

HY-OPTIMA™ 720AS-GC

HYDROGEN ANALYZING SYSTEM



Designed to measure, detect and respond to hydrogen leaks in gas chromatography systems

- Simple & efficient installation
- Designed for retrofit to any GC make or model
- Compact size allows for mounting flexibility - it can be easily installed either directly on or away from the GC
- Cost effective with short ROI
- Hydrogen as carrier gas
- Continuous monitoring - the system continually pulls sample from the GC oven for 24/7 monitoring
- Robust & flexible

H2scan's HY-OPTIMA™ 720AS-GC Hydrogen Analyzing System for GC ovens is leading the industry with its defining technology as a retrofit analyzer.

HELIUM AS CARRIER GAS

More than 80% of Gas chromatography (GC) instruments use helium as a carrier gas. Consumption of helium has increased rapidly due to applications in the medical, scientific and industrial fields. This has made helium a rare commodity and has led to a dramatic rise in price.

HYDROGEN AS CARRIER GAS

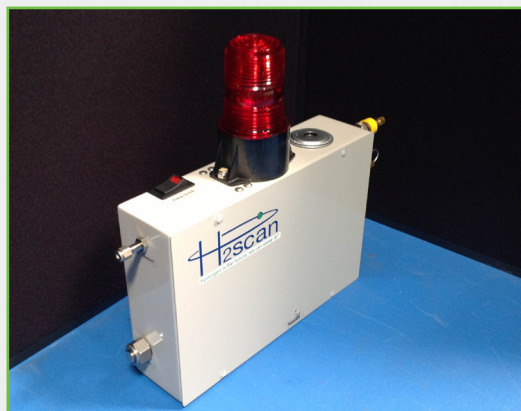
Hydrogen is an attractive carrier gas and is not likely to experience a similar price rise because its production is not dependent on the same factors. While hydrogen and helium are both very efficient gases to use in GC's, hydrogen offers several advantages.

ADVANTAGES

- **Separation:** With hydrogen, higher linear velocity can be used with little decrease in efficiency, resulting in shorter analysis times and thereby increasing the throughput of a laboratory.
- **Column life:** Lower maximum temperature is needed for the analysis or column needs to remain at higher temperatures for shorter periods. In addition, hydrogen is a reducing gas and can remove out potential acidic sites inside of the column. The removal of these sites leads to less sample absorption and less generation of phase breakdown (column bleed). Consequently low temperature and reducing properties result in a longer life for the column.
- **Cost:** Price of hydrogen can be 75% lower than helium resulting in a significant cost benefit.

SAFE USE

Since hydrogen's lower flammability limit is 4% in air, there is a safety need for an analyzer that can detect, measure and react in its presence.



H2SCAN SOLUTION

FEATURES & BENEFITS

To eliminate the possibility of reaching an explosive level, e.g., a leak in a GC oven where temperatures can be as high as 450°C, H2scan has developed a hydrogen analyzing system which can be:

- **Designed for retrofit to any GC make or model**
- Remote installation capability (does not need to be installed on the GC)
- Active pumping to allow constant monitoring of oven environment for leaks
- Quick response (a few seconds)
- Selective and specific hydrogen detection, eliminating false alarms
- Hydrogen shutdown and switch to inert gas in the event of an alarm
- On-site calibration capability
- No moving parts or consumables
- Sensor life expectancy in excess of 10 years

TECHNOLOGY

Hydrogen specific solid-state sensing technology for H₂ measurement/detection from 0.4% to 5% v/v

Palladium – Nickel alloy films provide high stability

Proprietary coating enables continuous operation in harsh contaminant environments

Temperature control loop compensates for external fluctuations

Sensor capable of operation in N₂, O₂, other inert gas backgrounds and multi-component, varying gas streams

“H2scan analyzers provide a cost-effective, **robust and flexible** solution for retrofitting the gas chromatographs in our lab as we are making the switch from He to H₂ carrier gas. The **ease of installation** and sensitivity of the analyzer was **very impressive.**” Laboratory Technician, Major Oil Company

SPECIFICATIONS

Ambient Temperature		Operating: 0°C to 40°C Storage: 0°C to 50°C
Hydrogen Sensitivity Range		0.4% to 5% hydrogen by volume at 1 ATM
Alarm	Set Point	User adjustable set point (0.5%- 4%)
	Response	Audible and visual output Auto Hydrogen shut off Inert gas (Nitrogen, Argon) purge
Instrument Display		Power On/Off LED Alarm LED
Power Supply		110 VAC
Environmental		Indoor Use Pollution degree 2 environment
Serial Communications		RS-232, USB (optional)
Dimensions		13 x 15.5 x 3 inches (330.2 x 397.7 x 76.2 mm)
Weight		~1.5 kg (~3 lb)

CONCLUSIONS

As a result of the extreme helium shortage, the industry is making a concise effort to switch to hydrogen as a carrier gas. This switch can lead to approximately 75% in costs savings. H2scan's reliable hydrogen specific detection technology offers a very light weight, retrofit on any GC. H2scan's solution benefits customers and secures their safety with a quick response time, auto purge gas switch and visual & audible alarms.



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