CASE STUDIES

High Voltage Testing Services
Gas Plant

HV COMPONENT REPLACEMENT

In many cases larger HV assets fail testing requirements, or more critically break down in service conditions, due to faulty minor components. These components often include Voltage Transformers, Current Transformers, cable terminations and joints. With effective testing faulty components can be identified prior to failure. This allows replacement items to be sourced and installed at a relatively low cost during a scheduled shutdown, maximising the lifespan and performance of the asset.

PROJECT DESCRIPTION

To determine REFCL compliance and provide a condition assessment for all site HV assets, high voltage testing was performed for a private high voltage network customer. Like many private network customers, the site included an incoming cable, metering cubicle, feeder cable and transformer.

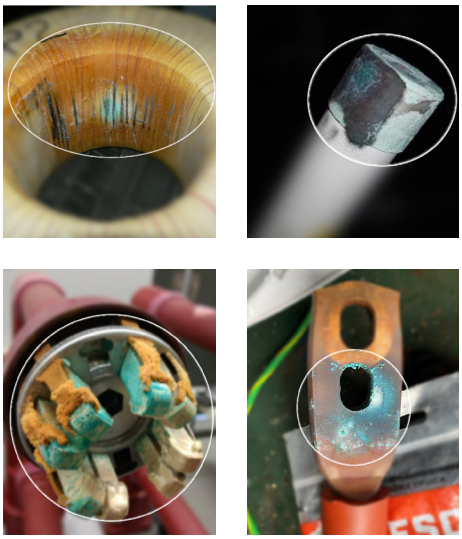
In addition to a detailed inspection, Partial Discharge (PD), Dielectric Dissipation Factor (DDF) and monitored withstand testing was performed on all HV assets in isolation. Dependent upon the capacitance of the item being tested, 50 Hz or VLF (0.1 Hz) test sets were used for energisation of the assets.

SWITCHGEAR FINDINGS

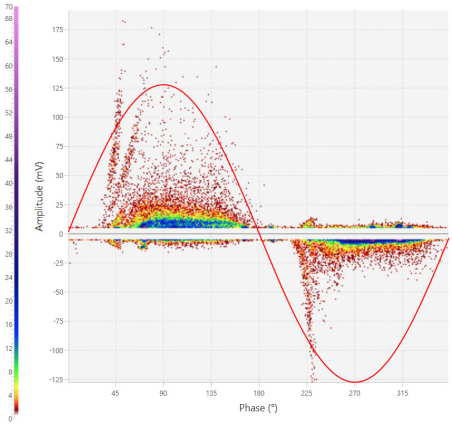
During the initial isolation and inspection of the site assets, corrosion and oxidisation were observed and noted on several components inside the switchgear cubicle. A by-product of Partial Discharge is the release of ozone and nitrous oxide, this commonly results in visible corrosion and oxidisation on the surface of HV components.

High Voltage PD testing confirmed significant discharge was occurring from multiple locations in the switchgear. Using a combination of PD time-of-flight techniques, including electromagnetic and acoustic sensors, the offending components were successfully pinpointed. It was determined that the remainder of the switchgear was in good condition with no PD evident.

The root cause of this PD was likely high precipitation and faulty cubicle heater.



Corrosion & Oxidisation



PD Phase Pattern from discharging switchgear

THE OUTCOMES

- Entire site's condition assessed in 1 day utilising concurrent testing
- Discharging CT's and VT's identified
- Switchgear cubicle heater repaired
- Follow-up testing completed with the site deemed REFCL compliant
- Functionality of the HV network ultimately upgraded

T: 1300 460 579
E: info@livehv.com.au
www.livehv.com.au