HVDC Hudson Transmission Project in New York (US)

Successfully in operation since 3rd of June, 2013

New York is the biggest city in the US with approximately 8.3 million inhabitants. This megacity is growing by 160,000 people each year followed by an increasing energy demand. In satisfying this hunger for energy, the New York Power Authority (NYPA) turned to a solution proposed by Hudson Transmission Partners to transmit power from the neighboring grid of PJM in New Jersey to New York City and to upgrade and reinforce New Jersey’s grid.

Benefits by the HVDC Hudson Transmission Project

Especially in the hot summer period, the energy demand rises due to increased use of air conditioning systems. Fortunately the Hudson high voltage direct current transmission system (HVDC) was set in operation 42 days ahead of schedule, just before the peak summer period in New York. Thanks to the excellent teamwork of all involved companies, the Hudson HVDC is now providing access to additional electricity and its fast control function provides stabilization to the connected grids, which is a key benefit in the event of grid disturbances or blackouts.

“The Hudson Transmission Project will provide enhanced transmission reliability and energy security and access to an additional pool of energy resources,” said New York’s Governor Andrew M. Cuomo. “The new line will also result in substantial economic savings to New York consumers. These are significant benefits that herald similar improvements on a broader scale from the New York Energy Highway initiative that my administration is spearheading to modernize and upgrade the statewide electric power system and improve its versatility and performance.” (Source: New York Power Authority, News 5th of June, 2013)

Project Overview

In May 2011 Hudson Transmission Partners, LLC, the developer and owner of the Hudson Transmission Project, awarded the contract to the Consortium of Siemens and Prysmian to connect the power supply networks of PJM in New Jersey with New York via a 660 MW back-to-back HVDC system. Siemens’ scope on a turn-key basis has included the contents engineering, civil works, delivery of all components, and
HVDC/FACCTS - Highlights

Installation and commissioning of the complete back-to-back HVDC System, while Prysmian has installed the high-voltage AC cable link across the Hudson River.

The converter station with the HVDC back-to-back (BtB) link is located in Ridgefield, New Jersey and is connected to PJM at Bergen substation, a Gas-insulated substation installed by Siemens and operated by the Public Service Electric and Gas Company (PSE&G), with New Jersey’s 230-kV power supply network. A 345-kV high voltage AC cable spanning a total distance of eleven kilometers provides the connection to the point where the power is fed into NYISO’s system at a Con Edison substation on W49th Street in Manhattan.

Project Management Excellent

The challenge of this project has been to provide a stable interconnection for two independent grids in an urban area with limited space and restrictive local noise requirements in a short time. The Hudson Project benefited from Siemens experience gained in the local market during the Neptune project and enhanced and proven technologies used by Siemens in HVDC projects worldwide.
A creative and clever choice of components and an improved design of the valve modules enable the compact design of the Hudson back-to-back HVDC converter station and offer increased stability. Additionally, acoustic panels were designed to surround the converter site and placed in front of the transformer bays to enable compliance with stringent local noise regulations.

**Operation and Maintenance Services**

In addition to the Hudson Transmission Project, Siemens was also responsible for the Neptune Regional Transmission System, the flagship project for HTP’s parent company PowerBridge, LLC. The Neptune project, in operation since June 2007, brings power from PJM’s energy grid to Long Island via a 65-mile undersea cable (www.neptunerts.com). Siemens provides operation and maintenance (O&M) services for both Hudson and Neptune including constant monitoring of the complex system components and preventative maintenance activities on all critical equipment. Siemens O&M services have delivered a system availability of nearly 99% for the Hudson project for the year 2013 and Neptune’s system availability has been greater than 98% since it first began transmitting power in 2007.

Fig.: Location and main data of the Hudson Transmission Project

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