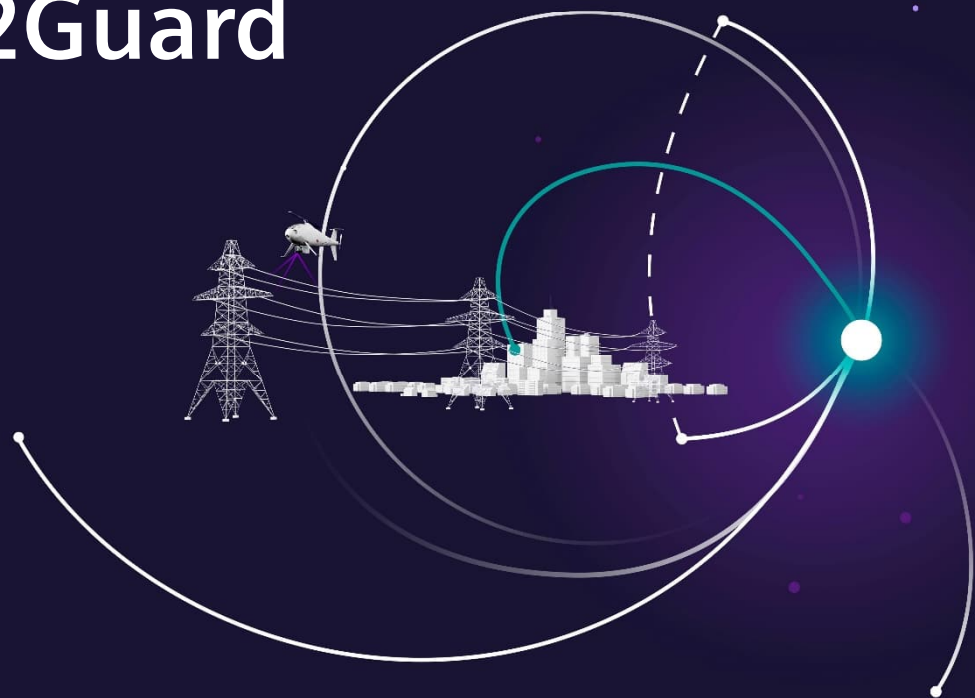


SITRAM H2Guard

Monitoring & Diagnostics



[siemens-energy.com/t-service](https://www.siemens-energy.com/t-service)

Introduction

Among the reasons for transformer outages, failures related to the winding have the highest rank. In case of present partial discharge phenomena which are also referred to as "sparking" the transformer oil produces internal gases along this problematic process of insulation capability loss.

One reason for the statistical outcomes in researched failure rates could be that the transformer oil is usually tested accordingly offline by classical analysis in oil laboratories. This procedure is not always trivial and only an incomplete picture can be drawn because of the nature of non-continuous test approaches.

With the SITRAM H2Guard, the new online DGA system (DGA: dissolved gas analysis), Siemens Energy Transmission Service offers a versatile single gas monitoring system for hydrogen measuring.

Features

SITRAM H2Guard enables asset managers to check the condition of the transformer oil in a continuous way and having the advantages of trending and histories functionalities.

The asset condition data allows a thorough evaluation and can reveal developing equipment issues before they become a problem.

SITRAM H2Guard allows:

- Use as a stand-alone system, or in combination with superior monitoring platforms
- Easy integration into existing SCADA landscapes through standard communication and protocol interfaces

The actual miniature sensing element is in the probe tube which should be fully inserted into the liquid phase of the insulating oil at suitable locations at the transformer tank or the pipe system.

Benefits

- Improved scheduling of maintenance work and downtimes, repairs, adequate personnel support
- Extensible system
- Fast detection and reliable alarming
- Very durable and minimum maintenance compared to other products
- Easy to install / uninstall
- Interoperability and simple operation
- Price attractive ownership with quick amortization considering classical assessment approaches



Transmission Service for Transformer.

