

Siemens presents new technology for reliable power highways

- **Full bridge technology represents milestone in transition to alternative energy sources**
- **First order from transmission system operators Amprion and TransnetBW**
- **Order volume of around 900 million euros**

Siemens has unveiled a groundbreaking technology for electricity transmission that also represents a landmark in the transition to alternative energy sources in Germany. Full bridge technology ensures that power can be transmitted over long distances with a high level of reliability and low losses. The German transmission system operators Amprion and TransnetBW will be using this technology for the first time in their ULTRANET direct current project. ULTRANET is the first of three planned high-voltage direct current (HVDC) transmission routes between northern and southern Germany.

Boasting a transmission capacity of 2,000 megawatts, the latest generation of converter stations will be employed at both ends of these routes, converting from alternating to direct current at the starting end and then back to alternating current at the other. Use of full bridge technology enables a fast and flexible fault recovery on low-loss DC lines without needing to power down the system. It also serves to stabilize the AC grid.

The advantage of the newly-developed Siemens converters is the high level of availability they bring to power transmission. A further innovation of the new technology is that it enables a grid segment to be supplied with power again after an outage, so avoiding lengthy power cuts.

"The full bridge technology identifies faults extremely quickly and so prevents grid problems from cascading into blackouts", says Jan Mrosik, CEO of the Energy Management Division at Siemens. "This innovative development enables Siemens to provide the technology necessary for successful grid expansion – a vital element in the transition to alternative sources of energy."

ULTRANET is a joint project between Amprion and TransnetBW. It forms the southern part of one of three planned HVDC corridors stretching from the north to the south of Germany. ULTRANET extends over 340 kilometers between Osterath in North Rhine-Westphalia and Philippsburg in Baden-Württemberg.

When it comes to transporting electricity across large distances with low losses, HVDC is the technology of choice. In Germany, HVDC is the technology used to supply the on-land power grids with electricity from offshore wind farms. HVDC is a reliable means of connecting up power systems of different frequencies and permits the precisely-controlled exchange of energy between neighboring countries.

Demand for HVDC transmission is increasing markedly. In the past forty years, HVDC transmission links with a total capacity of 100 gigawatts (equivalent to the capacity of 100 large power plants) were installed worldwide. According to Siemens forecasts, a further 270 gigawatts will be added in this decade alone. Currently worth around three billion euros per year, Siemens expects the HVDC market to double in volume within the next five years. Siemens has already carried out more than 40 HVDC projects worldwide, a quarter of these in China.

This press release and a press photo are available at www.siemens.com/press/PR2015120086EMEN

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