.ON, EWE, Vattenfall)	6 x Repower 5M, 6 x Adwen AD 5-116	12	60	2010	45	30
2	Amrumbank West	6/5a/NFG	EEZ	E.ON (Große Nordseeküste / Amrumbank West)	Siemens SWT-3.6-107	80	300	2015	35	21–25
3	BARD Offshore 1	2/5a/NFG	EEZ	Ocean Breeze Energy	Bard 5.0	80	400	2013	87	28–41
4	Borkum Riffgat	12 NM Zone	EEZ	EWE (EWE/EVO/EVN)	Siemens SWT-3.6-107	30	108	2014	25	16–21
5	Borkum Riffgrund 1	2/5a/NFG	EEZ	DONG Energy/Vattenfall/S. The Offshore Foundation	Siemens SWT-4.0-130	77	277	2015	34	23–29
6	Dan Tysk	5/5a/NFG	EEZ	Dan Tysk Offshore Wind, (Vattenfall Europe Windkraft 51%, Stadtwerke München 49%)	Siemens SWT-3.6-107	80	288	2015	70	23–32
7	Gode Wind 1	12 NM Zone	EEZ	DONG ENERGY/EWE/EVN	Siemens 2.3	3	6.3	2004	0.45	1
8	Global Tech I	6/5a/NFG	EEZ	Global Tech I Offshore Wind GmbH (DOT, Hochtief, Eneman Offshore, Aegis International, Wilmersdorf, BC Wind I/II, STUI / Stadtwerke München)	Adwen AD 5-116	80	400	2015	73	39–40
9	Meerwind Ost	4/5a/NFG	EEZ	WindMW (Blackstone/Windcomf)	Siemens SWT-3.6-107	40	144	2014	53	22–26
10	Meerwind Süd	4/5a/NFG	EEZ	WindMW (Blackstone/Windcomf)	Siemens SWT-3.6-107	40	144	2014	53	22–26
11	Nordsee Ost	4/5a/NFG	EEZ	RWE Energy	Siemens 6.2M-126	48	288	2015	30	19–25
12	Trianel Windpark Borkum (Borkum West II, 1. Phase)	2/5a/NFG	EEZ	Trianel Windkraftwerk Borkum	Adwen AD 5-116	40	200	2015	45	25–30
Summary						488	2,411			
Under Construction (5)										
13	Baltic1	3/5a/NFG	EEZ	wpd offshore, Marguerite Fund, Infrastructure Partner, PGA, Siemens, CIC, EBZ	Siemens SWT-3.6-107	80	288	2014	16	17–22
14	Gode Wind 2	1/5a/NFG	EEZ	DONG ENERGY	Siemens SWT-4.0-154	55	220	2014	35	28–32
15	Hamburg Gode	12 NM Zone	EEZ	wpd offshore	Siemens 6.2M-126	18	111	2014	12	2–14
16	Nordsee One (Formerly Energy Nordsee 1)	2/5a/NFG	EEZ	RWE Energy / Northland Power Inc.	Siemens 6.2M-126	54	332	2014	46	28–34
17	Sandbank	5/5a/NFG	EEZ	Vattenfall Europe Windkraft	Siemens SWT-4.0-130	72	288	2014	100	20–40
Summary						280	1,039			
Licensed Wind Farms (19)										
18	Albatros	2/5a/NFG	EEZ	EnBW Energie Baden-Württemberg		40	160		105	42
19	Albatros 1	6/5a/NFG	EEZ	EnBW Energie Baden-Württemberg		16	50		44	42
20	Borkum Riffgrund 2	2/5a/NFG	EEZ	DONG Energy	Siemens SWT-3.6-107	72	262		34	23–28
21	Borkum Riffgrund West 1	1/5a/NFG	EEZ	DONG Energy		80	400		45	30–35
22	Delta Nordsee 1	3/5a/NFG	EEZ	DWP Delta Nordsee, E.ON Energy Projects		48	360		40	28–35
23	Delta Nordsee 2	4/5a/NFG	EEZ	DWP Delta Nordsee, E.ON Energy Projects		32	200		40	29–35
24	Deutsche Bucht	6/5a/NFG	EEZ	British Petroleum (Windmills), Highland Energy Holdings Ltd. (Jackson Capital)		42	272		94	40
25	EnBW Ho Dreibank	1/5a/NFG	EEZ	EnBW Energie Baden-Württemberg		110	595		85	28–35
26	EnBW Hohe See	3/5a/NFG	EEZ	EnBW Erneuerbare und konventionelle Erzeugung AG		80	492		73	40
27	Gode Wind 2 and 4	2/5a/NFG	EEZ	DONG Energy	Siemens SWT-6.0-154	84	504		35	28–34
