



# $\mu$ PGC-NG+H<sub>2</sub>

**Metrological analyzer  
for continuous monitoring  
of the quality of natural  
gas and its mixtures  
with H<sub>2</sub> up to 20%**

**Quality analysis and  
transactional measurement  
of calorific value  
(OIML R140, MID 2014/32/EU)**





# CONTEXT, CHALLENGES, SOLUTION

Monitoring of natural gas  
and its hydrogen blends

## REGULATORY AND OPERATIONAL CONTEXT

Natural gas and its hydrogen blends are central to the energy transition.

Continuous monitoring of their quality is essential to ensure regulatory compliance and optimize transactional measures.

Accurate determination of the gas's calorific value is crucial for the proper management of commercial transactions.

The gas composition must be continuously monitored to guarantee its compliance with international and national standards, enabling it to be injected into the network as part of a transactional measure.

## **μPGC-NG+H2: THE NEXT-GENERATION MICRO GAS CHROMATOGRAPH ANALYZER**

The **μPGC-NG+H2** is an analyzer designed to analyze natural gas and its mixtures with up to 20% hydrogen using a single carrier gas (helium) and calculate the calorific value in near real-time. The ATEX Zone 1 certified analyzer offers operational safety in areas classified as hazardous.

Thanks to its modular configuration, it ensures rapid maintenance interventions and reduced operating costs.

Data acquisition and processing are carried out via **PROstation** (from **Agilent Technolo-**

**gies**), a **web browser software**: no software installation is required on a PC; a tablet or any network-connected device is sufficient to access all functions.

The results, provided continuously, are transmitted via Modbus, easily integrating with existing control systems.

All electronics and the processing unit are integrated onto the motherboard inside the instrument housing, eliminating the need for an external unit. The compact design simplifies installation, increases reliability, and makes the **μPGC-NG+H2** the ideal choice for continuous monitoring of the quality and calorific value of natural gas and its mixtures with hydrogen.

## THE **μPGC-NG+H2** SOLUTION

### ■ **Analysis of:**

CH<sub>4</sub>, CO<sub>2</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>8</sub>, C<sub>4</sub>, C<sub>5</sub>, C<sup>+</sup>, H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, CO, COS, H<sub>2</sub>S.

### ■ **Speed:**

Calculation of calorific value in less than 180 seconds; near real-time analysis of components.

### ■ **Reduced operating costs:**

Minimal helium consumption.

### ■ **ATEX certification:**

II 2G Ex db IIB+H2 T5 Gb (Zone 1).

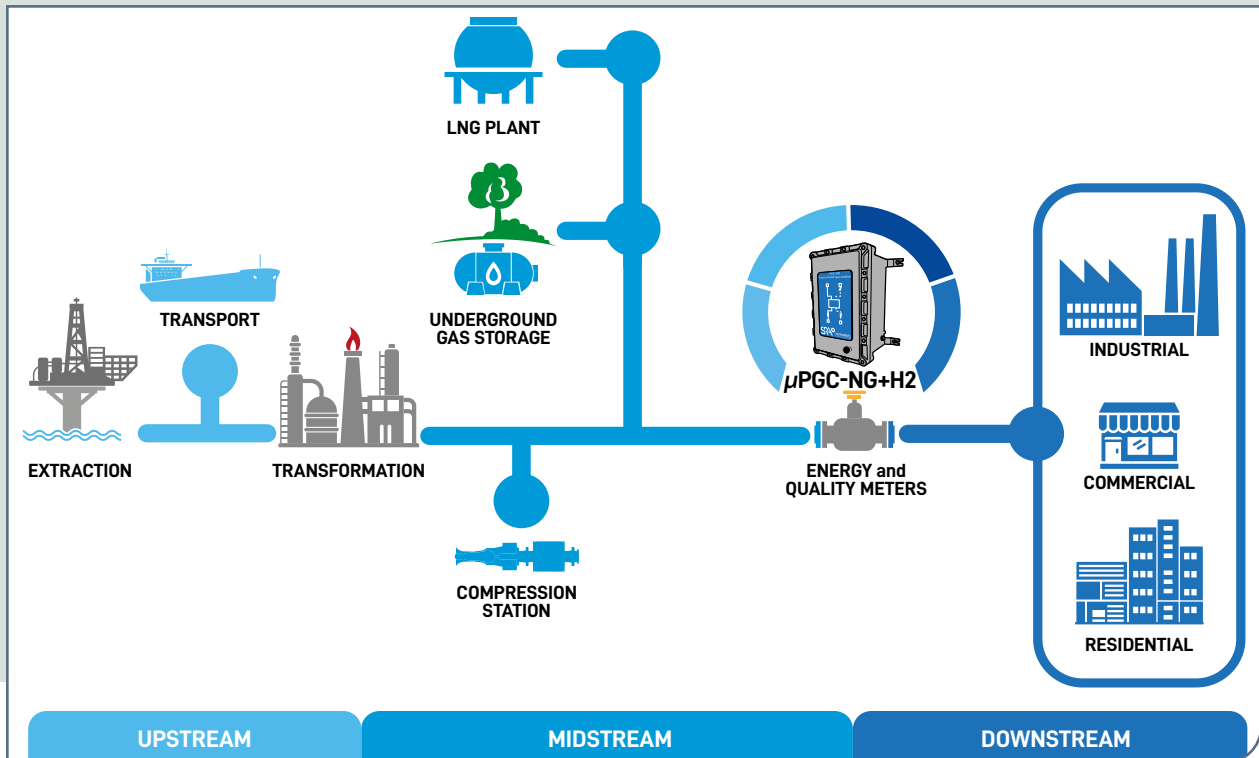
### ■ **Simplified on-site maintenance:**

