

Green Wind Operations and Green Wind Offshore

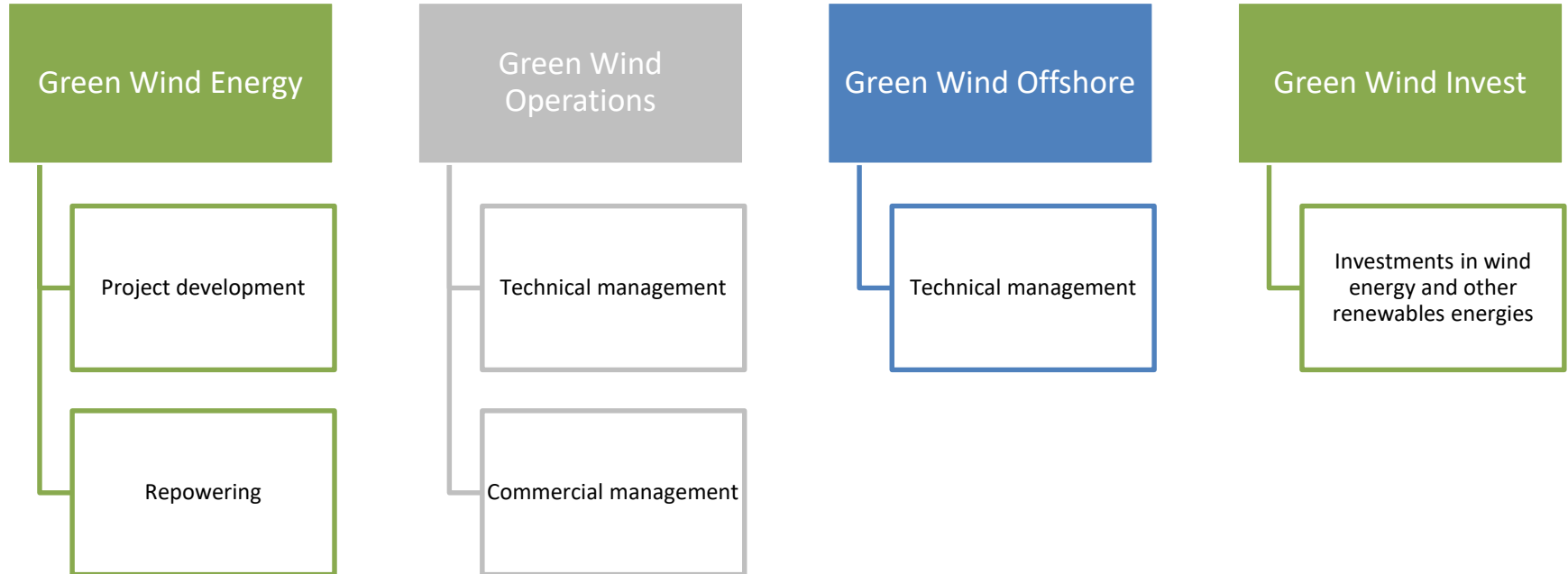
With the power of wind

Management concepts for wind turbines, sub stations
and ACDC converters (On- and Offshore)

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Manager Business Development



Green Wind Group



Green Wind Group

- ▶ Founded in 2008 as a subsidiary of the Danish Green Wind Energy A / S
- ▶ Self-employed since 06/2011 with a focus on technical and commercial management and project development of wind turbines and substations
- ▶ From 0 to today approx. 400MW wind power and approx. 150 MW substations power under management
- ▶ Headquarters in Berlin with today about 40 employees
- ▶ ISO 9001:2015 (since 06/2016) in place
- ▶ ISO 14001, ISO 55000 und ISO 27001 in preparation