28	Gode Wind III	1/5a/NFG	EEZ	PNE Wind		75	90		44	30–40
29	Kaikas	10/5a/NFG	EEZ	wpd offshore		80	500		110	39–43
30	MEG 1	2/5a/NFG	EEZ	EDPR (Leonardo Wind / Nordsee Offshore MEG 1)		80	400		45	30–35
31	Nordlicher Grund	3	EEZ	Wind MW		84	210		80	27–38
32	Nordsee Three	3/5a/NFG	EEZ	RWE Energy / Northland Power Inc.		80	269			26–36
33	Nordsee two	3/5a/NFG	EEZ	RWE Energy / Northland Power Inc.		48	295			26–36
34	OWP West	1/5a/NFG	EEZ	Northern Energy (OWP West / STRABAG OW EVS)		42	400		50	29–33
35	Trianel Windpark Borkum (Borkum West II, 2. Phase)	2/5a/NFG	EEZ			40	200		45	25–35
36	Veja Mate	6/5a/NFG	EEZ	Cassiopeia Capital		72	400		87	39–43
Summary						1,144	6,176			
Wind Farms undergoing licensing procedures (56)										
37a	Alpiras	1	EEZ	wpd offshore		80	400			39
37b	Apollon	1	EEZ	wpd offshore		80	400		38 – 41	
38	Area C1	A	EEZ	Windtech		80	400		46	36 – 43
39	Area C II	A	EEZ	Windtech		80	400		40	37
40	Area C III	A	EEZ	Windtech		80	400		40	37
41	Atlantis I (formerly Aquamarin)	3/5a/NFG	EEZ	PNE Wind AG		80	400		43	38
42	Atlantis II (formerly Rosendorf)	4	EEZ	PNE Wind AG		80	400		100	42
43	Atlantis III (formerly Ostsee)	4	EEZ	PNE Wind AG		80	400		131	43
44	Austernground	4	EEZ	Windtech		80	400		87	44
45	Blight Power I	2/5a/NFG	EEZ	Windtech		80	400		55	37
46	Blight Power II	2/5a/NFG	EEZ	Windtech		80	400		74	37
47	Borkum Riffgrund West II	1/5a/NFG	EEZ	Energiekontor AG		40	200		52	29–32
48	Concordia I	1	EEZ	KNK Concordia (MV Energie AG/Windenergie Holding)		80	400		100	42–48
49	Concordia II	1	EEZ	KNK Concordia (MV Energie AG/Windenergie Holding)		80	400		156	48
50	Diamant	N	EEZ	BARD Schiffahrtskontor GmbH & Co. Nachfolge KG		80	400		113	42
51	Dukkas	B	EEZ	BARD Foundation		140	490		103	44
52	GAIA I	11	EEZ	Northern Energy GAIA I		80	400		110	39–43
53	GAIA II	11	EEZ	Northern Energy GAIA II		40	200		110	39–43
54	GAIA III	11	EEZ	Northern Energy GAIA III		80	400		110	39–43
55	GAIA IV	11	EEZ	Northern Energy GAIA IV		68	340		110	39–43
56	GAIA V	11	EEZ	Northern Energy GAIA V		80	400		110	39–43
57	Germania	A	EEZ	Northern Energy Projekt (NEP)		80	400		89	38
58	Global Tech II	7/5a/NFG	EEZ	Northern Energy Projekt (NEP) / STRABAG OW EVS		75	300		70	37–39
59	Global Tech III	7/5a/NFG	EEZ	Northern Energy Projekt (NEP) / STRABAG OW EVS		75	375		70	37
60	He Dreiht II	7/5a/NFG	EEZ	EnBW Nordsee Offshore		75	300		85	39
61	Hanse	A	EEZ	Northern Energy Projekt (NEP)		80	400		84	33
62	Hartwind I	13	EEZ	Mainstream Renewable Power		65	390		125	38
63	Hartwind II	13	EEZ	Mainstream Renewable Power		75	450		121	42–43
64	Hartwind III	13	EEZ	Mainstream Renewable Power		75	450		133	43
65	Hartwind IV	13	EEZ	Mainstream Renewable Power		50	300			
66	HTOD 1 (formerly NSWP1)	1	EEZ	HOCHTIEF Offshore Development Eins		81	486		245	42–43
67	HTOD 2 (formerly NSWP5)	1	EEZ	HOCHTIEF Offshore Development Zwei		86	500		200	43