Plug & Play modules.

# TECHNICAL AND SOFTWARE DESCRIPTION

## The heart of the system: PROstation

PROstation, developed and guaranteed by Agilent Technologies, is the software integrated directly onto the instrument's motherboard. It ensures continuous operation (24/7) by digitizing and automating all measurement and analysis operations.



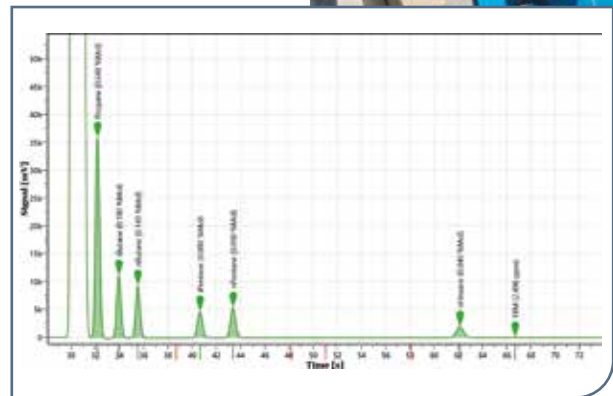
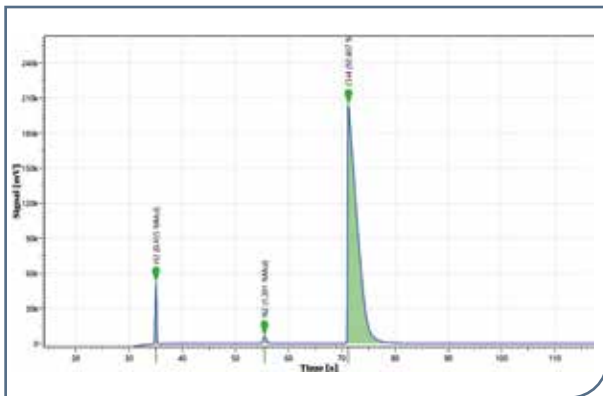
## MAIN FEATURES

- **Remote Web Access**  
Enables real-time data monitoring from any device (PC, tablet, smartphone) connected via a local area network (LAN) or other industrial protocols.
- **Continuous Calorific Value Calculation**  
Provides rapid results (in less than 180 seconds) with calculations compliant with **ISO 6976:2016**, essential for transactional measurements.
- **Advanced Analysis Management**  
Enables automatic programming of analytical sequences, alarm management, continuous calibration, and data transmission via MOD-BUS RTU/TCP, RS485, 4-20 mA, and FTP.
- **Continuous Analysis**  
Precise measurement of natural gas components (CH<sub>4</sub>, CO<sub>2</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>8</sub>, C<sub>4</sub>, C<sub>5</sub>, C<sup>+</sup>, H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, CO, COS, H<sub>2</sub>S), without manual intervention, thus reducing the risk of human error.

## ADVANTAGES

- Online analysis without operator sample handling, reducing the risk of human error and analysis time.
- Fully autonomous analyzer, requiring no manual intervention during normal operation.
- Continuous monitoring ensures immediate detection of gas composition variations and improved process control.
- Minimal downtime and product losses.
- Early detection of anomalies or non-compliant gases.

# ANALYTICAL DETAILS AND CHROMATOGRAMS



## ADVANCED ANALYZER PERFORMANCE

### ■ Complete Gas Composition Analysis

The analyzer measures the composition of natural gas, including methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), propane (C<sub>3</sub>H<sub>8</sub>), butane (C<sub>4</sub>H<sub>10</sub>), pentane (C<sub>5</sub>H<sub>12</sub>), hexane (C<sub>6</sub>H<sub>14</sub>), hydrogen (H<sub>2</sub>), oxygen (O<sub>2</sub>), nitrogen (N<sub>2</sub>), and carbonyl sulfide (COS).

