WIND POWER
EPC

Anders Lindberg, Head of EPC

Meet the Management, 2 February 2017
Anders Lindberg  
Senior Vice President, Head of EPC

Born: 1965  
Education: EMBA in Business Administration (SSE) & MSc. in Electrical Engineering (KTH)

2015 - Senior Vice President, Head of EPC, DONG Energy Wind Power
2014 - Board member, IEC Holden
2011 - 14 President Rolling Stock Central & Northern Europe and Asia, Bombardier Transportation
2007 - 11 President Rail Control Solutions, Bombardier Transportation
2004 - 07 President Propulsion & Controls, Bombardier Transportation
Robust & highly visible offshore wind build-out plan towards 2020

MW

<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Gode Wind 1&amp;2</td>
<td>3,009</td>
</tr>
<tr>
<td>2016</td>
<td>Burbo Bank Extension</td>
<td>582</td>
</tr>
<tr>
<td></td>
<td>Race Bank Extension</td>
<td>258</td>
</tr>
<tr>
<td></td>
<td>Walney Extension</td>
<td>573</td>
</tr>
<tr>
<td></td>
<td>Borkum Riffgrund 2</td>
<td>659</td>
</tr>
<tr>
<td></td>
<td>Hornsea 1</td>
<td>450</td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td>Borssele 1&amp;2</td>
<td>6,731</td>
</tr>
<tr>
<td></td>
<td></td>
<td>700</td>
</tr>
</tbody>
</table>

Target 6.5GW

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany</th>
<th>UK</th>
<th>UK</th>
<th>UK</th>
<th>Germany</th>
<th>UK</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>On time/budget</td>
<td>/ /</td>
<td>/ /</td>
<td>/ /</td>
<td>/ /</td>
<td>/ /</td>
<td>/ /</td>
<td>/ /</td>
</tr>
<tr>
<td>Turbine</td>
<td>Siemens 6.0 MW</td>
<td>MVOW 8.0 MW</td>
<td>Siemens 6.3 MW</td>
<td>Siemens 7.0 MW</td>
<td>MVOW 8.25 MW</td>
<td>Siemens 7.0 MW</td>
<td>Not decided</td>
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</tbody>
</table>

Note: The export capacity of Hornsea 1 is 1,200 MW determined by the boundary of the facility (offshore substations), while the aggregated installed generator capacity is 1,218 MW.

85
Gode Wind 1&2: Grid repair completed and park fully operational

- Gode Wind 1&2 completed slightly behind time schedule and within budget, despite grid delay and outages
- Outstanding safety performance with only 1 LTI (LTIF: 0.4) during construction
- Completed November 2016 after challenging turbine commissioning as a result of unstable grid
  - Delayed grid connection from TenneT and numerous grid outages
  - Grid repair campaign November 2016 to January 2017 by grid owner TenneT
- Grid returned 8 January and re-energisation of turbines progressed according to plan
- Wind park back in operation by end January and park fully handed over to Operations

<table>
<thead>
<tr>
<th>Activity</th>
<th>FID Nov 2013</th>
<th>Offshore substation</th>
<th>Array cables</th>
<th>Turbines</th>
<th>Completed Nov 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity commenced</td>
<td>Activity completed</td>
<td>Array completed</td>
<td>Turbines commissioned</td>
<td>Offshore substation commissioned</td>
<td>Completed Nov 2016</td>
</tr>
</tbody>
</table>

- On budget
- On time
- HSE
Burbo Bank Extension: Construction activities finalised

- Burbo Bank Extension on track to complete on time and within budget
- Outstanding safety performance with only 1 LTI (LTIF: 0.5) during the two year construction period
- Construction activities completed and commissioning advanced
  - First power achieved 20 November 2016
  - Last turbine installed 14 December 2016
  - 22 turbines are operational and produce power ultimo January
- Transfer to Operations has commenced
- First offshore and large scale deployment of 8 MW MHI Vestas (MVOW)
- CfD to commence 1 April 2017

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### Timeline

**FID**
- Dec 2014

**Onshore civil works**
- Activity commenced

**Offshore substation**
- Activity completed

**Array cables**
- Activity commenced

**Turbines**
- Activity completed

**First power**
- Completed Mar 2017

**258 MW**
Race Bank: Fully on track

- Race Bank is fully on track both on time and budget
- Good safety performance with 1 LTI (LTIF: 0.7)
- First offshore substation installed and energised; second to be installed in March
- Both export cables have been successfully installed in sensitive salt marsh area
  - First export cable fully installed, energised from onshore to offshore substation and buried
  - Second export cable remaining installation ongoing and will be ready for termination in second offshore substation
- All monopile foundations installed and transition piece installation progressing
- Turbine installation to begin during Q2 2017

The plough concept of the Sunfish: A section of the salt marsh is lifted, the cable injected underneath and the salt marsh lowered again.
Remaining construction program fully on track

Walney Extension
- 659 MW
- Country: UK
- On time / On budget: ●/●
- Expected completion: 2018

