GSENS H2

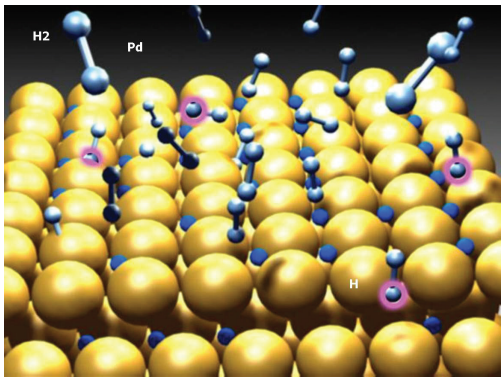
Hydrogen sensors for transformer dissolved gas monitoring using our proven DGA platform

Advance hydrogen sensing technology using palladium-nickel alloys with proprietary materials coating to protect the sensor, enabling it to measure hydrogen in oil or gas phase of power transformers and ancillary equipment.

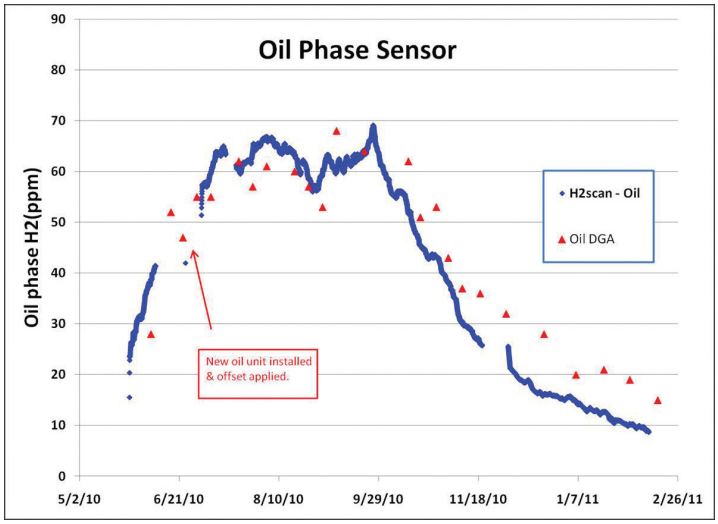
This solid-state sensing element is hydrogen specific, inert to other transformer gases and can be immersed directly in the transformer oil during normal operation to measure hydrogen levels continuously. GSENS H2 platform has no consumable components or any degradation of the sensor, does not require carrier or calibration gases to maintain accuracy and has a theoretically unlimited useful life.

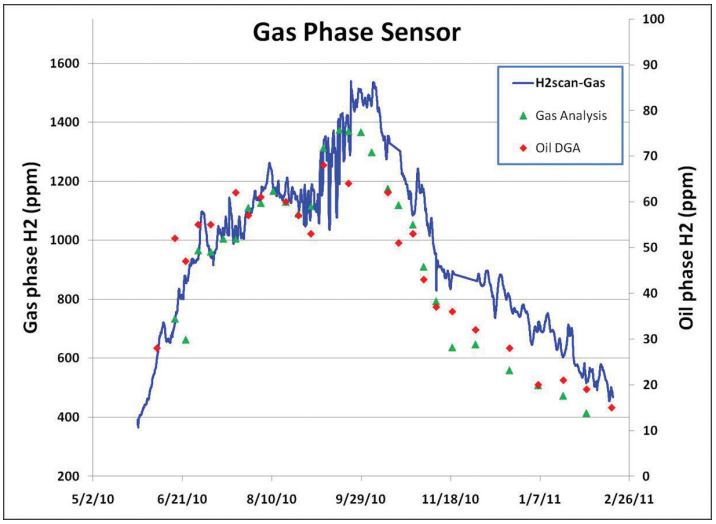
Key Features

GSENS H2 sensor is based on many years of research, experience and commercial success in various industries, including petroleum refineries, chemical production, nuclear power plants and fuel cells. GSENS H2 sensor is developed specifically for monitoring hydrogen in electric power transformers and other oil filled apparatus.



GSENS H2 sensors can be retrofitted onto active transformers without having to de-energize them. Unlike other technologies, GSENS H2 sensor technology does not suffer from signal saturation at high hydrogen concentrations. The sensor continuously measures oil temperature and provides an oil-temperature corrected hydrogen signal that can be used to activate relays and provide early warnings of a transformer failure.

