



## Odorants Quantity Measurement System



Reliable and ATEX



USER



DESKTOP  
AND MOBILE



DATA ANALYSIS PLATFORM



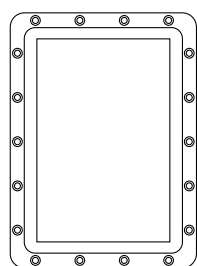
REMOTE  
SERVICE



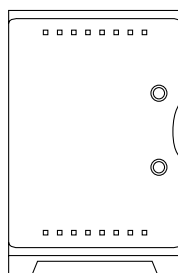
DATA  
ENCRYPTION  
KEY



INTERNET  
WI-FI/LAN/4G



PICOGC



REMOTE CONTROL BOX  
(RCB)

PLC/DCS/SCADA  
CLIENT

- MODBUS TCP/IP
- MODBUS RTU
- RJ45
- USB
- RS232/485
- 4-20 mA
- I/O MODULE

## POLLUTION GUARDIAN, THE CLOUD SOLUTION FOR THE REMOTE DATA MANAGEMENT IN REAL-TIME

PicoGC is entirely matchable with the cloud service, "Pollution Guardian" for the **data monitoring and management**. The Pollution Guardian software stores up and archives analysis data automatically, and allows real-time and historical viewing (with creation of charts, tables, graphs and other statistical analyses).

Pollution Guardian allows to set user-defined alarms on the data collected and to send notifications via SMS or email. In addition, push notifications on your smartphone is also available, thanks to the dedicated APP. Thanks to Pollution Guardian it is possible to manage the instrument: the remotely diagnostic has never been so simple.





# ANALYSIS SYSTEM FOR A SMART MANAGEMENT OF GAS DISTRIBUTION NETWORKS

**PicoGC** is an automatic gas chromatography solution designed for the continuous and remote determination of the odorants levels in fuel gases. The instrument quantifies the level of **THT** (tetrahydrothiophene) or **TBM** (tert-butyl mercaptan) odorants.

The Instrument makes it possible **to enhance the efficiency of the natural gas transportation and distribution grid**, leading to reduced operating costs, minimized waste, and a significant improvement in safety.

## THE GAS CHROMATOGRAPHIC REVOLUTION FOR GAS NETWORKS

Currently, most of the work for verifying and controlling the quantity of odorant is carried out via portable micro gas chromatographs installed on specialized mobile vehicles, which periodically analyze the level of odorization at the Odorant Measurement Points. This entails significant operating costs in staff, equipment and consumables (vans, portable  $\mu$ GC, carrier gas and standard cylinders, etc.), but above all a prolonged interval between one measure and the following (every six months) resulting in periods of time when the concentration is unknown.

**PicoGC** is a micro gas chromatographic solution **that automatically collects field data online** and enables **remote process management**.

The robust design, **ATEX Zone 1** certified, allows the device to be permanently installed at critical points in the natural gas grid to measure the concentration of various odorants (THT or TBM) in the flow.

The compounds are analyzed, and the data are transmitted in real-time to the customer's SCADA (Supervisory Control And Data Acquisition) and/or Cloud system or to our proprietary cloud platform **Pollution Guardian**.

The high level of automation and remote connectivity capabilities enables the optimization of the entire process, offering numerous advantages over traditional methods, including:

- **Higher production efficiency and significant time savings** compared to conventional laboratory techniques due to the analysis frequency;
- **High sensitivity and selectivity** to ensure precise and reliable results, even at very low concentrations of odorants, thanks to the proprietary Thermal Conductivity Detector (TCD) technology;
- **Cost savings** while maintaining required safety levels;
- **Prevention of potential overestimation of losses** by users, resulting in reduced costs associated with emergency management;

- **Significant reduction** in costs related to the purchase and handling of odorants;
- **Minimisation of the risk associated with high sulfur content**, which could lead to pipe corrosion and air pollution.