68	HTOD 3 (formerly NSWP6)	1	EEZ	HOCHTIEF Offshore Development Drei		84	504		190	43
69	HTOD 4 (formerly NSWP7)	1	EEZ	HOCHTIEF Offshore Development Vier		85	510		150	42
70	HTOD 5 (formerly Nordsee 1)	1	EEZ	HOCHTIEF Offshore Development Fünf		83	400		95	35–39
71	HTOD 6	1	EEZ	HOCHTIEF Offshore Development Sechs		64	384		188	39–42
72	Jules Verne	1	EEZ	PNE Wind		80	480		174	39–43
73	Kaskasi I (formerly Kaskasi)	6/5a/NFG	EEZ	RWE Energy		40	200		35	20–23
74	Kaskasi II (formerly Nordsee Deutsche Bucht GmbH)	5/5a/NFG	EEZ	RWE Energy		34	170		48	22–24
75	Meerwind West		EEZ	Windkraft Energieerzeugung GmbH		102	800		30	25–35
76	Nordfeld I	1	EEZ	PNE Wind AG		80	400			
77	Nordfeld II	1	EEZ	SOP Technology Holding AG / PNE Wind AG		80	500		178	40–44
78	Nordsee	1	EEZ	PNE Wind Nordsee AG		80	480		184	39–43
79	Nordpassage	5/5a/NFG	EEZ	Vattenfall		80	400		75	24–26
80	Nordsee	6/5a/NFG	EEZ	wpd offshore	5	53	315		80	39
81	Petrel	A	EEZ	Northern Energy Projekt (NEP)		80	400		78	37–38
82	Sandbank Extension	5/5a/NFG	EEZ	Sandbank Power Vattenfall Europe Windkraft		80	400		90	25–34
83	Seagull	1	EEZ	Northern Energy Projekt (NEP)		80	400		41	38–37
84	SeaStorm I (OWP)	10	EEZ	Northern Energy SeaStorm I (NEP)		80	400		110	43
85	SeaStorm II (OWP)	10	EEZ	Northern Energy SeaStorm II (NEP)		50	250		110	43
86	SeaWind I (OWP)	8	EEZ	Northern Energy Projekt (NEP) / STRABAG OW EVS		80	400		90	38
87	SeaWind II (OWP)	8	EEZ	Northern Energy Projekt (NEP) / STRABAG OW EVS		80	400		90	38–43
88	SeaWind III (OWP)	10	EEZ	Northern Energy SeaWind III (NEP)		37	200		110	42
89	SeaWind IV (OWP)	10	EEZ	Northern Energy SeaWind IV (NEP)		74	300		110	42–43
90	Skua (OWP)	A	EEZ	Northern Energy Projekt (NEP)		80	400		85	38
91	White Hawk	11	EEZ	Projekt Ostsee (Projekt Gotch)		110	500		100	43
Wind farms undergoing licensing procedures					Summary	4,293	22,402			
Total projects in the North Sea					Summary	8,205	32,476			
Windfarms in earlier planning process (13)										
92	Ennus Offshore NSWP 8 – 10	1	EEZ	Ennus Energiekonzept					205	44
93	Hagshot 1	B	EEZ	Bagstone Energy Projektgesellschaft					170	44
94	Hagshot 2	B	EEZ	Bagstone Energy Projektgesellschaft					170	42
95	Hagshot 3	B	EEZ	Bagstone Energy Projektgesellschaft					180	42
96	Hard-Out Passat I			Tiefbau Unternehmen (TAUD)			360		240	42
97	Hard-Out Passat II			Tiefbau Unternehmen (TAUD)			360		240	42
98	Hard-Out Passat III			Tiefbau Unternehmen (TAUD)			360		240	42
100	Nordertland	11	EEZ	Nordertland Projekt					114	38–40
101	Provento II	B	EEZ	Wind PROMotion International	8.4	108			170	44
102	Provento 2	B	EEZ	Wind PROMotion International		108			170	44
103	Provento 3	B	EEZ	Wind PROMotion International		108			184	44
104	Stirling I	A	EEZ	Bagstone Energy Projektgesellschaft	80	500			109	37–39
105	Stirling II	A	EEZ	Bagstone Energy Projektgesellschaft		500			101	38–39
Summary					96,5	2,367				

