Client Reference

Public Sector | Improved MV Substation Reliability and Safety with Condition Monitoring

Time to enhance our substation maintenance programme, by identifying and using CM technologies that allow us to continuously or periodically monitor and diagnose in order to forecast component degradation so that as needed, planned maintenance can be performed prior to equipment failure"

Client background

Our client is an electrical utility responsible for the supply and distribution of bulk electrical power to industrial and residential customers in six administrative regions within their country.

Urbanisation contributes to a growing customer base in their capital city with its population of 2.7 million people, resulting in an increased demand for electricity from their ageing and poorly maintained network that was not designed to deliver so much electricity.

The client approached Martec to assist them with identifying the best condition monitoring technologies which would help them to identify and detect defects before failure, and ensure the safety of their maintenance staff when conducting maintenance.

Key challenges

The client's main challenges include:
An ageing infrastructure
A higher demand for electricity than the currently designed capacity of the network assets
Overloaded assets due to a high demand on the network resulting in the negligence of routine maintenance
The lack of reliable and timely maintenance on many of the assets in the network
Numerous catastrophic failures in their MV (6.6kV and 11kV) substations which lead to extended power outages.

Value add

- The client received a 'customised solution' that provides a wide network coverage, within the limits of their budget.
- The customised solution allowed the client to take action and perform proactive maintenance before catastrophic failure of network components.
- Insight into the condition of their assets and peace of mind that their critical assets are monitored in real-time.
- Their team was trained on condition monitoring capabilities and services on a wide range of network assets which equipped them with the know-how to proceed in future.
- Improved substation safety for the clients maintenance teams.

Tools and technology

- SDT270 ultrasound technology to detect partial discharge, corona, arcing and tracking in substation components.
- Radar Engineers Radio Frequency "Sniffer" for immediate substation safety.

Martec intervention

- Establish the primary root cause failures on the different assets within the electrical network.
- Identify the best condition monitoring technologies to detect the various types of problems and defects on the different assets in the network (including overhead lines, transformers, switchgear and cables).
- Consult with the client to establish the best overall solutions based on client budget, number of assets, failure history and asset risk ranking.
- Supply condition monitoring products for the substation maintenance teams.
- Provide practical and theoretical training on the condition monitoring products provided.