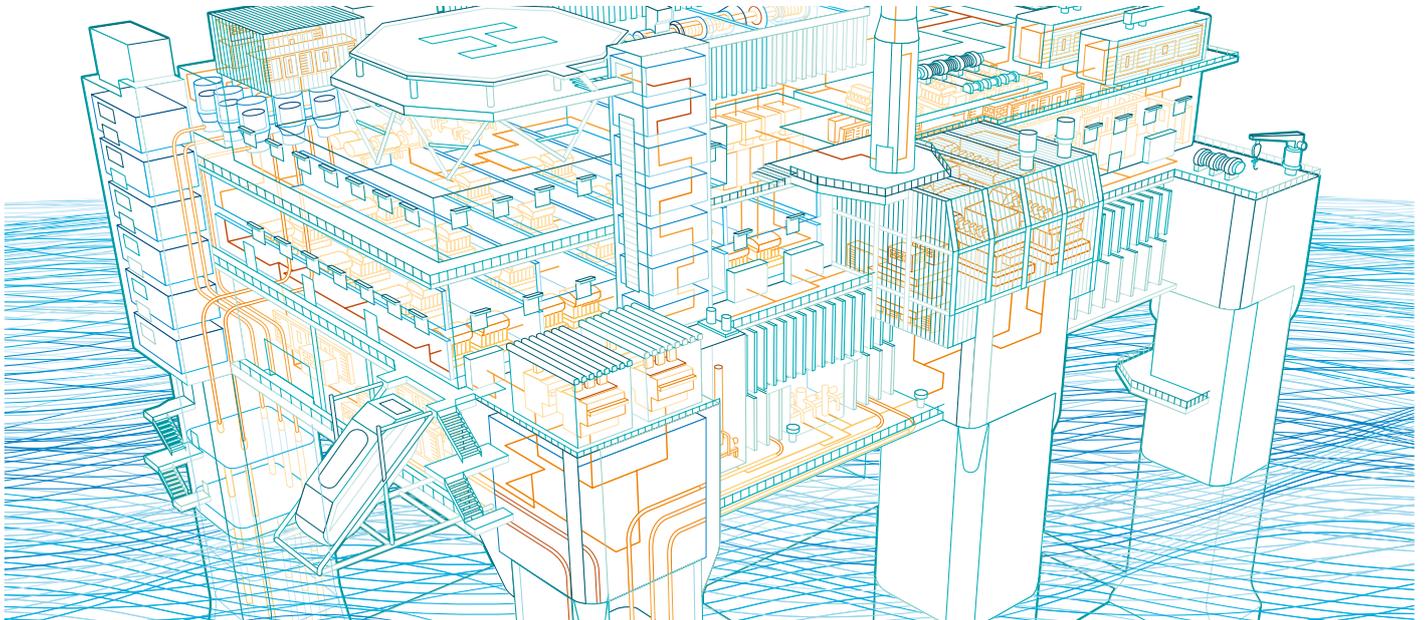


DolWin2

ABB's offshore connection will help reduce CO₂ emissions by more than three million tons per year



Major offshore wind connection project – DolWin2 at a glance

- Customer - TenneT
- Capacity - 900 MW
- Cable lengths – 2 x 45 km ± 320 kV DC submarine cables, 2 x 90 km ± 320 kV DC land cables and 2 x 12 km 155 kV AC submarine cables
- Technology - HVDC Voltage Source Converters (VSC)
- Converter platform – Gravity-based self-installing structure

TenneT is the responsible TSO for the grid connections to offshore wind farms in the German North Sea.

ABB has already in 2009 installed the BorWin1 offshore wind farm grid connection (400 MW) for TenneT and is now constructing the DolWin1 grid connection (800 MW), which is scheduled for commercial operation in 2013, and the DolWin2 grid connection, which is scheduled for commercial operation in 2015.

The DolWin2 grid connection will link the Gode Wind II wind farm and in the future further wind farms to the German grid at the Dörpen West substation via ABB's HVDC Light[®] technology.

Total solution for an offshore wind power connection

The entire project – from the 155 kV AC offshore busbar on the DolWin beta platform to the 400 kV AC busbar at the Dörpen West substation – will be supplied, installed and commissioned by ABB.

The DolWin2 project demonstrates ABB's ability to combine experience and leadership with innovation in providing the best total solutions at the forefront of technology, while at the same time ensuring minimal environmental impact.

HVDC Light[®] - Voltage Source Control

HVDC Light[®] was developed by ABB more than 10 years ago to permit the wide-scale introduction of HVDC transmission by submarine and subterranean cables. It includes complete, converter stations, converting AC to high voltage DC and on the other end of the transmission link back from high voltage DC to grid code compliant AC.

An important characteristic of HVDC Light[®] is its ability to stabilize the AC voltage at the terminals. This is particularly relevant in wind power systems where the generation voltage can fluctuate rapidly due to variations in wind speed. With HVDC Light[®], grid code compliance is assured.

In all power transmission systems, losses are a critical factor. In modern HVDC Light[®], the full load losses are less than 1 percent per converter station.

Cabling

The cables are manufactured at ABB's factories and are loaded directly onto the cable-laying vessels at the factory. All cables are oil free to ensure no adverse environmental effects.

The main DC cables are rated at 900 MW, the highest-ever rating for a DC cable. All cables have extruded polymer insulation and are designed to meet the requirements of HVDC Light[®], thus ensuring minimal losses. All cables have integrated optical fibers for control system applications.

A challenge in this project is laying cables in environmentally sensitive areas. The submarine cables run under the UNESCO-listed Waddensee Nature Park, which contains many protected species of wildlife. Natural habitats must be conserved or restored and no significant work can be undertaken during breeding seasons. All materials and methods are subject to prior approval.

The ABB Group has a long-held, deep commitment to improving the environment and thus has the experience and resources to plan, manage and monitor activities to meet demanding environmental requirements.

Moreover, the cables must pass under the River Ems, a busy shipping channel. The cables will be installed in two 1,500 m horizontal holes drilled under the river using the horizontal directional drilling method.

Gravity-based self-installing (GBS) platform

The DoIWin2 platform utilizes a newly developed self-installing concept. The entire structure will be floated and towed into position, and then ballasted to stand firmly on the sea bed.

Key design benefits are that no piling or heavy lifting is required, and the installation procedure is much less sensitive to weather conditions than for traditional platforms. The design is reliable and minimizes installation risks as well as the overall project risks. Decommissioning of the platform at the end of its life cycle is also simplified and will have minimum environmental impact.

The GBS platform will facilitate laying cables to the platform. External terminals will allow straightforward underwater connections and will greatly reduce the risk of damage to the cables.

ABB support

ABB has completed HVDC projects on five continents. The ABB Group is well established in more than 100 countries around the world. ABB thus has the experience, capacity and presence to offer customers meaningful, long-term support.

For the TenneT projects, ABB has already undertaken maintenance responsibility for the BorWin1 and DoIWin1 connections. More recently, ABB has been awarded a three-year contract for maintenance and servicing of the sea-based and shore-based converter stations for DoIWin2.

Our customers are our partners!



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