

Mumbai, March 29, 2017

Siemens and Sumitomo Electric win order for HVDC link

- **Order won by consortium of Siemens and Sumitomo Electric Industries Ltd.**
- **India's first HVDC link featuring state-of-the-art voltage-sourced converter technology**
- **Transmission link to support Government's Vision of 24x7 power for all**
- **Made in India: Siemens to leverage its strong local manufacturing presence**

A consortium of Siemens and Sumitomo Electric Industries Ltd. has been awarded an order from Power Grid Corporation of India, the central transmission utility of India, to supply a high-voltage direct current (HVDC) transmission system. The total size of the order won by the consortium is US \$520 million, of which the share of Siemens Limited is approximately Rs 1,682 crore.

"The grid-augmentation project will go a long way in delivering reliable, uninterrupted power to the state of Kerala. This project further demonstrates Siemens' commitment to partner with the Government of India in its vision of delivering 24/7 power for all. The availability of reliable power transmission is key for India's sustainable progress. Most of the critical equipment for the project is being sourced from factories in India, renewing our commitment towards Make in India," said Sunil Mathur, Managing Director and Chief Executive Officer, Siemens Limited.

The about 200-kilometer-long HVDC connection will be India's first direct current link using voltage-sourced converter (VSC) technology. VSC is the latest innovation in HVDC technology offering a very stable and highly-flexible reactive power control independent of active power control and additional features to support the AC systems like blackstart capability. Furthermore, this solution is ideal to be combined with XLPE cable technology.

Siemens will be supplying two converter stations with two parallel converters, each rated 1000 Megawatts (MW), using its VSC HVDC technology while Sumitomo Electric will be responsible for XLPE HVDC cables in the DC circuit. The grid connection is scheduled to go into operation in the first half of 2020.

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Innovative HVDC link across the southern region of India

2X1000 MW
Equivalent to the output of about 2 large conventional power plants

VSC* based HVDC link

- First time in India
- High grid stability

Excellent example of 'Make in India'

Major components – Converter Transformers, Power Converters and GIS made in India

Partnering Governments vision of 24x7 reliable power for all

Provides electricity for **22 million** people

Combination of underground DC cables and overhead lines
Safeguards sensitive environment

24/7

*VSC- Voltage-sourced Converter Technology

The Pugalur-Thrissur ± 320 kilovolt (kV) HVDC system will connect Pugalur in the southern state of Tamil Nadu to Thrissur in Kerala State in South-West India. The Thrissur converter station will be connected via underground XLPE HVDC cable to a transition station also being built by Siemens. Sumitomo Electric's DC-XLPE cable has unique characteristics among industries to maximize utilization of HVDC system, enabling normal operation temperature at 90 degree and polarity reversal operation, which is suitable for future hybrid system with bulk power overhead line. Sumitomo Electric will supply 128km XLPE HVDC cables comprising four cables for a route of 32km. From the converter station at Pugalur, power will be transmitted via an overhead line to the transition station. The Siemens scope of supply for the turnkey project encompasses design, engineering, supply, installation as well as commissioning and major equipment supplies of the complete HVDC stations, including converter valves, transformers, cooling systems and control and protection technology.

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Siemens Limited focuses on the areas of electrification, automation and digitalization. It is one of the leading producers of technologies for combined cycle turbines for power generation; power transmission and distribution solutions; infrastructure solutions for Smart Cities and transportation; automation and software solutions for industry, and also supplier of healthcare equipments. Siemens Ltd. has 21 factories located across India and a nation-wide sales and service network. Siemens Limited, in which Siemens AG holds 75% of the capital, is the flagship listed company of Siemens AG in India. As of September 30, 2016, Siemens Limited had Revenue of INR 108,089 million and 9,580 employees. Further information is available on the Internet at www.siemens.co.in.

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 165 years. The company is active in more than 200 countries, focusing on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of efficient power generation and power transmission solutions and a pioneer in infrastructure solutions as well as automation, drive and software solutions for industry. The company is also a leading provider of medical imaging equipment – such as computed tomography and magnetic resonance imaging systems – and a leader in laboratory diagnostics as well as clinical IT. In fiscal 2016, which ended on September 30, 2016, Siemens generated revenue of €79.6 billion and net income of €5.6 billion. At the end of September 2016, the company had around 351,000 employees worldwide. Further information is available on the Internet at www.siemens.com.

Sumitomo Electric Industries, Ltd. was established in 1897. Since then, based on electric wire and cable manufacturing technologies, we have conducted our original research and development and strenuously strived for the establishment of new businesses. These efforts have allowed us to create new products and new technologies, as well as diversify our business fields. Currently, we operate our businesses on a global basis in the following five segments: Automotive; Infocommunications; Electronics; Environment & Energy; and Industrial Materials. We have been contributing to society through environmental friendly and fair business activities globally. Further information is available here <http://global-sei.com/>.

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