Budget
- All major contracts signed

Schedule
- On track with overall program timeline

Safety
- LTI: 0

Activities 2017
- Offshore works to fully ramp up
  - Export cable H1
  - Foundation and array cables H1
  - Turbine installation to begin H2
  - First power expected during H2

Borkum Riffgrund 2
- 450 MW
- Country: Germany
- On time / On budget: ●/●
- Expected completion: 2019

Budget
- All major contracts signed

Schedule
- On track with overall program timeline
- Final approval of amended building consent received January

Safety
- LTI: 0

Activities 2017
- Manufacturing of components to be ready to start offshore installation in 2018
- Installation of jacket for our offshore substation in Q3
- TenneT to install DolWin3 converter station

Hornsea 1
- 1,200 MW
- Country: UK
- On time / On budget: ●/●
- Expected completion: 2020

Budget
- All major contracts signed

Schedule
- On track with overall program timeline

Safety
- LTI: 0

Activities 2017
- Commence installation of onshore substation electrical Q2
- Commence installation of onshore export cable Q2
- Manufacturing of components

Borssele 1&2
- 700 MW
- Country: Netherlands
- On time / On budget: ●/●
- Expected completion: 2020/21

Budget
- Turbine tender currently ongoing

Schedule
- On track with overall program timeline

Safety
- LTI: 0

Activities 2017
- Closing of major contracts
LCoE being reduced through scale, innovation, industrialisation and digitalisation in both EPC and Operations

Scale
- Increased size of windfarms and turbines

Innovation
- Driving innovative solutions

Industrialisation
- Standardisation and procurement for multiple projects

Digitalisation
- Fully capturing new technological opportunities
Wind Power fully on track with 2020 build-out plan

All projects fully on time…

… and within budget

Continue the cost reduction journey
Meet the Management, 2 February 2017
Jens Jakobsson
Senior Vice President, Head of Operations

Born: 1966
Education: BSc.EE (DTU), Finance for Executives (INSEAD) & Executive Management Programmes (INSEAD & IMD)

2015 - Senior Vice President, Wind Power Operations
2014 - 15 Senior Vice President, Wind Power Engineering
2010 - 14 Vice President, Power and Gas Distribution
2006 - 10 Vice President, Power Distribution
1994 - 06 NESA A/S, Various Management Positions
Largest operator of offshore windfarms in the industry

### Installed and decided capacity (GW)

- **DONG Energy**: 3.8
  - Decided: 3.6
  - Installed: 1.1
- **Vattenfall**: 1.1
- **EON**: 0.8
- **RWE**: 0.7
- **Iberdrola**: 1.3
- **SSE**: 0.6
- **Northland Power**: 0.5
- **Statoil**: 0.3

### Number of turbines in operation

- **2013**: 666
- **2016**: 1,059
- **2020**: 1,499

**Source**: DONG Energy, Bloomberg New Energy Finance (BNEF)

1. If a project is executed on behalf of a lead developer managing the construction, then 100% of capacity is allocated to the lead developer. If construction is executed by an integrated joint venture, capacity is allocated in proportion to the JV share.
Availability performance of clusters in H2 2016 as expected – specific challenges in German cluster

**UK West**
- Q3 2016: 93%
- Q4 2016: 96%

**UK East**
- Q3 2016: 95%
- Q4 2016: 96%

**Denmark**
- Q3 2016: 97%
- Q4 2016: 95%

**Germany**
- Q3 2016: 79%
- Q4 2016: 90%

Note: Nearshore & demo wind farms excluded. Commercial time based availability shown.
Scale effects – clusters allow for shared onshore infrastructure and application of Service Operation Vessel

Northsea cluster
Borkum Riffgrund 1 and Gode Wind 1&2

- Higher accessibility
- Minimizing non-productive time
- Lean setup through shared infrastructure

Borkum island
Norddeich

Borkum Cluster
Gode Wind Cluster

SOV based service train to access sites
Shared onshore base for management and storage
More data – source for significant operational improvement in the near future

**Before - No online monitoring:**
- Turbine stops in case of high temperature
- Leads to availability loss

**Now - Standard Analytics:**
- Continuous temperature monitoring and predictive models
- Identifies issue before turbine stops, lowering lead time and limits availability loss

**Near future - Advanced Analytics:**
- Further development of existing predictive models
- Temperature ride-thru controls, more measurements and data
- Turbine operational until repair
Consistently improving park performance after take-over from OEMs

- Long term perspective on optimisation of operating wind farm
- Strong incentive to increase availability as both owner and operator
- Large portfolio enable synergies and drive down costs

Average availability performance for operating assets (Index)

As portfolio grows availability is expected to increase

Performance under OEMs: 100
Performance post OEMs: 102

DONG energy
In addition, larger turbines provide powerful scale effects.
Wind Power is the largest offshore wind power operator in the world with a significant focus on cost reductions.

- Operating the industry’s largest portfolio
- Site performance meets expectations, with additional opportunities to improve
- Scale is a main driver for cost reductions
- Advanced analytics being developed to reduce maintenance costs and improve performance