



# μPGC NG+$H_2$

## Metrological analyzer for continuous monitoring of the quality of natural gas and its mixtures with $H_2$ up to 20%

**Quality Analysis and Fiscal Calculation of Calorific Value (OIML R140, MID 2014/32/EU)**

NMi CERTIFIED TC12888

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SRA INSTRUMENTS
ANALYTICAL SOLUTIONS


# CONTEXT, PROBLEM, SOLUTION AND SUPPLY

**Monitoring of Natural Gas and its blends with Hydrogen**

## REGULATORY AND OPERATIONAL CONTEXT

Natural Gas and its blends with Hydrogen are at the heart of the energy transition, and continuous monitoring of their quality is essential to ensure regulatory compliance and optimize fiscal transactions.

The precise determination of the calorific value of gas is essential for the correct management of trade exchanges.

The composition of the gas must be monitored in real time to ensure that it complies with international and national standards, in order to be fed into the grid as part of a fiscal transaction.

## *μ*PGC NG+$H_2$: THE NEW GENERATION MICRO-GAS CHROMATOGRAPHIC ANALYZER

The ***μ*PGC NG+$H_2$** is an analyzer designed to analyze Natural Gas, its blends with Hydrogen up to 20% with a single carrier gas (Helium) and calculate the calorific value in real time.

The ATEX Zone 1 certified analyzer offers operational safety in areas classified as hazardous.

Thanks to its modular configuration, it guarantees rapid maintenance interventions and reduced management costs.

Data control and processing are carried out via **PROstation** (by **Agilent Technologies**), a **Web Browser-based software**: no software installed on a PC is required, a tablet or any device connected to the network is sufficient to access all the functions.

The results, provided in real time, are transmitted via Modbus, easily integrating with existing control systems.

All the electronics and the processing unit are enclosed in the motherboard inside the instrument box, without the need for any external unit. The compact architecture simplifies installation, increases reliability and makes the ***μ*PGC NG+$H_2$** the ideal choice for continuous monitoring of the quality and calorific value of Natural Gas and its blends with Hydrogen.

