DURAG GROUP

ProCeas® H_2 Purity

Multi-gas, trace-level analysis for H_2 purity and quality control monitoring

- Trace-level measurement compliant with ISO 14687:2025 and ISO 19880
- Adapted for hydrogen grade D purity measurement
- Suitable for online or offline analysis
- Available in pressurized enclosures for ATEX, IECEx, cUL compliance

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PROCEAS® H_2 PURITY: TRACE-LEVEL IMPURITY ANALYSIS

The ProCeas® H_2 Purity is an advanced analytical system that leverages Optical Feedback Cavity Enhanced Absorption Spectroscopy (OFCEAS) - a patented technology developed by AP2e (part of DURAG GROUP) - housed in a compact, integrated cabinet. This laser-based technique offers high accuracy and short response time for trace gas analysis, enabling precise detection of critical impurities in hydrogen streams. The system precisely monitors multi-gas compounds with outstanding precision and long-term stability, without requiring carrier gases or consumables. It ensures compliance with ISO 14687 for PEM fuel cell applications and ISO 19880 for hydrogen quality at distribution and refueling sites. Designed for both on-line and off-line operation, it is perfectly suited for hydrogen production processes (electrolysis, SMR, pyrolysis), as well as research labs, analytical facilities, and fueling stations.
Early and accurate detection of trace impurities is essential to protect fuel cell catalysts, maintain hydrogen system efficiency, and prevent long-term degradation of performance and reliability.

FEATURES

- Patented OFCEAS® + LPS® technologies for ultra-accurate, real-time measurements
- Can be combined with GC/FID-TCD for full compliance with ISO14687 - validated through MetroHyVe project
- Highest selectivity without cross-interference
- No zero gas or carrier gases required, reducing operational complexity
- Wide, dynamic measuring range
- Available in pressurized enclosure (ATEX, IECEx, cUL)

BENEFITS

- **Long-lasting accuracy:** On-line measurement, with no need for re-calibration or sensor replacement
- **Reduced operational costs and complexity:** Multi-point measurement, no zero gas or carrier gases required, easy to use with low maintenance
- **Helps protecting infrastructure:** Identifies contaminants in real-time enabling process adjustments that reduce fuel cells degradation and related maintenance costs
- **Fast decision-making:** Real-time, accurate data supporting process control and gas quality assurance

TECHNICAL DATA

Gas	Range (ppm)	LoD (ppm)	ISO 14687:2025 specifications (ppm)
H_2O	0 ... 50	0.2	≤5
NH_3	0 ... 10	0.005	≤0.1
HCOOH	0 ... 10	0.01	
HCHO	0 ... 10	0.01	≤0.2
CH_4	0 ... 200	0.05	≤100
CO	0 ... 20	0.005	≤0.2
CO_2	0 ... 50	0.02	≤99.97
H_2S	0 ... 1	0.001	0.004
COS	0 ... 1	0.001	0.004
HCl	0 ... 10	0.001	<0.05*
O_2	0 ... 50	0.1	≤5

Linearity: <1% of reading
Repeatability: 3 x LOD or ± 0,5 % relative
LoD: 3σ over a period of 60 s, σ: Standard deviation
Other parameters or ranges on request

*Sum of sulfur compounds

Measuring system	
Technology	Patented OFCEAS® (Optical Feedback Cavity Enhanced Absorption Spectroscopy) combined with LPS® (Low Pressure Sampling)
Power supply	110 ... 230 VA, 50 ... 60 Hz
Power consumption	150 VA max, 80 VA stabilized (per rack / wall mounted configuration)
Ambient conditions	• Rack version: +10 ... +35°C / +50 ... +95°F • Wall mounted: up to -10 ... +60°C / +14 ... +140°F
Housing	• 19'' 4U rack for cabinet integration • Wall-mounted: Stainless Steel enclosure Dimensions 800x600x250mm (without purge controller) • Cabinet: 38U
Protection rating	• 19'' 4U rack: IP32 • Wall mounted: IP65 • Cabinet: IP54
Sampling line	Recomended: 1/8" stainless steel electropolished
Sampling	Process connection: 1/4'' Stainless Steel standard, adapter on request. Sampling probe: consisting of 2 µm filter and sonic nozzle.
Communication interfaces	• USB ports • Modbus TCP/IP, RS232 (Standard), VGA. • Remote access via Ethernet • Optional: Analog output 4-20 mA, Analog input 0-3.3 V

DURAG GMBH
Kollaustraße 105 | 22453 Hamburg, Germany | Phone +49 40 554218-0 | info@durag.com