Green Wind Operations GmbH

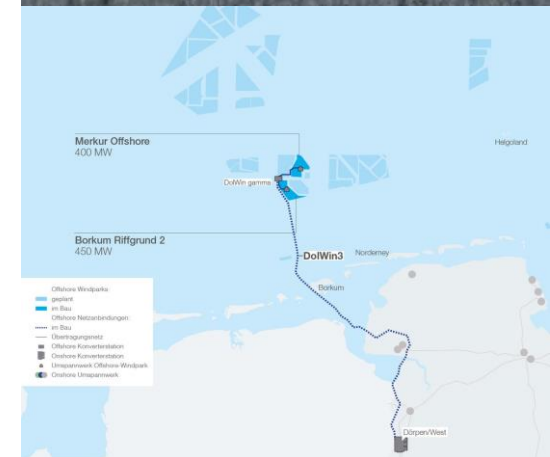
- ▶ founded 2009
- ▶ Focus on technical and commercial management of Onshore wind turbines and substations
- ▶ located in Berlin and Groß Pankow (regional office)
- ▶ Focus on a trouble-free and optimized system operation with 24/7 system monitoring (control room)
- ▶ Development and creation of needs-based maintenance concepts of onshore-generation-systems and substations
- ▶ Planning, implementation and follow-up (back-office) of scheduled and unscheduled maintenance and repair work on onshore-generation-systems and substations

Green Wind Offshore GmbH

- founded 2015
- Focus on technical and commercial management of Offshore wind turbines, platform management for ACDC converter and Offshore substations and substations
- located in Berlin, Rostock and Emden/ Wilhelmshaven (warehouse, staff hostel, office)
- Independent from third service and maintenance companies with focus on a trouble-free and optimized operation with 24/7 monitoring system (control room)
- Development and creation of needs-based maintenance concepts of offshore-generation-systems and substations
- Planning, implementation and follow-up (back-office) of scheduled and unscheduled maintenance and repair work on onshore-generation-systems and substations

Actual project: Management and Maintenance of the ACDC platform Dolwin3 from General Electric (GE)

Customer:	General Electric (GE)
Duration:	- 18 month preparation phase - 60 month execution phase
Location:	North Sea (60 miles offshore)
Capacity:	900 MW
Components:	18.000 components offshore 6.000 components onshore
Project volume:	1.2 billion US\$



Source: Picture 1 Alstom, Picture 2 Tennet

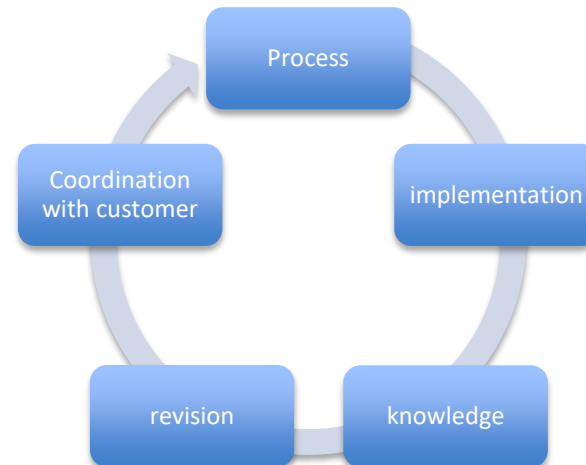
Green Wind is responsible for the complete management and maintenance on the platform and land station. Green Wind operates a 24/7 control center to recognise every single detail at the grid connecting system.

Targets

Safe and trouble-free operation of the generating or transmission unit with maximum availability under optimal economic aspects