### ■ Hydrogen Mixture Monitoring

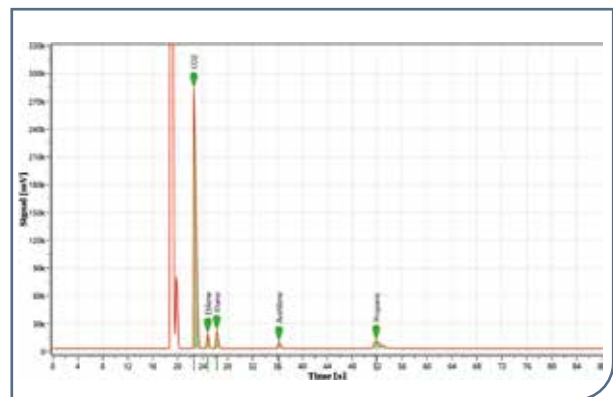
Capability to analyze natural gases containing up to 20% hydrogen using a single carrier gas, enabling the optimization of low-carbon natural gas.

### ■ Calorific Value Calculation

Calculation of calorific value in near real-time, in accordance with **ISO 6976:2016**, essential for billing and transactional measurements.

### ■ Response Time and Reliability

Thanks to its fast response time (140 seconds), the analyzer provides near real-time information for continuous gas network management.



## APPLICATIONS

### ■ Network Injection and Transactional Measurements

The  $\mu$ PGC-NG+H<sub>2</sub> guarantees the quality of natural gas and its mixtures, complying with regulatory requirements for network injection and calorific value calculation, an essential element for transactional measurement.

### ■ Quality Control of Natural Gas and Hydrogen Mixture

The quality of natural gas and its hydrogen mixtures is guaranteed by continuous monitoring.

### ■ Sustainability and energy transition

It optimizes the management of low-carbon natural gas and mixtures with hydrogen, thus contributing to the transition towards more sustainable energy.



## TECHNICAL SPECIFICATIONS

Parameters	Value / Description
Application	Online analysis of the quality of natural gas and/or natural gas and hydrogen mixtures
Inputs/Outputs	2 × RS485, 1 × RS232, 1 × LAN (MODBUS TCP/IP)
Supported Protocols	MODBUS RTU, TCP/IP, RS485
ATEX Certifications	II 2G Ex db IIB+H2 T5 Gb (Zone 1)
Transactional Measurements	ISO 6976:2016 / OIML R140 / MID 2014/32/EU issued by NMi Certin V.B. (certificate TC1288 dated October 23, 2025)
Carrier gas	Helium (He)
Carrier gas pressure	5,5 ± 0,2 bar rel.
Carrier gas purity	Class 5,5 minimum (≥ 99,9995% purity)
Carrier gas connections	Swagelok 1/8"
Sample connections	Swagelok 1/8"
Sample gas conditions	P <sub>min</sub> : 0,2 bar rel.; P <sub>max</sub> : 1 bar rel.
Compounds analyzed	CH <sub>4</sub> , CO <sub>2</sub> , C <sub>2</sub> H <sub>6</sub> , C <sub>3</sub> H <sub>8</sub> , C <sub>4</sub> , C <sub>5</sub> , C <sup>+</sup> , H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , COS, H <sub>2</sub> S
Sample inputs	1 to 2 sample inputs + 1 standard (automatic calibration possible)
Repeatability	< 1% RSD
Accuracy	Class A (±0,5%)
Operating temperature	-40 °C / +60 °C
Temperature range for Class A accuracy (± 0,5% accuracy)	-25 °C / +40 °C
Dimensions / Weight	47,5 × 54,4 × 27,2 cm / ~55 Kg
Software	PROstation; WELMEC 7.2 compatible web browser (no dedicated PC required)
Power supply	100-240 VAC 50-60 Hz 150 W max
Power consumption during operation	56 W
Analysis time	< 180 sec. for calorific value calculation



## CONCLUSIONS

- The  $\mu$ PGC-NG+H2 is the ideal solution for those who demand precision, safety, and compliance in monitoring natural gas injections into the network.
- **Near real-time data:** instantaneous calculation of calorific value (ISO 6976:2016 / OIML R 140 / MID 2014/32/EU).
- **Analytical flexibility:** optional odorant monitoring (THT, TBM).
- **Maximum efficiency:** intuitive interface and fully automated management, without dedicated software or PCs.
- **Guaranteed compliance:** fully compliant with European standards, for complete operational peace of mind.



Contact us for a demonstration  
or a personalized quote!



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without notice.

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