MW = megawatts, **WTG** = wind turbine generator, **12 NM zone** = 12 nautical mile zone (coastal seas) in Germany licensed by German states
EEZ = German Exclusive Economic Zone (here 12 to 200 nautical miles from the coast)
in Germany licensed by: German Maritime and Hydrographic Agency (Bundesamt für Seeschiffahrt und Hydrographie, BSH)

Baltic Sea

No.	Project name	Cluster on map	Location	Developer/Operator	Turbine Type	Number of WTG	Total output [MW]	Commissioning	Distance to nearest coast [km]	Water depth [m]
Operational (3)										
106	Buetlitz / Rostock	12 NM Zone		WEKO-project	Nordex N90/2500	1	2.5	2004	0.5	2
107	Kalkis 1	12 NM Zone		EnBW Erneuerbare und konventionelle Erzeugung AG	Siemens SWT-2.3-93	21	48.3	2011	15	16–19
108	Baltic 2	1	EEZ	EnBW Erneuerbare und konventionelle Erzeugung AG / Macquarie Capital	Siemens SWT-3.6-120	80	288	2015	32	19–30
Under Construction (1)										
111	Wikinger (formerly Ventotec Ost 2)	1	EEZ	Iberdrola Renovables Offshore Deutschland	Adwen AD 5-135	70	400	2017	35	20–41
Licensed Wind Farms (2)										
109	Arkona Becken Südost	1	EEZ	E.ON / VNG Arkona-Windpark Entwicklungs GmbH		60	268		36	23–36
110	Gaofree	12 NM Zone		GOD Gesellschaft für Energie und Ökologie		5	18		28	21
Summary						85	286			
Wind Farms undergoing licensing procedures (21)										
112	Adlergrund EOD	1		Adlergrund EOD		21			48	14–17
113	Adlergrund EAP	1		REC Energie Consult		50			34	16–41
114	Adlergrund Nordkap	1		REC Energie Consult		31			34	16–41
115	Arcadis Ost 1		12 NM Zone	ENE Wind, WI Energie, Deutsche Windenergie Holding, Stadtwerke Bad Waldsee, 25 more municipal utilities		56	248		18	41–44
116	ArkonaSee Ost	1	EEZ	ArkonaSee Ost			120		49	41
117	ArkonaSee Süd	1	EEZ	ArkonaSee Süd		80	480		32	41
118	ArkonaSee West	1	EEZ	ArkonaSee West		80	480		28	42–43
119	Baltic Power East	1	EEZ	Windtech		40			33	43–47
120	Baltic Power West	1	EEZ	Windtech		40			32	41–47
121	Baltic Eagle	1	EEZ	Windtech		80			36	41–44
122	Bellow		EEZ	Plambeck Neue Energien		70	224		14	23–28
123	Beta Baltic		EEZ	E.ON Energy Projects		50	180		33	41
124	Ostseequelle	1	EEZ	Financial Insurance GmbH (Windtech)		35	245		23	39–47
125	Ostseeschelf	1	EEZ	Financial Insurance GmbH (Windtech)		40	235		38	44
126	Sowind	1	EEZ	Iberdrola Renovables Offshore Deutschland		75	330		33	40–44
127	Street Süd	1	EEZ	Iberdrola Renovables Offshore Deutschland		111	444		38	39–42
128	Street-Nord	1	EEZ	Iberdrola Renovables Offshore Deutschland, Stadtwerke Renewables		30	270		38	41–45
129	Vineta		12 NM Zone	KNK Vineta (MV Energie AG – Windenergie Holding GmbH) / Stadtwerke Bad Waldsee		50	400		19	
130	Wikinger Nord	1	EEZ	Iberdrola Renovables Offshore Deutschland		8				
131	Wikinger Süd	1	EEZ	Iberdrola Renovables Offshore Deutschland		18				
132	Windanker	1	EEZ	Iberdrola Renovables Offshore Deutschland		97	342		42	41–48
Summary						136	3,147			

