



Offshore Wind & Experiences from Hywind Scotland

Norwegian Offshore Wind delegation to Hamburg, 4th of December 2017

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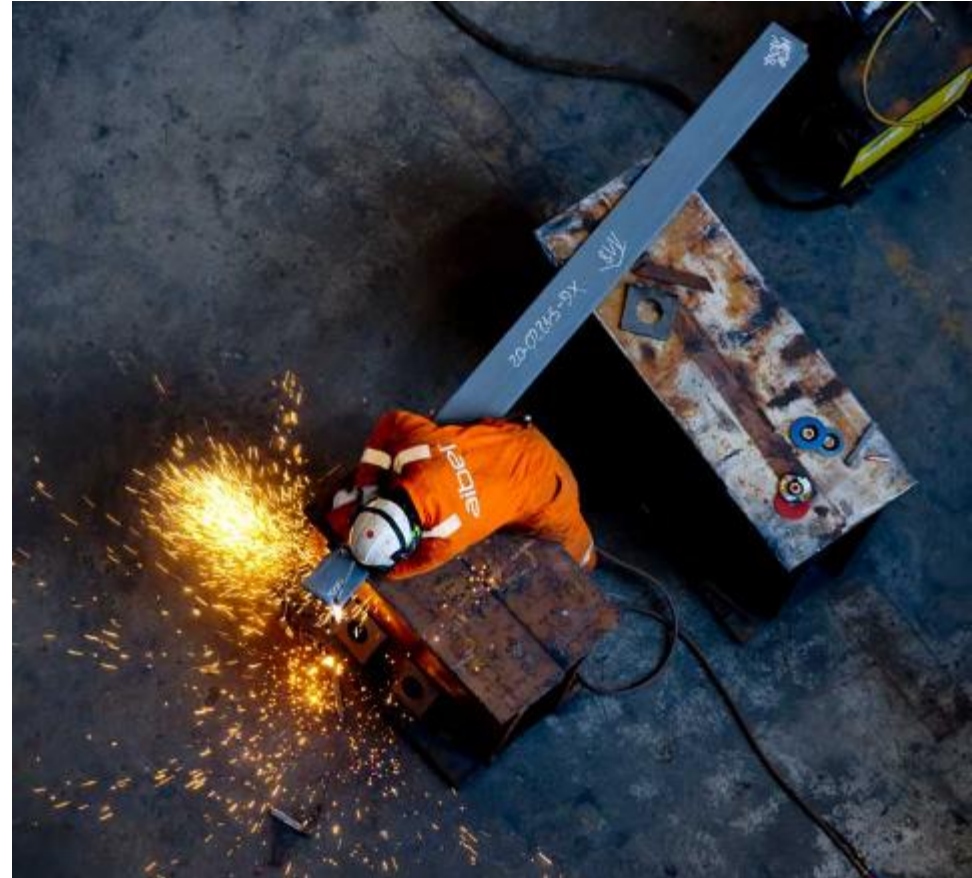
Agenda

- Introduction to Offshore Wind in Aibel
- Experiences from Hywind Scotland



About Aibel

- Aibel AS is a leading supplier of services related to oil, gas and renewable energy
- Around 4,000 employees
- More than a hundred years of proud history
- A global company with roots in Norway



Company overview

- Long term maintenance and modifications contracts
- Present on half of the offshore installations and 4 onshore terminals in Norway
- Deliver new platforms and modules
- Successfully entered into offshore wind market



Aibel scope of services

STUDIES | ENGINEERING | PROCUREMENT

CONSTRUCTION | INSTALLATION |

MC/COMMISSIONING |

OPERATIONAL SUPPORT |

DECOMMISSIONING



Haugesund yard, Norway

- Construction of new platforms and topside modules
- Maintenance and modifications of offshore and onshore facilities and modules
- Yardstay services
- One of Norway's largest indoor assembly facilities
- Largest dry dock in Northern Europe



Thailand yard

- Construction of FPSO modules and platforms
- EPC contracts in collaboration with Aibel in Singapore and Norway
- The assembly area is located at the port of Laem Chabang



Offshore Wind



HVDC Solutions

- EPC-IC contracts for complete HVDC transmission systems
- Own platform concept

AC Substations

- EPC-IC contracts for AC substations
- FEED/Studies

Floating Wind

- Floating & fixed
- FEED/studies
- EPC contracts
- Floating substations
- Innovative mooring solutions

Installation and O&M

- Onshore and offshore

DoWin beta – our first wind platform

- Contract awarded in August 2011 to design and build DoWin beta (ABB)
- Convert alternating current (AC) from wind farms to direct current (DC)
- Receive electricity from more than 200 offshore wind turbines
- Size of a football pitch. Accommodation for 24 people
- Construction of the platform in Dubai
- Sail away from Dubai to Haugesund June 2014
- Sail away from Haugesund August 2015
- Installed in the DoWin wind cluster in the German North Sea



