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# Online Transformer Data Comes at a Price



In a data-driven world where transformer owners want to have as much data as possible from their transformers, they start by monitoring the top oil temperature, winding temperature, pressure relief device, liquid level, tank pressure, sudden pressure, and various load tap changer (LTC) data.



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When transformers fail without warning, they realize that more data is necessary. They then investigate single and multi-gas online dissolved gas analysis (DGA), partial discharge, bushing monitoring, acoustic vibration, etc. Then they build asset health centers and hire data scientists to manage the vast amount of data they didn't realize would be such a monumental task to manage.

There must be a better way.

Large utilities on the bleeding edge of technology have found that all of this data comes at a price. While many monitors do not interface directly with transformer fluids, the online DGA monitor must measure gases either directly in the fluid, or extract gases from the fluid for measurement after extraction.

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Large monitoring systems may be justified for critical or sick transformers, but, today, most utilities spend too much time and effort getting their large monitoring systems installed, commissioned and maintained, when 90% of their fleet has no online monitoring. With an average transformer failure rate of roughly 1% annually, utilities need affordable solutions that can be installed fleet-wide that can alert them to internal transformer faults prior to failure so potential failures can be managed during the regular workday rather than on overtime.

In a world where people have less resources and more to get done every day, utilities need valuable, reliable and maintenance-free devices to alert them to problems with their transformers. It's time for utilities to take a step back and look at which data is most useful. They need to look at how they will get the most bang for their buck in the future.

In addition, they must survive ground faults, corona, electro-magnetic flux, vibration, corrosive compounds in the oil, etc. Data scientists love data from multi-gas monitors because they get a better idea of the real-time health of the asset. Unfortunately, the reality is that most multi-gas monitors of any type are prone to some type of failure within 2-5 years after installation.

While a 5 year warranty sounds like a good plan, what happens after the

warranty expires? Due to limited maintenance budgets, most utilities are unable to keep their multi-gas monitors running after the warranty expires. Therefore, after 10-20% of the transformer's life, the utility is back to relying on annual data from manual samples. Some utilities are now getting 10 year warranties on their monitors. While this extends the life of their monitors, does the cost of the monitor and warranty outweigh other options that could alert utilities to more transformer failures?

**What Have Utilities Learned from Their Online Data?**

Many utilities are frustrated because they spend more time installing, commissioning, and maintaining their multi-gas monitors than they spend actually fixing problems on their transformers. This means that they are starting to understand that using low-cost, reliable single-gas sensors that last 10+ years makes more sense than trying to equip every large transformer with a high-end monitoring solution.

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