## STRUCTURE

The complete solution for measuring odorants quantity in fuel gases consists of two elements:

- **PicoGC**: a micro gaschromatograph, designed for direct installation near the gas grid, thanks to its ATEX Zone 1 certified enclosure. Compact and reliable, it can accurately monitor odorant compounds THT or TBM in real-time and remotely;
- **RCB - Remote Control Box**: a system for storing, processing, and transmitting the field data collected by PicoGC to the customer's control systems and/or the proprietary cloud platform Pollution Guardian.





# SAFETY AND EFFICIENCY THANKS TO PICOGC

## MAIN FEATURES

- High analytical accuracy
- Operational cost savings
- Increased safety
- Easy installation and management
- Low Carrier Gas consumption
- Robust design
- ATEX II 2G Ex db IIB+H2 T6 Gb certification

## MAIN FEATURES

Automated and online analysis of the odorant quantity (THT or TBM) in gas distribution grid:

- Pre and post odorization analysis in the Gas Pressure Control & Metering Station
- Analysis in the Pressure Reduction Stations
- Analysis at critical points in the distribution grid (side pipelines or "end of grid" with low and/or irregular flow)
- Analysis at the Odorant Measurement Points
- Analysis at remote and/or hard-to-reach grid points

## SAFETY AND EFFICIENCY THANKS TO PICOGC

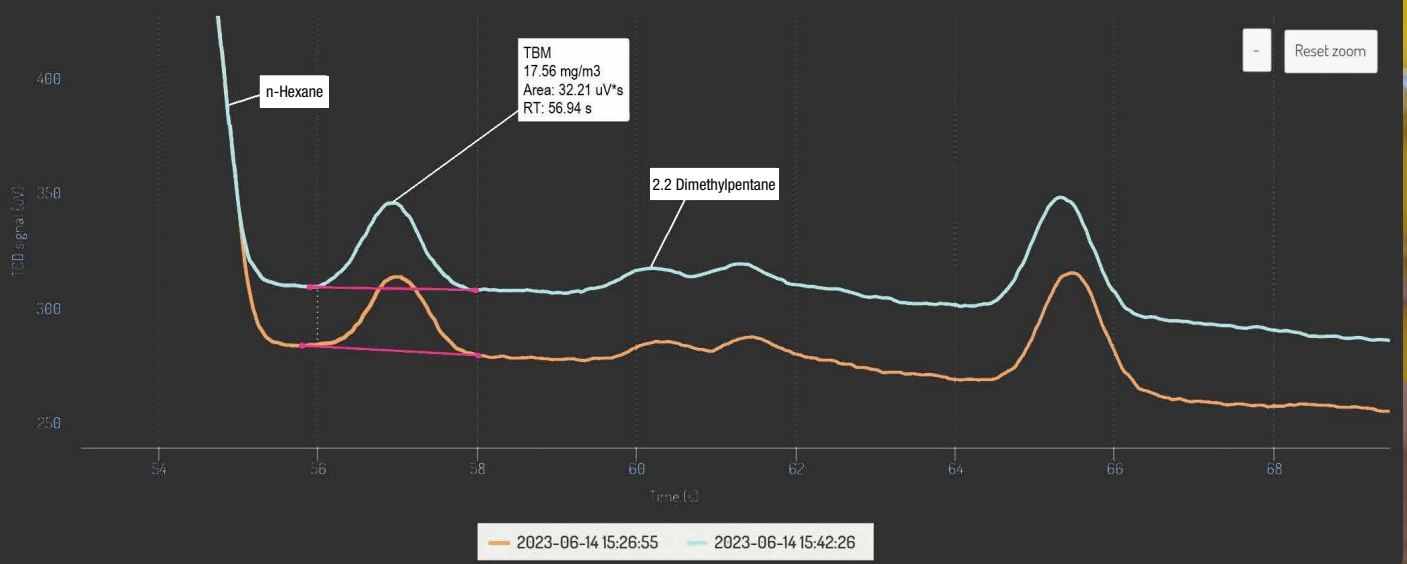
National laws define natural gas odorization as a primary requirement for public safety. These regulations provide essential guidelines to ensure that natural gas is accurately odorized, with the aim of promptly detecting any leaks and potential hazardous situations related to explosiveness or toxicity.