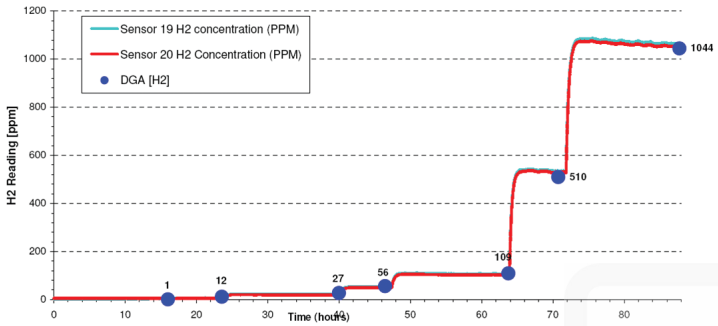




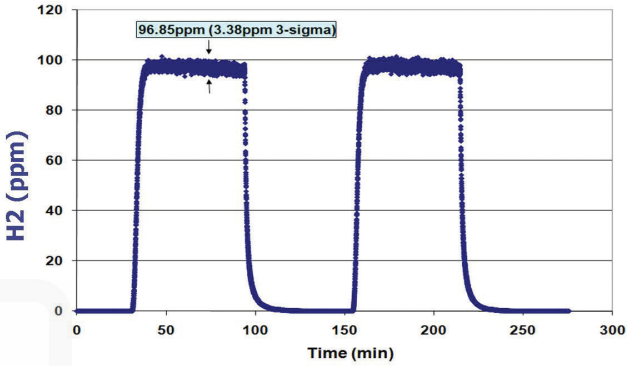
Benefits

- Low cost solution for key incipient fault marker that is easy to install and maintain
- Operates immersed directly in transformer oil or headspace
- Continuous hydrogen monitoring reveals potential faults to ensure timely action and avoid downtime
- Reduced dependence on costly oil sample based DGA diagnostics
- No membrane, consumables, moving parts or reference gas

GSENS H2 Sensor Performance



Sensor matches DGA readings in Oil Phase



Sensor performance in Gas Phase

GSENS H2 Sensor for Transformer and Other Oil Filled Assets

- May be installed on New and Retrofit Applications
- Any class of oil filled transformer (Transmission /Distribution /Commercial /Industrial)
- Instrument Transformers
- Load Tap Changers and other oil-filled assets

Transformer Installation

Technical Specifications

Parameter	Oil Phase	Gas Phase
Measurement Accuracy Range	25 - 5,000 ppm	500 - 100,000 ppm
Accuracy[1]	20% of reading or 25 ppm[†]	20% of reading or 500 ppm
Repeatability[2]	10% of reading or 15 ppm[†]	10% of reading or 300 ppm
Response Time	< 60 minutes	< 60 minutes
Operating Temperature (Ambient)	40°C to +70°C	40°C to +70°C
Storage Temperature	-40°C to +85°C	-40°C to +85°C
Oil Temperature Range[3]	-40°C to +105°C	n/a
Data Log Storage	1 Year	1 Year
Cross-sensitivity to H2O, CO2, C2 H2, C2 H4, CO, etc.	<1%	<1%
Serial Communications	RS485, MODBUS RTU	RS485, MODBUS RTU
Power Supply	9-48 VDC, 10 Watt	9-48 VDC, 10 Watt

[†]whichever is greater

Physical Specifications

Wetted Materials

316SS, 40% mineral filled Nylon, polyimide, glass

Sealing

Hermetic glass-to-metal feedthrough, Buna-N gaskets

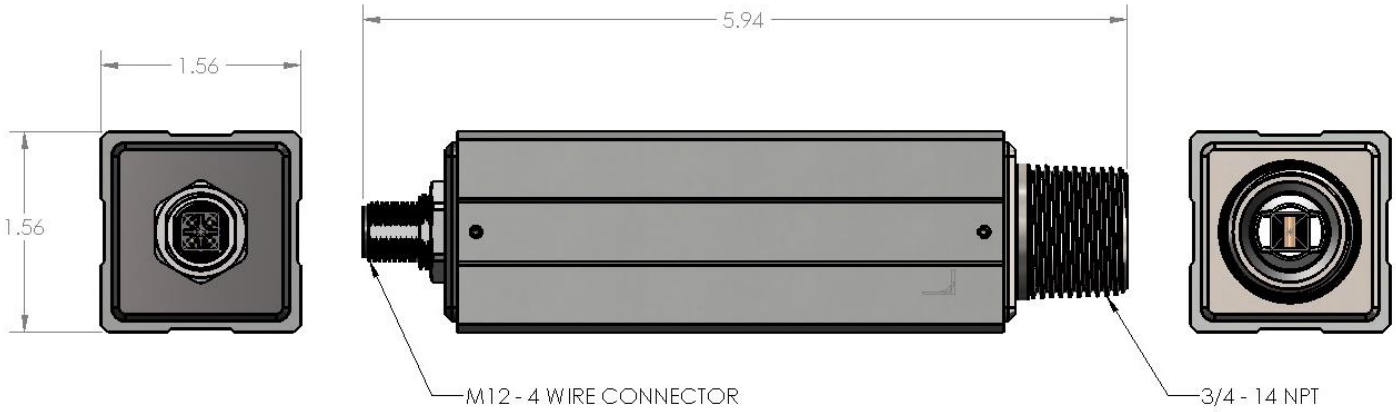
Housing

Hard Anodized 6061 Aluminum

Humidity and Corrosion Resistance

Class C5M Marine rated; salt-water condensing
(IEC 60068-2-11 & DIN EN ISO 12944)

DIMENSIONS (inches)



Ratings

CE Mark (IEC 61000)
ROHS 2011/65/EU compliant
EMC/RFI and Other Electrical Certification

- IEC 55022 IFCC Part 15
- IEC 55024
- IEC 55011
- IEC 61000-4-2 through 61000-4-6, and 61000-4-8
- IEC 61010-1
- IEC 60255-5
- IEC 61326

Ingress Protection

IP68; 25 feet water for 14 days
(IEC 60529)

Vibration

3-axis Sinusoidal, Wideband and Random
[Simulated Long-Life] (IEC 60068-2-6 table C.2, IEC 60068-2-64 paragraph A.2, cate-gory no. 2, IEC 61373: 2010 Cat 1B section 9)
Shock: 30g, shock duration 18ms (IEC 60068-2-27)

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