Condition and performance-oriented maintenance

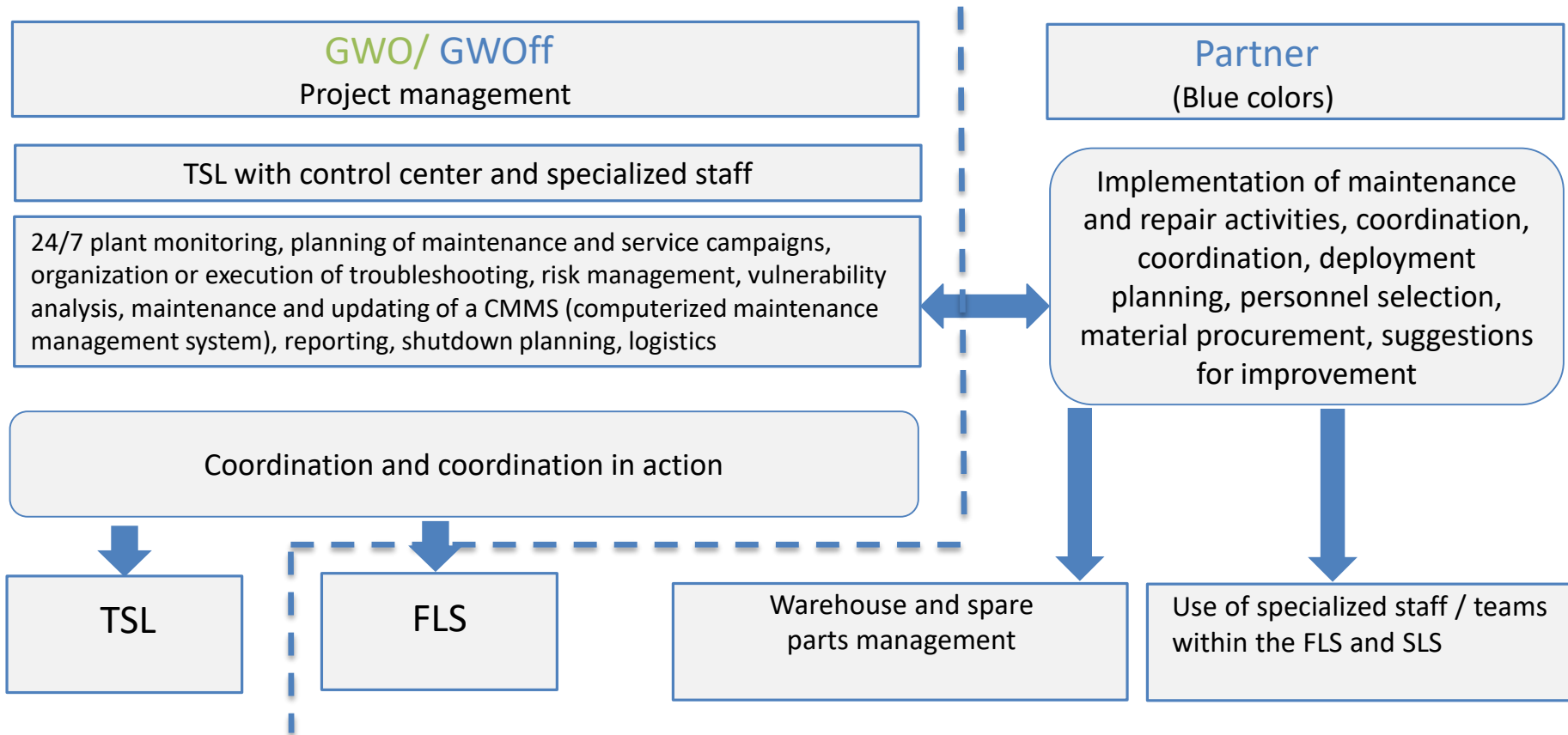
- Consideration of all areas necessary for the implementation of all monitoring, maintenance and repair measures
- Continuous improvement process
- Constant evaluation and optimization of processes



- ▶ Taking care off
 - Component data for all systems and components to be maintained
 - Own experience in maintenance and repair activities
 - new knowledge during the project preparation

- ▶ Components of the technical management
 - Risk assessments of the plants and of other subareas
 - Creation of jobcards and PTWs
 - Preparation of Method Statements
 - Plant monitoring and control
 - Mission planning and coordination
 - Organization of transports, transfers and accommodation
 - Spare Parts and Tool Management
 - Reporting and optimization

- ▶ Phasen
 - Preparation phase
 - Execution phase



▶ Preparation phase Part 1

- Viewing the entire documentation and data recording
- Development of the maintenance strategy and coordination with AG
- Creation and implementation of all necessary processes
- Structuring and data preparation in CMMS
- Creation of sample documents and coordination with AG (Jobcards, PTM, risk assessments, reporting, etc.)