Johan Sverdrup power from shore

- Contract awarded October 14, 2015
- EPC contract covering engineering, procurement, construction site work, building of a converter station and installation of converter equipment
- The contract also includes trenching and laying of two sets of 300kV alternating-current cables from Kårstø to Haugsneset
- The Johan Sverdrup oil field will be operated by land-based power from production start late in 2019

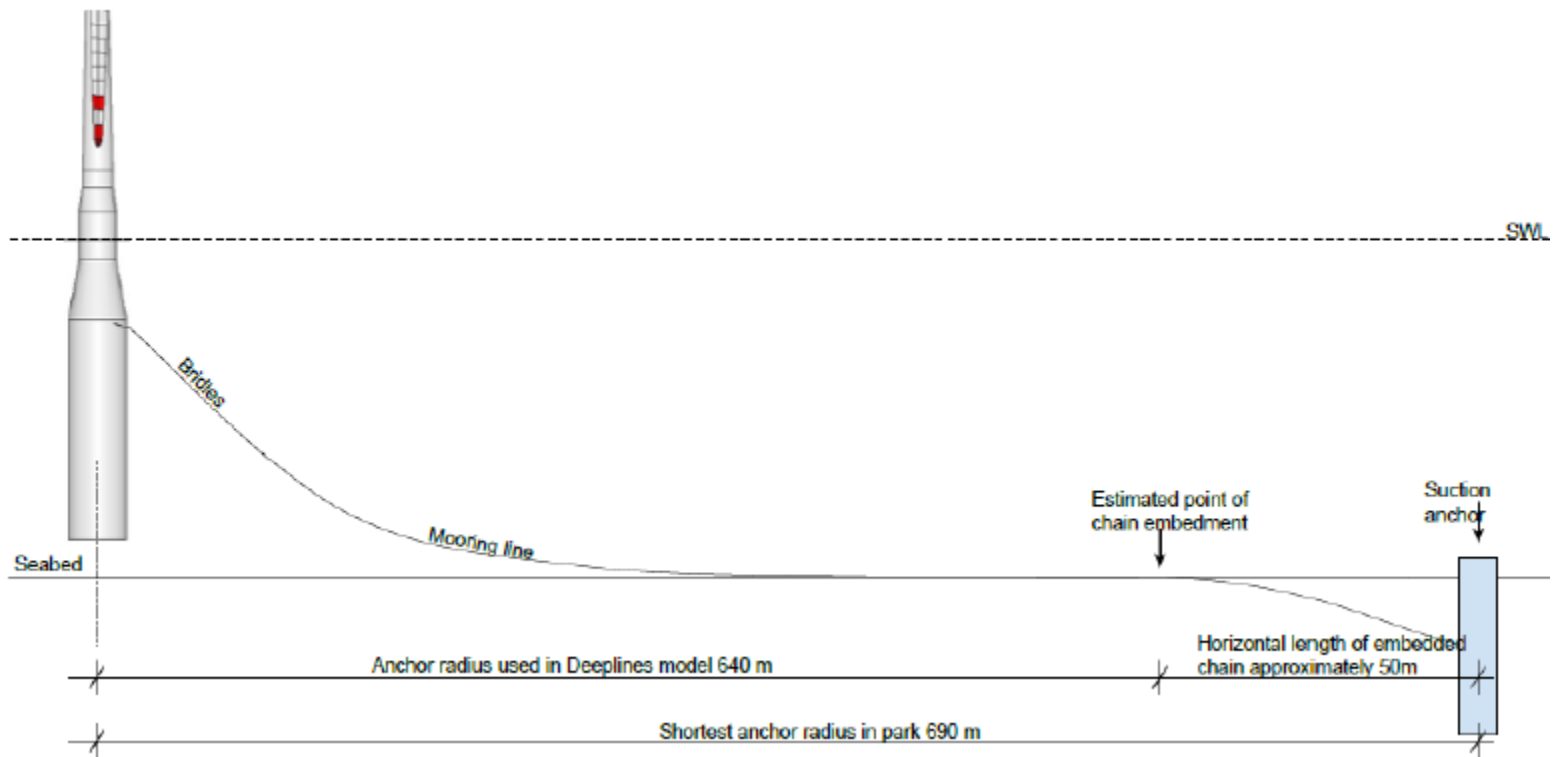


Hywind Scotland Pilot Park

- In 2015 Statoil made the final investment decision to build the world's first floating wind farm
- Based on the Hywind Demo installed outside of Karmøy, Norway
- Realizing 60-70 percent cost reduction per MW from the Hywind Demo
- In total 5 WTG's of 6 MW each
- In 2014, Aibel was awarded a FEED and later on EPMa (Engineering, Procurement, Management Assistance)
- In 2017, Aibel was awarded a contract to provide installation assistance



Hywind Scotland Aibel Scope



- Substructure with systems, mooring, anchors, tower, interfaces
- FEED, detail design, procurement of utilities and fabrication Follow Up
- Installation Assistance

Selected pictures



Selected pictures



Selected pictures



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aibel[®]
energy to perform