

## Case Studies

### Gurgaon Palwal Transmission Limited: India's first Vertical Substation

Haryana is a growing economic and commercial powerhouse for the country and home to thousands of industrial and commercial establishments. To meet the peak energy requirements of Haryana, which is expected to grow from 9,000 MW in FY 2014-15 to more than 12,000 MW in FY 2020-21. Today, the state meets its power deficit through high-capacity Diesel Generation (DG) sets, which are also a source of high pollution levels in the region. The Gurgaon-Palwal Transmission Limited (GPTL) was envisaged as part of an Interstate Transmission System project, to evacuate ~2,000 MW to Haryana Vidyut Prasaran Nigam Ltd. (HVPNL) ensuring access to reliable power for the people of Gurugram and Palwal – areas in the state.

#### THE CHALLENGES

The power demand in Haryana is likely to increase significantly in the coming years. This is primarily due to factors like rise in agricultural consumption, enhanced demand of existing consumers because of growing use of appliances, commercial activities and industrialisation, among others. To meet



the peak load of 12,112 MW, a robust Interstate Transmission System (ISTS) was planned in the form of GPTL.

With increasing urbanisation, there is a scarcity of land available globally for constructing transmission assets. GPTL is also the first project for Sterlite Power which was constructed in a completely urban milieu. All the eleven elements in the project traversed through densely populated areas of Gurugram and Palwal areas. Thus, securing the RoW for the project had been a significant challenge.

#### WHAT WE DID

It is also a unique project as it implemented one-of-its-kind innovation in the power sector with India's first vertical GIS substations built at Prithla, Kadarapur and Sohna. These 400/220 kV GIS substations are multi-storied substations with a rooftop 220 kV open switchyard. A conventional GIS substation of similar capacity generally requires 12 acres of land, but this innovative solution is built only on 3.8 acres resulting in 75% reduction in land size. Apart from the vertical substations, Multi Circuit Monopole towers have been built to optimise

the space challenges related to the project. Apart from saving land, all these innovations have resulted in offsetting more than 18,000 tonnes of CO<sub>2</sub> emissions each year as compared to a conventional layout for a similar GIS substation.

#### Achievements

The project not only evacuates ~2000 MW of reliable power to ~3 Million households in the state but will also bring cleaner air to NCR by reducing the use of diesel fired generator sets.

~3 Million households in the state benefitted

~2000MW of power supply to Gurgaon and Palwal areas in Haryana

Reliable power supply to replace more than 10,000 DG sets in Gurugram