Outages Happen 24/7. So Should Monitoring.

/ PREVENT POWER TRANSFORMER FAILURE WITH HELP FROM VAISALA
Power Transformer Monitoring that Works

There’s nothing worse than an unplanned outage, in terms of both lost revenue and the damage to your reputation and brand. In the typical big utility, on average six transformers fail every year.

So what can be done?

Here’s the good news: 50% of power transformer failures can be prevented with the right online monitoring tools for moisture levels and dissolved gases in power transformer oil.

Moisture reduces the insulating properties of transformer oil, resulting in more rapid aging of the transformer. Traditionally, oil moisture readings have been taken at periodic intervals. However, because moisture levels can change rapidly due to temperature variations of the transformer oil, periodic sampling is not sufficient.

Dissolved gas analysis (DGA) is a critical component in preventing power transformer failure. Dissolved gas levels in transformer oil can indicate the existence of a fault, and the rate of change in these levels can be used to determine its severity.

But if your monitors give false alarms or require regular maintenance, they can end up wasting time and money while failing to predict an imminent failure.

You need a monitor that does all the work for you – sampling, analysis, and calibration – and only alerts you when there is an issue with the transformer. A monitor you can install, trust, and forget.

That’s why we created the Vaisala range of monitors for power transformers. They provide real time, trouble free monitoring for your power transformers – with no false alarms.
Make Your Assets Work for You

Vaisala has a better way. Our online monitors for power transformers have been designed from the ground up to eliminate false alarms and provide reliable long-term trends. You get the data you need to safely extend the life of your power transformers and simplify key investment decisions: like when to maintain or refurbish existing units. Best of all, you get the data you need to avoid power transformer failure, which not only saves you money, but also protects your reputation. The end result? Your assets working for you, not the other way around.

You Can Count On Vaisala

Vaisala has been creating measurement devices for 80 years. Our instruments and systems are used in over 150 countries in industries where failure is not an option, including airports, pharmaceuticals, and power generation. In fact, over 10,000 companies in safety and quality-critical sectors already rely on Vaisala.

Vaisala sensors are so reliable they’re used in the harshest places on earth – like arctic, maritime, and tropical environments – and even on Mars.

We know the pressures you face in this industry. An aging installed base, expensive and time consuming refurbishment or replacement, and untold costs if there is a power transformer failure.

Online monitoring is supposed to fix this. But each false alarm costs time and money when someone needs to visit the site and take samples. Even worse, false alarms can mean that people stop paying attention to the monitors. Not only is this a waste of your investment, but it can also lead to warning signs being missed.
The Vaisala Optimus™ OPT100 DGA Monitor for Transformers

**Dependable Data**
- Sensor optics are protected from contamination
- Vacuum gas extraction is independent of oil temperature, pressure, and type
- Unique autocalibration eliminates long-term drift
- IR sensor technology designed and optimized in Vaisala cleanrooms
- Spectral scanning for better gas selectivity
- Excellent signal/noise ratio means no averaging

**Robust Construction**
- Hermetically sealed structure tolerates vacuum and pressure variation
- No consumables to replace or service
- IP66-rated and temperature-controlled housing withstands harsh conditions
- Stainless steel and aluminum components and piping
- Magnetic gear pump and magnetic valves

**Smart Design**
- Self-contained plug-and-play monitor that can be installed in less than two hours
- Browser-based user interface means no additional software needed
- Continuous real-time monitoring allows for trending, analysis, and correlation to, for example, load patterns
- Self diagnostics provide self recovery after disturbances

*The Vaisala Optimus OPT100 DGA Monitor delivers out-of-the-box performance, completely eliminates false alarms, and gives you the best long-term stable measurements of any device on the market – without maintenance.*
How is the Vaisala Optimus DGA Monitor Different?

The Vaisala Optimus DGA OPT100 Monitor for Transformers is the culmination of decades of listening to customers’ needs and researching existing devices, as well as leveraging our 80 years of experience making sensors and measuring equipment for safety-critical industries and harsh environments.

