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### **Energy trading hub: HVDC transmission link between Britain and the Netherlands goes into operation**

Together with the operating company BritNed Development Ltd., Siemens Energy has placed the BritNed HVDC transmission link between Britain and the Netherlands into operation. BritNed is a joint venture of National Grid, the international electricity and gas company and one of the largest investor-owned utilities in the world, and TenneT, the Dutch grid operator based in Arnhem. The 260-km-long subsea cable connection with a transmission capacity of 1000 megawatts (MW) links the 400-kV grids in southern England and in the south of the Netherlands. The HVDC transmission system's converter station in the UK is located on the Isle of Grain in Kent in south eastern England, while the Dutch station is situated in Maasvlakte near Rotterdam. Besides ensuring greater stability in the European integrated network, BritNed will also serve as an energy trading hub and thus bring more competition into the grid.

"The BritNed HVDC transmission system we've installed will stabilise the power supply grids in both Britain and the Netherlands, and thus increase supply reliability in Europe. The advantages of low-loss HVDC transmission technology become fully apparent, especially in regard to long-distance subsea cable links," said Dr. Udo Niehage, CEO of the Power Transmission Division of Siemens Energy. The planned expansion of wind power in Britain will require an improved connection between the UK and continental Europe to better compensate major fluctuations in power generation expected in the future due to the increasing

number of renewables. In addition, the new subsea cable connection is intended to improve the competition in northwestern Europe's grid and to get energy trading into higher gear. Starting on April 1, current will flow through the new "interconnector" with low-loss transmission, with the electricity markets of both countries setting the price for the electricity as well as the transmission direction. The HVDC transmission connection will thus meet the European Commission's requirements to interconnect power grids to a greater extent.

As part of the BritNed project, Siemens was responsible for the design of the complete HVDC transmission system and installed both turnkey converter stations. Siemens' scope of supply included the supply, installation, and commissioning of core components such as converter valves with direct light pulse-fired power thyristors, converter transformers, smoothing reactors, protection and control systems, and AC filters.

BritNed is a high-priority project for Europe's energy industry. The HVDC transmission link between Britain and the Netherlands will ensure more reliable energy supply and enable electricity and interconnector capacity. Capacity will be traded via energy auctions. It will result in a broader range of choices and give local power companies more options to participate in the European power markets. Market participants will have open access to BritNed's capacities that are allocated based on implicit auctions run by the Amsterdam Power Exchange (APX-ENDEX) and Unicorn on short-term explicit auctions. Compared to long-term capacity reservation systems, these allocation processes ensure a significantly higher level of transparency and open access to all market participants. The trading of electricity among various power markets also makes them more efficient and more competitive, and forms the basis for creating a standardised European electricity market and network.

In explicit auctions, preset transmission capacities are auctioned off separately from the electricity trading market. In these types of auctions customers can bid on and buy corresponding capacities, whose quantities, flow direction, and duration are predetermined. This model is currently used for electricity connections between France and Britain, the Netherlands and Belgium, and the Netherlands and Germany. In implicit auctions the transmission capacity along with the electricity to be transmitted is auctioned off. The allocated capacities and the flow direction will be determined over the course of the combined electricity trading and transmission capacity auctions so that the electricity, usually to the greatest extent possible, flows to the market region with the highest price - and the higher demand for power. APX-ENDEX will serve as the implicit auctioneer for BritNed. To this end it will use the existing auction market in the Netherlands and expand the existing auction house in Britain.

Siemens is also expanding its UK HVDC capability to meet future requirements, especially in Renewables. Siemens is making a significant investment in its Global Centre of Competence for HVDC connections in Manchester, which will create an additional 340 new jobs (adding to the existing 130). John Willcock, director of Major Projects for Siemens Transmission and Distribution Ltd explains: "The UK's Round 3 offshore wind farms will be sited much further out to sea than previous developments and so will need HVDC technology to overcome the power losses that occur when bringing electricity ashore over longer distances, Strengthening our UK expertise in HVDC is therefore central to Siemens' strategy and will help us maintain our leading market position in the UK."

Energy-efficient high-voltage direct-current transmission technology (HVDC) is part of Siemens' Environmental Portfolio. In fiscal 2010, revenue from the Portfolio totalled about EUR28 billion, making Siemens the world's largest supplier of eco-friendly technologies. In the same period, our products and solutions enabled customers to reduce their carbon dioxide (CO<sub>2</sub>) emissions by 270 million

tons, an amount equal to the total annual CO2 emissions of the megacities Hong Kong, London, New York, Tokyo, Delhi and Singapore.

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 2010 (ended September 30), the Energy Sector had revenues of approximately EUR25.5 billion and received new orders totalling more than EUR30.1 billion and posted a profit of more than EUR3.6 billion. On September 30, 2010, the Energy Sector had a work force of more than 88,000. Further information is available at: [www.siemens.com/energy](http://www.siemens.com/energy)

#### **Notes to editors**

##### **About Siemens in the UK**

Siemens was established in the United Kingdom 168 years ago and now employs around 16,000 people in the UK. Last year's revenues were £4.1 billion. As a leading global engineering and technology services company, Siemens provides innovative solutions to help tackle the world's major challenges, across the key sectors of energy, industry and healthcare. Siemens has offices and factories throughout the UK, with its headquarters in Frimley, Surrey. The company's global headquarters is in Munich, Germany. For more information, visit [www.siemens.co.uk](http://www.siemens.co.uk)

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