▶ Preparation phase Part 2

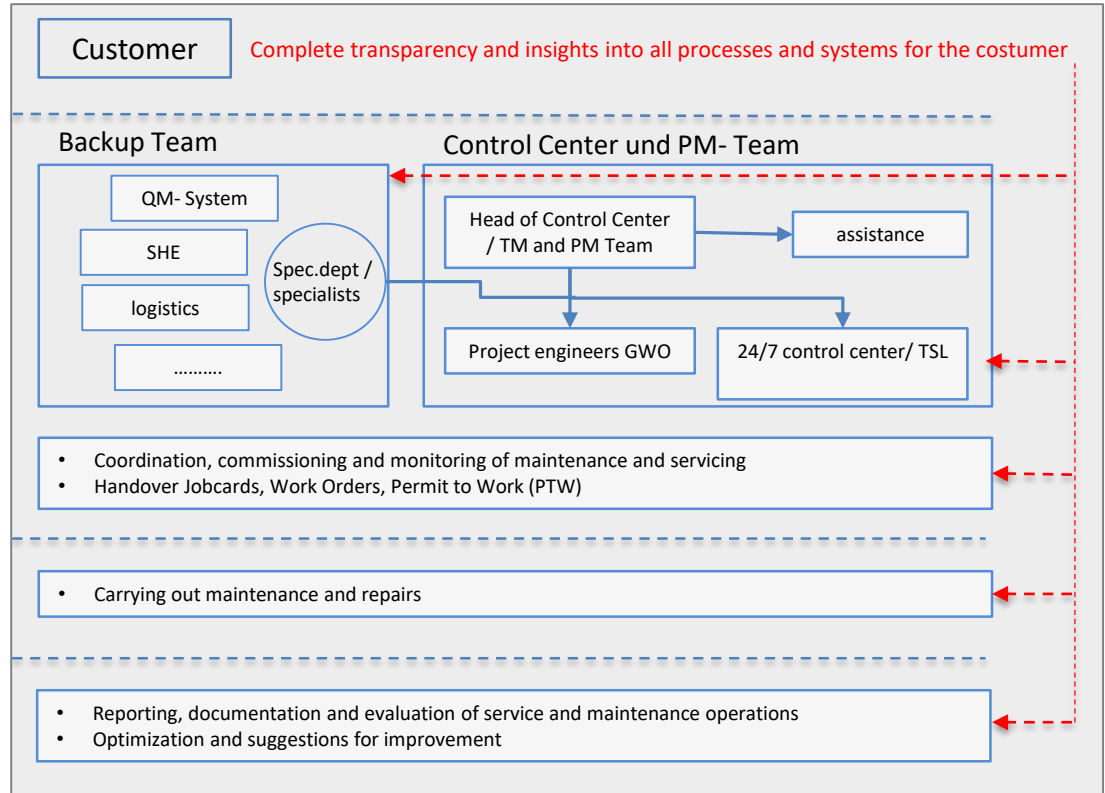
- Implementation of production facilities in the control room (live connection) and connection WIS
- Creation of interfaces for the integration of third party systems (CMS, weather forecasts, barcode systems, handhelds, etc.)

▶ Preparation phase Part 3

- Creation of a campaign plan for 12 months in advance (planning of maintenance and servicing, WKP's, etc.)
- Structuring and data preparation in CMMS
- Creation of sample documents and coordination with AG (Jobcards, PTM, risk assessments, service reports, etc.)

► Team execution phase

- 24/7 system monitoring and operational readiness
- Planning and coordination of maintenance and service campaigns
- Evaluation and optimization of the entire plant operation
- Reporting
- Integration and evaluation of predictive systems (CMS, algorithms, neural networks)



Thank you for your attention!



www.greenwindoffshore.de