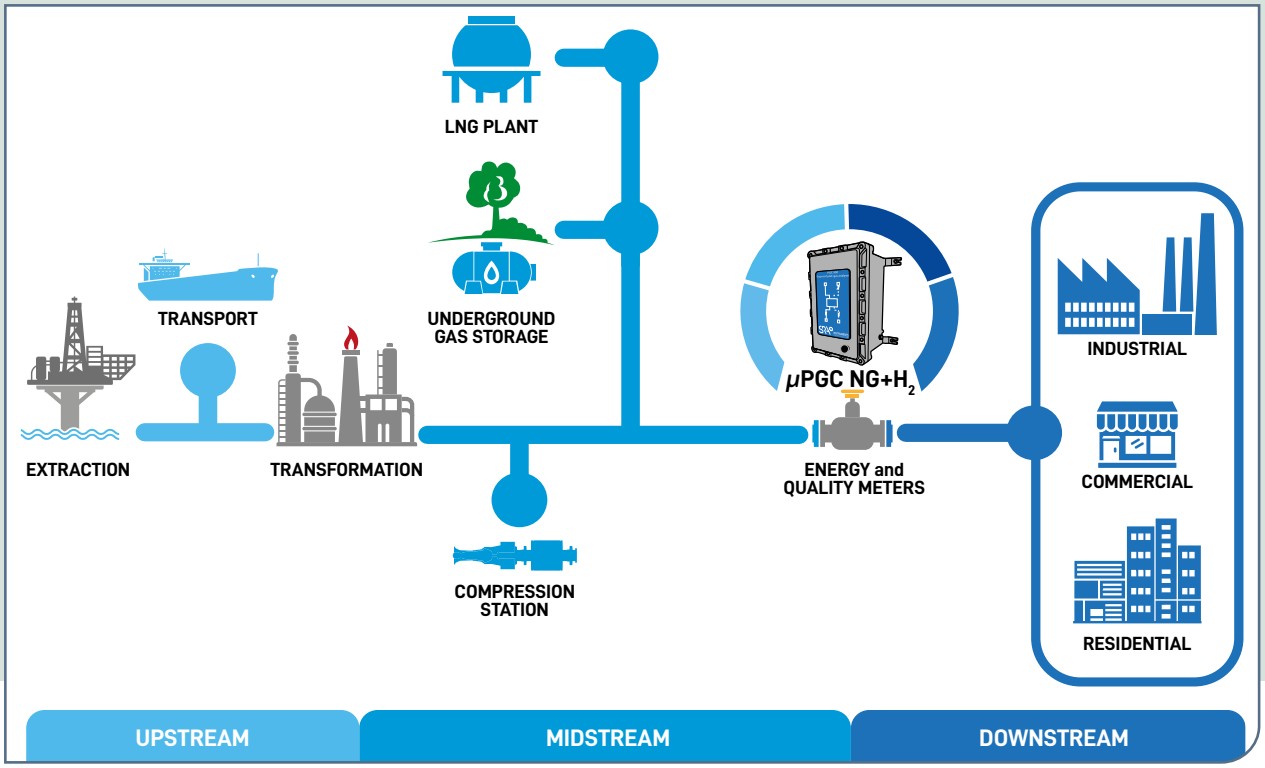
## THE *μ*PGC NG+$H_2$ SOLUTION

- **Analysis of**
  $CH_4$, $CO_2$, $C_2H_6$, $C_3H_8$, $C_4$, $C_5$, $C_6^+$, $H_2$, $O_2$, $N_2$, CO, COS, $H_2S$.
- **Rapidity**
  <90 s for the calculation of the calorific value; real-time analysis for the components.
- **Reduced management costs**
  Minimum Helium consumption.
- **ATEX Zone 1 certification**
  II 2G Ex db IIB+H2 T5 Gb.
- **Simplified maintenance on site**
  Plug & play modules.

# TECHNICAL DESCRIPTION & SOFTWARE

## The heart of the system: PROstation

**PROstation, developed and guaranteed by Agilent Technologies, is the software integrated directly on the instrument's motherboard that ensures 24/7 operation, digitalizing and automating all measurement and analysis operations.**



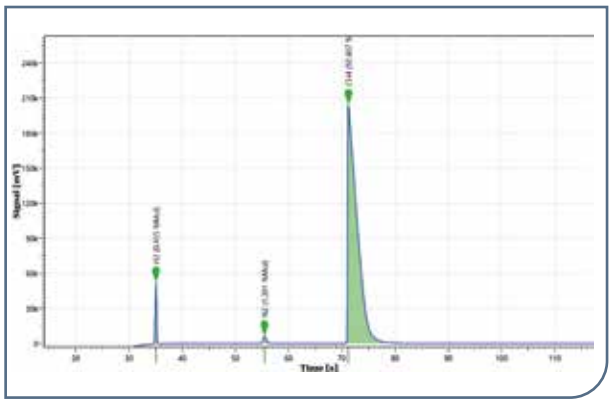

## KEY FEATURES

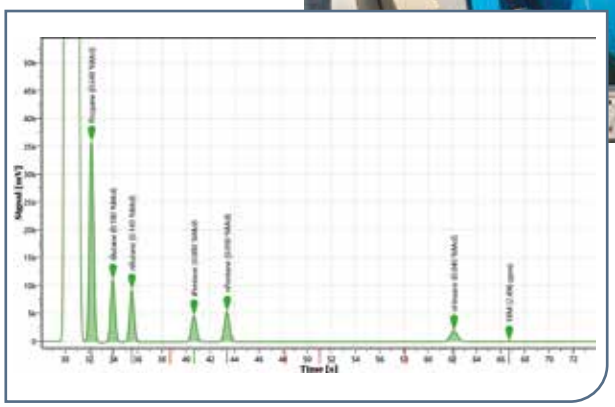
- **Remote Web Access**
  Allows you to monitor data in real time from any device (PC, tablet, smartphone), connected via LAN, WiFi or other industrial protocols.
- **Continuous Calorific Value Calculation**
  Provides fast results (within 90 seconds) with calculations compliant with **ISO 6976:2016** standards, essential for fiscal transactions.
- **Advanced Analysis Management**
  Allows automatic programming of analytical sequences, alarm management, continuous calibration and data transmission via MODBUS RTU/TCP, RS485, 4-20 mA, FTP.
- **Real Time Analysis**
  It accurately measures the components of Natural Gas ($CH_4$, $CO_2$, $C_2H_6$, $C_3H_8$, $C_4$, $C_5$, $C_6^+$, $H_2$, $O_2$, $N_2$, CO, COS, $H_2S$), without the need for manual intervention, reducing the risk of human error.

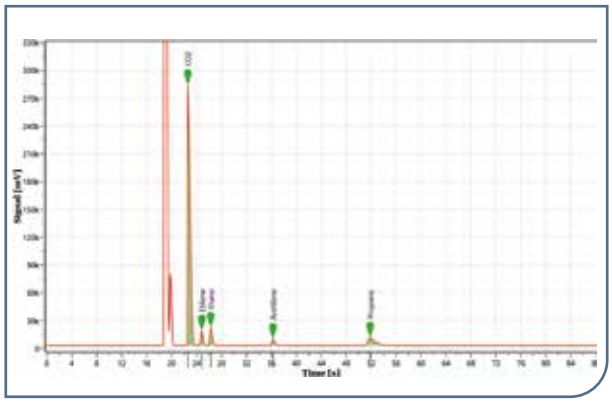
## BENEFITS

- Online analysis where the operator does not handle the sample, reducing both human error and analysis time.
- Fully autonomous analyzer, with no need for manual intervention during routine operation.
- Continuous real-time monitoring, ensuring immediate detection of variations in gas composition and improved process control.
- Minimized downtime and product posses.
- Early detection of anomalies or off-spec gas allows for faster corrective action.