The odorizing substances specified by the regulations are THT and a mixture of mercaptans in which TBM must be the main component. The Distributor System Operator is responsible for ensuring that the quantity of odorant in the gas remains constant and always above the minimum levels required by the law.

Thanks to micro gas chromatographic technology, PicoGC enables real-time and remote measurement of THT or TBM concentrations at critical points in the distribution grid, including pressure reduction stations, allowing operators to optimize their processes.

In the context of grid digitalization, the **Capex** and **Opex** investment in PicoGC by sector operators represents an opportunity for efficiency and cost savings.

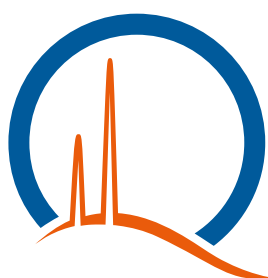
## CHROMATOGRAM





## TECHNICAL FEATURES

Application	Automated gas chromatograph for odorants (THT-TBM) quantity analysis	
Functions	Acquisition of chromatograms, alarm management, monitoring. Analog and logic Input / output status, data protection, PLC communication and supervision, remote and wireless server.	
Inputs/Outputs from RCB	1 x RS485 dedicated to communication with Modbus ASCII/RTU 2 x Ethernet TCP/IP Modbus / Web APIs WiFi, 4G	
Inputs/Outputs from GC	1 x Power Supply + RJ45 datas (Ethernet)	
Supported protocols	Modbus RTU; Modbus TCP/IP; Web APIs	
Enclosure GC ATEX	IP66, 450 x 350 x 251 mm, <27 kg	
Certifications	CE ATEX II 2G Ex db IIB+H2 T6 Gb - IECEx Ex db IIB+H2 T6 Gb	
RCB Enclosure	IP66 325 x 428,2 x 178 mm, 4 Kg	
Carrier Gas connections	1 x Carrier gas inlet: 1/8" OD Swagelok type	
Process Gas connections	1 x Sample gas inlet: 1/8" OD Swagelok type 1 x Calibration gas inlet: 1/8" OD tipo Swagelok type	
Gas Carrier	Helium (He) or Hydrogen (H <sub>2</sub> ): - duration He gas cylinder 14L @200 barg: 9 years with (4 analysis/hours) - duration H <sub>2</sub> gas cylinder 14L @200 barg: 8 years with (4 analysis/hours) - quality purity: 5.5; ≥ 99.9995% - pressure: 3.5 ± 0.5 barg	
Sample gas conditions	Suggested pressure: 20 mbarg; Pmax: 1.5 barg Consumption: 13 mL/min @ 20 mbar (excluded bypass flow of fast loop, if needed) Free of liquids and particles (H2O < 2000 ppm; particle Ø < 2µm)	
Compounds analysed	Range	Detection Limit (S/N = 3)
THT	0 – 200 mg/Sm <sup>3</sup>	0.5 ppm - 1.86 mg/Sm <sup>3</sup>
TBM	0 – 200 mg/Sm <sup>3</sup>	0.5 ppm - 1.91 mg/Sm <sup>3</sup>
Repeatability	Retention time: ≤ 0.04%% RSD THT: <0.6 % %RSD @ 32.0 mg/Sm <sup>3</sup> (32 ± 0.5 mg/Sm <sup>3</sup> ) TBM: <3 %RSD @ 9.3 mg/Sm <sup>3</sup> (9.3 ± 0.6 mg/Sm <sup>3</sup> )	
Data Logging	Odorants concentration storage (THT o TBM) in mg/Sm <sup>3</sup> or ppm with lower and/or upper alarm	
Chromatograms stored	> 3 years of all analytical data with lower and/or higher alarm	
Languages	English	
Operating Temperatures	From -35°C a +60°C- Outdoor	
Power Supply	24 V provided by external remote control and communication system (RCB) included in delivery - Automatic restart after a power failure	
Nominal power consumption	35 W @ 0°C; maximum absorption of current 120 W	
Minimum Analysis Time	30-120 seconds (according to the carrier gas)	



Quality & Process

## THE ANSWER TO YOUR ON-SITE DETECTION CHALLENGES

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