

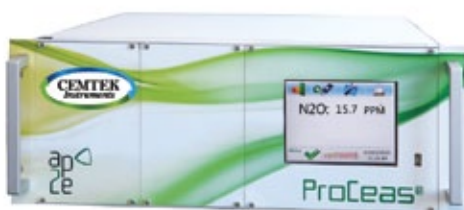


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*\*Analyzers by AP2E*

## CEMGAS H<sub>2</sub> LASER ANALYZER ADVANTAGES AND BENEFITS:

- Interference Free Gas Measurement
- Direct Measurement
  - Sample Conditioning
  - No Moisture Removal
  - Low Temperature Sampling
- Low Maintenance
- Pre-Calibrated
  - Prime Measurement
  - No Re-Zero
- Clean Sample Technology
  - Low- Pressure
  - Low-Flow



H<sub>2</sub> molecule

## CEMGAS 5000 H<sub>2</sub> Laser Analyzer\*

Direct H<sub>2</sub> Laser Measurements - Low Pressure Sampling  
Extremely High Resolution Laser

The CEMGAS 5000 H<sub>2</sub> Laser Analyzer is the first device in the world to be able to measure hydrogen gas in infrared by resonant cavity laser spectroscopy. The instrumentation enables quantitative monitoring with an LOD up to 3ppm.

This innovative high resolution laser-based gas analyzer is for rapid online measurement of low level of hydrogen in chlorine matrix or other gases with very high sensitivity, selectivity and accuracy.

The analyzer comes pre-calibrated for your application and with no optical moving parts it's marked by a high MTBF of 5 years. The touch screen interface and on-board PC allows for local/remote control and real time display/recording of results.

Avoid the condensation phenomenon, the cost of a heated sample gas line or the risk of chemical absorption/desorption with the patented low-pressure sampling system for gas extraction and transportation.

### DIRECT MEASUREMENT.

#### No sample pre-treatment.

Enables direct measurement. The low pressure in the sampling system minimizes any risk for chemicals absorption/desorption and/or condensation in the line.

### CLEAN SAMPLE TECHNOLOGY

The low pressure sampling system enables low flow rates 3-9L/h (0.11-0.33 cfm) without degrading response time. Accumulation of contaminants in lines and filters are greatly reduced.

### EASE-OF-USE AND INTEGRATION

The CEMGAS is pre-calibrated for the CEM's application. Initially packaged in a standard 19" rack, it includes a touch screen interface and on-board PC for local control and real-time display of results. Digital outputs are Ethernet protocol; RS485, RS232 and ModBus. Analog outputs are optional.

### PRIME MEASUREMENT.

#### No Re-zero; No Drift

CEMGAS Laser 5000 technology is a prime measurement. The zero information is contained in the signal, enabling automated and intrinsic re-zero of the analyzer.

### ROBUST LOW MAINTENANCE

In addition to containing no moving optical components, the IR sources (telecom laser) are characterized by MTBF's of 5-10 years. Designed and built strictly for industrial and on-board mobile applications.

### NO INTERFERENCE

Provides exceptional selectivity, enabling simultaneous multi-component measurement without interference, regardless of the matrix.

### SAFE

ATEX compliant configuration available.

## SAMPLING SYSTEM

Flow Rate: 3-9 L/h (0.11-0.33 cfm)  
 Max. Temp: 600°C (1,110 F)  
 Max. Humidity: H<sub>2</sub>O (g) < 65% vol.—Standard  
 H<sub>2</sub>O (g) > 65% vol.—Study Required  
 Pressure: 1atm. ± 100 mBar @ sampling point  
 Sampling Line: Ambient Temp. > 10°C and H<sub>2</sub>O < 65% vol.  
 →simple polytube (no heating)  
 Ambient Temp. < 10°C or H<sub>2</sub>O > 65% col.  
 →80°C heated line.

## ANALYZER

Size: Standard 19" 4U rack.  
 550 mm (21.9 in) depth  
 Weight: 20 kg (44lbs)  
 Options: Wall mounted.  
 ATEX compliant integration.  
 Display/Control: 5.7" diagonal color touch screen  
 PC OS: Windows® XP®  
 Software: WinProceas ©

## INSTALLATION REQUIREMENTS

Operating Temp: 15-35°C (59-95°F) - Standard  
 10-40°C (50-104°F) - Optional  
 Power Requirements: 200W - 110 - 220VAC - 50-60Hz  
 Compressed Air: 1-6 bar (oil free). Not provided.  
 Air Cleanup Panels are available.

## SAMPLING PROCESS



The Sonic Probe allows for extremely low intake flow rate which enables extremely low fouling of the sampling probe filter and reduced maintenance requirements. No moisture or particulate cleanup required.



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## DATA I/O

Standard: Ethernet protocol; RS 485,  
 RS 232; ModBus  
 Optional: Analog I/O; TDR I/O.  
 Other I/O's on request

## ANALYTICAL SPECIFICATIONS

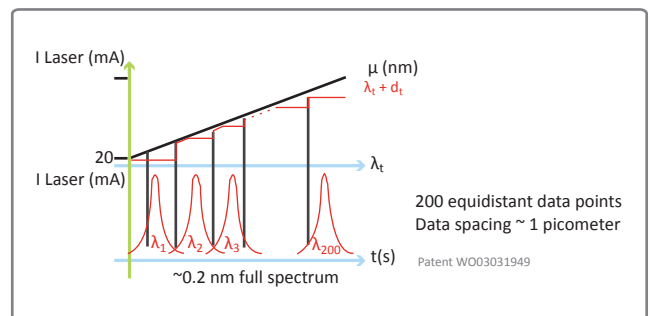
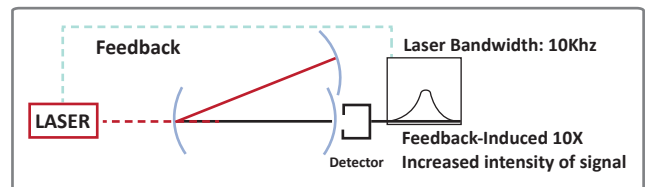
Response Time: < 30 seconds  
 (with sample transfer time)  
 Zero Drift: none

Gas	Range <sup>a</sup>		LOD <sup>b</sup>	
	min	max	min	max
H <sub>2</sub>	1000ppm	100%	3ppm	200ppm

<sup>a</sup> adjustable range on request  
<sup>b</sup> limit of detection 3 Sigma

## PRINCIPLE OF OPERATIONS

Optical Feedback Cavity Enhanced Absorption Spectroscopy



## SPECTRA - 200 equidistant data points over 0,2 nm