MW = megawatts, **WTG** = wind turbine generator, **12 NM zone** = 12 nautical mile zone (coastal seas) in Germany licensed by German states
EEZ = German Exclusive Economic Zone (here 12 to 200 nautical miles from the coast)
in Germany licensed by: German Maritime and Hydrographic Agency (Bundesamt für Seeschiffahrt und Hydrographie, BSH)

Converter Platform SylWin alpha
Source: www.siemens.com/press - Copyright: Siemens

TenneT Cluster (North Sea)

Converter platform	Rectifier [MW]	Connecting Offshore Wind Farms	Offshore Substation supplier	Operator/Owner	Planned operation	Commissioning
BorWin alpha	800	(1) Bard Offshore 1	ABB	TenneT Holding B.V. (Mitsubishi Corporation (MC))		2010
BorWin beta	800	(3) Nordsee One (4) Global Tech I	Siemens/Prysmian	TenneT Holding B.V. (Mitsubishi Corporation (MC))		2013
BorWin gamma	900	(5) Meerwind (6) DolWin beta, and, after tender of Federal Network Agency	Siemens/Prysmian		2009	
DolWin alpha	900	(11) Borkum Riffgrund	not decided	not decided	2008	
DolWin epsilon	900	(12) Helgoland	not decided		after 2009	
DolWin alpha	900	(9) MEG 1, (10) Trianel Windpark Borkum Phase 1, (7) Borkum Riffgrund 1 (interim grid)	ABB	TenneT		2014
DolWin beta	900	(13, 14) Gode Wind 1/2, (15) Nordsee One	ABB/ABB	TenneT Holding B.V. (Mitsubishi Corporation (MC)) (50,01%), Siemens (49,99%)		2013
DolWin gamma	900	(7) Borkum Riffgrund 1, (16) Borkum Riffgrund 2	Siemens	TenneT Offshore GmbH	2015	
DolWin delta		(20, 21) Delta Nordsee 1, 2	not decided		after 2009	
DolWin epsilon	900	(22) Gemeinsam Offshore Werk 1, (8) DWP West	not decided		after 2009	
DolWin zeta	900	(38, 37) Nordsee two, three	not decided		after 2009	
HelWin alpha	576	(32) Nordsee One, (35, 33) Meerwind Süd/Ost	Siemens/Prysmian	TenneT		2013
HelWin beta	960	(4) Amrumbank West	Siemens/Prysmian	TenneT Holding B.V. (Mitsubishi Corporation (MC)) (50,01%), Siemens (49,99%)		2015
SylWin alpha	864	(6) DanTysk, (34) Butendiek, (39) Sandbank	Siemens/Prysmian	TenneT		2015
SylWin beta	720	(31) Nordergründe Grund, (30) Sandbank Extension	not decided		after 2020	
Summary	11,016					

Interconnector [GC]	Capacity [MW]	Between countries	Cable supplier	Operator/Investor	Planned operation	Commissioning
COBRA Cable	700	Denmark (Endrup) / Netherland (Eemshaven)	not decided	TenneT TSO, energinet.dk	2019	
NordLink	1,400	Germany (Büsum) / Norway (Tonstad)	ABB	50% Statnett, 50% DC Netzanbieter GmbH (50% TenneT, 50%KfW)	2020	
NorNed	700	Netherland (Eemshaven) / Norway (Feistad)	ABB	50% Statnett TSO, 50% TenneT		2008
Viking Link	1,400	Denmark / UK	not decided	Nationalnetz/Energinet/Statnett, energinet.dk		

LEGAL NOTICE

Publisher:
BWE e. V.
Marienstraße 2
27568 Bremerhaven
T: +49 (0)471 30177 0
F: +49 (0)471 30177 19
info@wab.net
www.wab.net

Editorial staff:
Steffen Schierhorn, BWE

Layout:
Mike Pfeifer, mueller-studio.de

May 2015

WINDFORCE Baltic Sea
Bremerhaven 27–28 January 2016

WINDFORCE 2016

www.wab.net

windenergie agentur