

Siemens to upgrade India's oldest HVDC link

- **Siemens will refurbish 30-year-old HVDC back-to-back system in the State of Madhya Pradesh in India**
- **Modernization will extend the lifetime to ensure reliable power supply**
- **First Siemens refurbishment project of a third-party HVDC system**

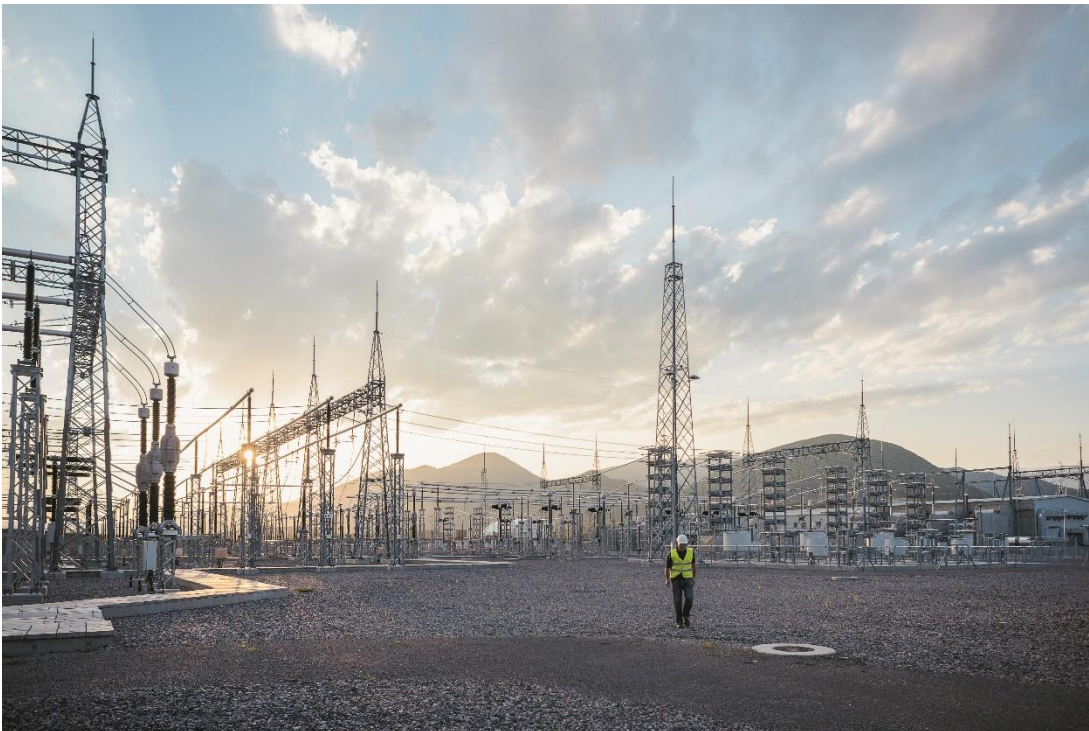
Power Grid Corporation of India (POWERGRID), the Central Transmission Utility of India, has chosen Siemens to modernize the country's first and oldest high voltage direct current (HVDC) link, Vindhyachal. Located in the central Indian state of Madhya Pradesh, the 500-megawatt HVDC back-to-back system was put into operation in 1989 to interconnect the asynchronous 400-kilovolt alternating current networks of the Northern and Western regions. By installing its latest HVDC components Siemens will extend the useful life of the link. This will be the first Siemens HVDC modernization project in India and globally the company's first refurbishment of a third-party system involving replacement of the thyristor valves. The upgrade is expected to be completed in 2021.

"We are proud that POWERGRID trusts in Siemens engineering excellence to breathe new life in the first HVDC system in India," said Mirko Düsel, Head of Transmission Solutions at Siemens Gas and Power. "We look forward to extending the lifespan of the station and enhancing the installation's efficiency by implementing our state-of-the-art technology."

The project's scope includes the installation of new thyristor valves, converter cooling system, HVDC control and protection system, direct current measuring devices and surge arrestors. The key components for the upgrade - the thyristor valves as well as the HVDC control and protection system – will be delivered from the Indian facility in Goa.

Latest light-triggered thyristors with a higher voltage blocking capability will replace the old electrically-triggered thyristors. Thus, the number of thyristors will be halved resulting in less power loss. After completion of the refurbishment, the Vindhychal HVDC station will ensure a reliable power supply.

With a HVDC back-to-back link, two independent neighboring transmission networks with incompatible electrical frequencies, or different operating philosophies, are connected. Additionally, it prevents the power increase in the short circuit levels of the network. An HVDC back-to-back system can also be used for controlled power transfer between two separated alternating current transmission systems.



HVDC back-to-back converter station

A view of the alternating current yard at the HVDC back-to-back converter station in Georgia. All over the globe HVDC back-to-back systems link neighboring asynchronous power grids and can be used for controlled power transfer between these independent networks.

This press release and a press picture are available at

www.siemens.com/press/PR2019040241GPEN

For further information on HVDC, please see

www.siemens.com/hvdc

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