No More False Alarms

The monitor’s IR sensor has been designed and optimized in Vaisala cleanrooms. Vacuum gas extraction means no data fluctuation due to oil temperature, pressure, or type, while hermetically sealed and protected optics prevent sensor contamination. The end result? A monitor that completely eliminates false alarms.

A Device That Works Anywhere

Stainless steel pipes, IP66-rated temperature controlled housing, and a magnetic pump and valves mean superb performance and durability – from the arctic to the tropics. There are also no consumables to service or replace.

Intelligent Features for Hassle-free Monitoring

The Vaisala Optimus DGA OPT100 Monitor for Transformers uses a browser-based interface that completely eliminates the need for additional software. The device can be installed in less than two hours – just connect the oil and power and it’s ready to go. And in case of a disturbance like power loss, self diagnostics allow the device to self recover.

- Hydrogen H₂
- Carbon monoxide CO
- Carbon dioxide CO₂
- Methane CH₄
- Ethane C₂H₆
- Ethylene C₂H₄
- Acetylene C₂H₂
- Moisture H₂O
The Vaisala MHT410 Moisture, Hydrogen, and Temperature Transmitter is a cost-effective and dependable solution for monitoring insulating oil in power transformers. Unlike conventional solutions, the Vaisala MHT410’s sensors directly measure transformer oil to provide non-stop trend data.

The transmitter can be easily installed and mounted onto an operational transformer in minutes by one person, with no field adjustments necessary. The MHT410 is also robust: its non-membrane technology means it can handle both under-pressure and over-pressure conditions. Furthermore, there are no pumps, hoses, batteries, valves, or other sensitive wear parts that could fail or lead to outages.
Vaisala HUMICAP® – Continuous Online Moisture Measurement

The Vaisala MMT330 Moisture and Temperature Transmitter measures transformer oil moisture online, providing an accurate real-time picture of the transformer's condition. The transmitter monitors moisture levels in all ambient and operating conditions, and is compatible with all types of insulating oil. Installation is easy, and the device can be directly connected to the substation data collection system. The Vaisala MM70 Hand-held Moisture and Temperature Meter is a lightweight meter for spot checks to identify transformers with moisture issues. Because the probe can be inserted directly into the process through a ball valve, there’s no need to drain the oil or shut down the transformer.

Vaisala DRYCAP® – Ensure Dry Insulation with Dew Point Measurement

When building a new transformer or overhauling an installed unit, the cellulose insulation needs to be dried completely by applying heat and vacuum. After drying, the tank is purged with dry nitrogen or air. Dew point measurement is crucial to confirming the final dryness after the nitrogen/air purge, ensuring a thorough drying process. But how do you know when dry is really dry? Vaisala's fixed DRYCAP Dewpoint and Temperature Transmitter Series DMT340 and portable DRYCAP Hand-Held Dewpoint Meter DM70 allow you to quickly and reliably verify specified moisture levels.
Vaisala Monitoring for Power Transformers

**Vaisala offers a full range of online monitoring solutions for all your power-transformer needs.**

Vaisala Optimus™ OPT100 DGA Monitor for Transformers

A comprehensive multi-gas monitor for your most critical transformers. It delivers out-of-the-box performance with no maintenance, eliminates false alarms, and offers the best long-term measurement stability on the market.

Vaisala MHT410

An early-warning online monitor for power transformers that gives hydrogen trend and moisture data with no false alarms or maintenance.

Vaisala HUMICAP® MMT330 and MM70

A fixed transmitter or handheld meter for power transformers that gives reliable relative humidity, moisture, and temperature readings for oil—with no false alarms.

Vaisala DRYCAP® DMT340 and DM70

A fixed transmitter or handheld meter for quality control and spot checking humidity levels in power transformers in the factory or after refurbishment or transport.