Vaisala’s Optimus DGA Monitor OPT100 Guards Against Impact of Solar Flares

Elimpus Ltd has installed several of Vaisala’s online transformer monitoring solutions on behalf of Scottish Power, a leading British energy provider, to provide real-time condition updates at key sites. In one particular case the Optimus DGA Monitor OPT100 will give continuous updates on Scottish Power’s 1000MVA auto transformer and monitor for the impact of geomagnetically induced currents on the asset.

Scottish Power is a British energy provider and distribution network operator for central and southern Scotland, parts of northern England and Wales. It is also the transmission grid owner for the south of Scotland.

At a key site in Scotland’s central belt, it wanted to protect a 1000MVA autotransformer from the effects of solar flares: periods when intense high-energy radiation is emitted from the sun’s surface, causing radio and magnetic disturbances on Earth. Coupled with local geology, these have the potential to disrupt a power transformers’ magnetic circuit, leading to inefficient power transmission and significant damage to the transformers.

The OPT100 is Vaisala’s most advanced monitoring solution, and assesses a transformer’s condition by measuring for the presence of moisture and seven different fault gases in transformer oil.

“Scottish Power has a number of strategic transformers on the transmission network that require advanced condition monitoring, and we have been increasingly wary of the effects of solar flares and geomagnetically induced currents to disrupt their efficient performance.”

Keith Black,
System Performance Senior Engineer,
Scottish Power.

“The Vaisala unit was installed as it met our current specification of online DGA devices with the addition of being maintenance free.”

Employing Advanced Technology for the Best Outcomes

The OPT100 draws on Vaisala’s long heritage in industrial measurement technology. The highest engineering quality is maintained by manufacturing all of the unit’s components in-house, including the innovative tuneable non-dispersive infrared (NDIR) filters, which ensure optimal condition monitoring performance regardless of operational conditions.
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The tuneable NDIR filter provides confidence to the monitoring team that their measurements are stable over the long term. The tuneable NDIR filter prevents drift and ensures all dissolved gas concentrations are accurately measured.

An additional and key benefit of Vaisala’s OPT100 over other transformer monitoring offerings is its simple installation process, which enabled Elimpus and Scottish Power to quickly and independently bring the unit online. And, with no consumables, the unit requires no regular maintenance of its own.

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“The OPT100 gives us the ability to track any disturbance that may occur and extend the lifetime of our transformer, as well as reducing the possibility of any unplanned outages,” added Keith Black.

With online transformer monitoring set to become increasingly important, Scottish Power are installing more OPT100 units across their fleet of power transformers.