Siemens introduces DC transmission system for medium voltage to the market

- Efficient power transmission in the range from 30 to 150 megawatts
- Functions as direct-current transmission line (DC) to control, optimize, and regulate load flows in medium-voltage alternating current grids (AC)
- Based on Siemens high-voltage direct-current transmission (HVDC) technology

With MVDC PLUS (Medium Voltage Direct Current Power Link Universal System), Siemens is introducing a new direct-current transmission system to the market that will serve as an efficient transmission route in medium-voltage AC grids from 30 to 150 kilovolts (kV). Siemens has developed the transmission system for grid operators who need to enlarge their infrastructure to handle the increasing volumes of power fed into the distribution system from distributed and renewable energy sources and also keep their network stable. Distances of up to 200 kilometers can be bridged with MVDC PLUS. Siemens offers the medium-voltage DC transmission system as a compact system in three variants: for a transmission capacity of approximately 50, 100, and 150 megawatts (MW) at DC transmission voltages of 20 to 50 kV.

This makes MVDC PLUS suitable for connecting small communities in sparsely populated regions to the grid, and for connecting and stabilizing low-power distribution grids regardless of their voltage and frequency. This system enables a regulated power exchange between regional medium-voltage networks and microgrids. It also has greater independence from the high-voltage network. Cables as well as overhead lines can be used for transmission. It’s also possible to use existing routes when it’s necessary to increase power capacity without needing to move up to high-voltage level.
The transmission system also allows operators to set up a power link between islands or offshore platforms and the mainland in order to avoid maintenance measures and costs for a diesel generator backup. For example, the system can be used as a backup solution for medium voltage in the production industry, where it increases the availability of machines and equipment and reduces production losses. As a backup power supply for data centers, MVDC PLUS ensures, for example, classification in a quality stage (“tier”). The medium-voltage DC transmission system is also attractive because of its cost efficiency and the short implementation time for combinations at the local level with different financing models, which are increasing in importance in countries that have a growing proportion of renewable and distributed energy sources.

MVDC technology is based on the HVDC PLUS technology used in the Siemens HVDC transmission system, but is reduced to its basic functions. Like HVDC PLUS, the medium-voltage transmission system operates with voltage-source converters (VSC) in a modular multilevel converter design (MMC) that convert alternating current into direct current and vice versa. The current on the transmission route can flow in both directions. Thanks to the use of insulated-gate bipolar transistors (IGBT), the commutation processes in the converter run independent of the network voltage. Both converter stations can be operated as a static synchronous compensator (statcom). The extra high-speed control and protection intervention capabilities of the converters ensure the stability of the transmission system, which reduces network faults and malfunctions in the three-phase grid. This significantly improves the security of supply for energy suppliers and energy customers alike.

This press release and a press picture is available at
www.siemens.com/press/PR2017100005EMEN

For further information on MVDC PLUS, please see
www.siemens.com/mvdc

More press material on EUW 2017 is available at
www.siemens.com/press/euw2017

For further information on Division Energy Management, please see
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