# ANALYTICAL DETAIL AND CHROMATOGRAMS







## ADVANCED ANALYZER PERFORMANCE

- **Complete Gas Composition Analysis**
  The analyzer measures the composition of Natural Gas, including methane ($CH_4$), carbon dioxide ($CO_2$), ethane ($C_2H_6$), propane ($C_3H_8$), butane ($C_4H_{10}$), pentane ($C_5H_{12}$), hexane ($C_6H_{14}$), hydrogen ($H_2$), oxygen ($O_2$), nitrogen ($N_2$), carbon monoxide (CO) and carbonic acid (COS).
- **Hydrogen Blend Monitoring**
  Ability to analyze natural gases with up to 20% Hydrogen content using a single carrier gas, allowing optimization of low carbon natural gas.
- **Fiscal Calorific Value Calculation**
  Calculate calorific value in real time in compliance with **ISO 6976:2016**, essential for invoicing and fiscal transactions.
- **Response Time and Reliability**
  With fast response times (90 seconds), the analyzer provides timely information for the continuous management of the gas network.

## APPLICATIONS

- **Grid Feeding and Fiscal Transactions**
  It guarantees the quality of Natural Gas and its blends, respecting the regulatory requirements for grid feeding and for the calculation of the calorific value, essential for fiscal management.
- **Quality Control of Natural Gas and Blends with Hydrogen**
  The quality of Natural Gas and its blends with Hydrogen is guaranteed through continuous monitoring, without the need of sampling.
- **Sustainability and Energy Transition**
  It optimizes the management of low carbon natural gas and blends with Hydrogen, contributing to the transition towards more sustainable energy.


# TECHNICAL SPECIFICATIONS

| Parameters | Value / Description |
|---|---|
| Application | Online analysis of the quality of Natural Gas and/or blend of NG with Hydrogen |
| Inputs/Outputs | 2 × RS485, 1 × RS232, 1 × LAN (MODBUS TCP/IP), WIFI |
| Supported Protocols | MODBUS RTU, TCP/IP, RS485 |
| Certifications | ATEX Zone 1 (II 2G Ex db IIB+H2 T5 Gb); CE and EU compliant; EMC 2014/30/EU |
| Custody transfer | OIML R140 & MID 2014/32/EU issued by NMi Certin V.B. (TC1288) |
| Carrier Gas | Helium (He) |
| Carrier Gas Pressure | 5.5 ± 0.3 barg |
| Carrier Gas Purity | Class 5.5; ≥ 99.9995% |
| Carrier Gas Connections | Swagelok 1/8” |
| Sample Connections | Swagelok 1/8” |
| Sample Gas Conditions | Pmin: 0.4 barg; Pmax: 0.6 barg |
| Compounds Analyzed | $CH_4$, $CO_2$, $C_2H_6$, $C_3H_8$, $C_4$, $C_5$, $C_6^+$, $H_2$, $O_2$, $N_2$, CO, COS, $H_2S$ |
| Sample Inputs | 2 inputs; sample + standard (automatic calibration included) |
| Repeatability | <1% RSD |
| Accuracy | Class A (±0.5%) |
| Operating Temperature | -40 °C / +60 °C |
| Temperature Range for Class A accuracy (OIML R140) | -25 °C / +55 °C |
| Dimensions / Weight | 47.5 × 54.4 × 27.2 cm / ~55 Kg |
| Software | PROstation; WELMEC 7.2 compliant web browser no dedicated PC required) |
| Power Supply | 230 VAC, 50/60 Hz |
| Electric Consumption | 180 W |
| Analysis Time | <90 s for calorific value calculation |

## CONCLUSIONS

- The **μPGC NG+H2** is the ultimate solution for **those who require precision, safety, and compliance** in monitoring natural gas injection into the grid.
- **Real-time data:** instantaneous calculation of calorific value (**ISO 6976:2016 / OIML R 140/MID 2014/32/EU**).
- **Analytical flexibility:** odorant monitoring option (THT, TBM).
- **Maximum efficiency:** intuitive interface and fully automated management, without the need for dedicated software or PCs.
- **Guaranteed compliance:** fully aligned with EU, UNI, and ISO standards for complete operational peace of mind.


**Contact us for a demonstration or a personalized quote!**

*This information is subject to change without notice.

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