Scope of Work / Deliverables

- Standard electrical and mechanical connection kit or individual mechanical connection kit on request
- Optional external sensors e.g., for measurement of humidity or temperature on request
- Turnkey installation and communications services
- Expert analysis of monitoring data and customer support
- On-site training courses for operation and maintenance of our systems
- Design, installation, and commissioning of all necessary equipment

Technical Details

The SITRAM H2Guard has an advantageous compact solid-state design involving the chemical elements Palladium (Pd) combined with Nickel (Ni) in a thin film alloy which catalyzes the molecular hydrogen into atoms which are picked up by the palladium and bound into the metallic lattice inside the film.

During this process of binding the hydrogen from oil the bulk electrical properties of the alloy are changed and used as measurement basis.

Therefore, based on this measurement principle there is no need in consumables like reference gases which are used in gas chromatography. Also, there is no need in a classical membrane which is used in e.g., fuel cell sensor approaches based on the electrochemical principle or the thermal conductivity detection (TCD).

All in all, by that, the used sensor technology in SITRAM H2Guard becomes very robust. Operating SITRAM Dry, Siemens Energy global service network is always happy to help.

Measuring Demands*

Range	25 – 5000ppm
Accuracy	20% of reading or 25ppm, whichever is greater
Repeatability	10% of reading or 15ppm, whichever is greater
Response Time	< 60min (90% of step change)
Cross-Sensitivity	< 2% to other gases CO, CO ₂ , CH ₄ , C ₂ H ₂ , C ₂ H ₄ , C ₂ H ₆ , C ₃ H ₈ , etc.

*For better understanding please refer to the details in the system manual.

SITRAM H2Guard is compatible with Sensformer solutions

SITRAM H2Guard – General Data

Supply Voltage / Power Consumption	110 to 240 VAC, 50-60Hz / max. 50 W
Ambient Operating Conditions	-40°C...+70°C, indoor/outdoor also in harsh EMC areas, 5%...95%RH (non-condensing) for complete operating temperature, 100% RH for gross of operating temperature range
Operating Conditions	Pressure and vacuum withstanding oil temperature, pressure: ≤ 105°C / ≤ 3bar
Physical Dimensions and Weight	Tube > ¼" NPT / 3.5", System > L:406 W:127 H140 mm (L:16.0 W5.0 H5.51 inch), 2.3kg
Ingress and Corrosion Protection	<ul style="list-style-type: none"> • IP67 (IEC 60529) • C5M (a.o. ISO 12944) • Weather and UV resistant powder coat (AAMA 2604) • Cast aluminum enclosure (UNS A03280) with a stainless-steel probe tube (316 type)
Resistance to Shock and Vibration	Among others tested on basis of: <ul style="list-style-type: none"> • DIN EN 60068-2-6 – shock and vibration • DIN EN 60068-2-64 –vibration environmental test • DIN EN 60068-2-27 – shock test for transformer environment Additional performed tests such as extended, aggressive vibration dwell at 50 and 60 Hz.
Data Rate	Maximal 1 measurement value per second, self-calibration: 2h every 12h
Output Relays	Four "Form C" relays with NO, NC, and COM terminals are available for use
Analogue I/O	Supported functionality is dependent on firmware version* <ul style="list-style-type: none"> • 2 inputs, standard: 0-20mA (e.g., for connection of additional external sensors e.g., humidity) • 3 outputs, standard 0-20mA (first output is reserved to report hydrogen) *CLI or Software configurable I/O (current- or voltage input optional, current ranges)
Communication	<ul style="list-style-type: none"> • Serial RS-232 and RS-485, Mini-USB, ethernet • Protocols: Modbus over ethernet or serial
Memory	<ul style="list-style-type: none"> • Existing Micro-SD slot (support is dependent on firmware version) • Also sufficient data storage capability on internal flash memory
Display and Status LED Indication	<ul style="list-style-type: none"> • Multi-line OLED monochrome graphics display (orange text on black background) • Three bright LEDs (red, yellow, green)

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[siemens-energy.com/t-service](https://www.siemens-energy.com/t-service)

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