

### Energy Sector Power Transmission Division

Erlangen, Germany, July 16, 2010

#### **Siemens wins another order from transpower for connecting up offshore wind turbines**

Order worth approximately EUR500 million for the consortium

**A further order for connecting offshore wind turbines to the power grid reinforces Siemens as the undisputable leading provider of offshore grid connection technology. Together with Prysmian, Siemens Energy is to connect a wind farm in the North Sea to the mainland power grid for the transmission system operator transpower, a subsidiary of the Dutch grid operator TenneT. Prysmian as a leading player in the industry of high-technology cables will provide the cable connection. The volume of the order for the consortium as a whole amounts to approximately EUR500 million. The Nordsee-Ost wind farm will be connected to the mainland via submarine cables using high-voltage direct current (HVDC) transmission technology.**

"The HelWin1 project for the turnkey integration of the Nordsee-Ost offshore wind farm into the onshore high-voltage transmission grid will benefit from our expertise and many years of experience in this field. At present, we have received orders for connecting up offshore wind farms with a rating totaling approximately 4,600 megawatts," says Dr. Udo Niehage, CEO of the Power Transmission Division within the Energy Sector at Siemens. The wind farm is located about 85 kilometers offshore to the north-west of the island of Helgoland. The grid connection will have a transmission capacity of up to 576 megawatts (MW) of clean electric power. Siemens will be supplying a Voltage Sourced Converter (VSC) system using Siemens HVDC Plus technology to transport the wind-generated power to the mainland.

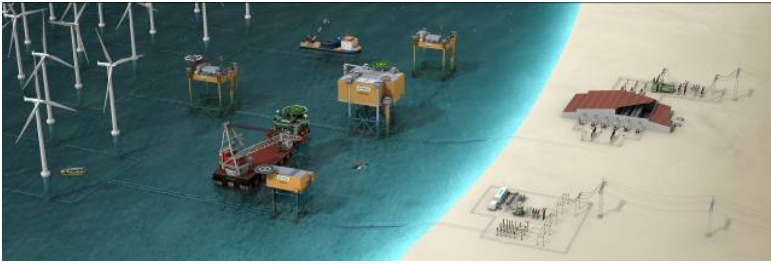
The converter will be set up on an offshore platform, on which alternating current (AC) voltage of 155 kilovolts (kV) will be transformed to 250 kV and then converted into direct current (DC) at the same voltage level. The platform will carry the entire equipment package required for the HVDC converter, essentially comprising the converter itself, two transformers, and the gas-insulated high-voltage switchgear. The wind-power offshore substation (WIPOS) supplied by Siemens will be

delivered on a floating, self-erecting platform. The platform will be towed to its destination on the open sea by tugs. At that point, the water is about 23 meters deep. Thanks to the platform's special design, there is no need for a heavy-duty crane ship to heave it onto its substructure.

The wind power will be transmitted by submarine and land cable to Büttel, north-west of Hamburg, where it will be converted back from DC to AC in a station on the mainland for further transmission and distribution. The structural design and engineering work on HelWin1 is due to be completed by the middle of 2011. The onshore station will be constructed in 2011, installation of the offshore platform is scheduled for mid-2012. Laying of the cables is planned to start in spring 2011. The entire grid connection is scheduled to be up and running by 2013.

Using HVDC technology reduces transmission losses significantly. High-voltage cable links of more than 80 kilometers require HVDC as the power transmission technology due to the fact that a major portion of the electrical energy would be lost as reactive power with an AC connection of that length and power rating. Siemens has developed HVDC Plus, the first multilevel VSC system, for precisely such applications. This modular VSC technology reduces the complexity and thus the space needed for the installations. It delivers an almost ideally sinusoidal AC waveform and a smooth DC voltage, largely eliminating the need to install high-frequency and harmonic filters.

The **Siemens Energy Sector** is the world's leading supplier of a complete spectrum of products, services and solutions for the generation, transmission and distribution of power and for the extraction, conversion and transport of oil and gas. In fiscal 2009 (ended September 30), the Energy Sector had revenues of approximately EUR25.8 billion and received new orders totaling approximately EUR30 billion and posted a profit of EUR3.3 billion. On September 30, 2009, the Energy Sector had a work force of more than 85,100. Further information is available at: [www.siemens.com/energy](http://www.siemens.com/energy)

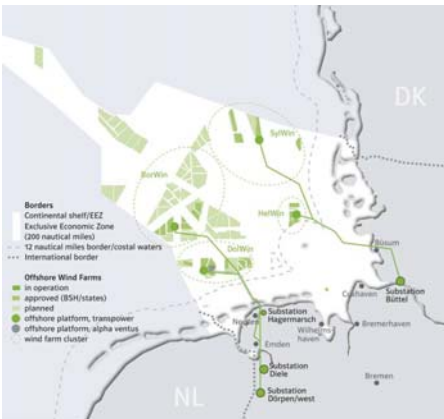


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A further order for connecting the offshore wind park cluster HelWin1 to the mainland power grid reinforces Siemens as the undisputable leader of offshore grid connection solutions. A consortium comprising Siemens Energy and Prysmian has won an order worth approximately half a billion Euro from the German transmission grid operator transpower. In the first phase the offshore wind farm Nordsee-Ost gets connected to the mainland via submarine cable in high-voltage direct current (HVDC) technology.



**Source: transpower**

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