ANALYSIS AND MANAGEMENT OF GAS PROCESSES FROM REMOTE
GRETA is a modular multi-function system based on:

1. field analysis devices, consisting of miniaturized gas chromatographic systems that allow fast gas analysis with a high degree of reliability;

2. smart SCADA able to process data received from the field and activate advanced processes on gas distribution and transmission networks.
GRETA FIELD ANALYSIS DEVICE

GRETA device is a miniaturized gas chromatographic system, housed in a casing of reduced size and weight and installed on the field.

It is connected directly to the gas network and has the same functions as a gas chromatograph, with the advantage that it remains field-installed and allows the collection of remote analysis data.

It will therefore no longer be necessary to engage operators to perform gas analysis, thus providing obvious economic and managerial advantages.

The technology is patented internationally and is certified for installations in ATEX Zone 1*.

COMPONENTS

Each device has everything necessary to operate independently, record the analyzed data and send it to SCADA. Indicatively, each module consists of:

1. IP65 container or certified for ATEX Zone 1*
2. High speed remote control and communication system
3. Housing base for 1, 2 or 4 miniaturized gas chromatographic modules
4. Gas conditioning fluidics
5. Inputs and outputs for remote control

Each GRETA field module integrates, depending on the configuration, from 1 to 4 gas chromatographic modules that allow the analysis of various compounds. The form factor of the modules ensures a high degree of protection against external factors, allowing outdoor installation without particular limitations.

Each module is easily accessible and can be removed by following a few simple steps. The modules have a wide life cycle (from 5 to 10 years) and guarantee a very low consumption of calibration and carrier gas. Consequently, management costs are minimal compared to any other analysis device capable of ensuring the same performance.

* : available from January 2019
POSSIBLE APPLICATIONS

ADVANCED MANAGEMENT OF GAS ODORIZATION

GRETA detects the odorization rate present in the network and transmits it to SCADA, where an advanced control and analysis system combines the data received with what is collected from other points in the network:

PRESSURE
TEMPERATURE
FLOW RATE

The control and analysis system then identifies the optimal set-point to be automatically set on the network odorizing systems, in order to guarantee, at the point of remote analysis, a constant odorizing concentration.

DETECTION OF SPECIFIC COMPOUNDS

The modular structure of GRETA field analysis device allows the accurate identification of many different compounds in natural gas:

PERMANENT GASES
ALKANES
ALKENES

Greta is therefore ready for the next gas market challenges, such as real-time monitoring of:

PERMANENT GASES
SULFUR COMPOUNDS
ALKANES
ALKENES

As is the case in the odorization management, the processed data can be used to monitor other complex processes in the area of the smart management of gas grid (e.g. constant monitoring of H2 in power-to-gas applications).

BIOMETHANE

GRETA field analysis device contains miniaturized gas chromatographies that ensure the measurement of specific compounds.

CH4
CO2
N2
O2
H2
H2S
THT/TBM

The gas chromatographic technique ensures data reliability.

Through the analysis of the indicated compounds, GRETA system determines the useful values for the quality analysis of the biogas injected into the grid. Very frequent measurements are possible.

WOBBE INDEX
HIGHER CALORIFIC POWER
LOWER CALORIFIC POWER
RELATIVE DENSITY
OXGEN CONTENT
CARBON DIOXIDE CONTENT
HYDROGEN SULFIDE CONTENT
ODORANT CONTENT (optional)

The system complies with OIML R-140 and can be integrated in custody transfer measurement systems. In addition, it is compliant with the provisions of UNI / TR 11537.

TECHNICAL SPECIFICATIONS

DIMENSIONS

Module Weight
1 kg

Assembly weight
10 kg

External enclosure dimensions (LxWxH)
320x240x200 mm

Module dimensions (LxWxH)
174x94x54 mm

GAS CARRIER

External cylinder
Helium, hydrogen, nitrogen, argon

COMMUNICATION

Wired Ethernet
Possibility to remote control by means of 3G connection

SOFTWARE

Process and laboratory software
Web Application compatible with common web browsers and able to monitoring, scheduling and elaborating measurements

GAS COMPANIES DETECTED BY GRETA MINI-GC MODULES

Permanent gases
Hydrogen, Oxygen, Nitrogen, Carbon Monoxide, Carbon Dioxide

Sulfur compounds
Hydrogen Sulfide, Carbonyl Sulfide, Tetrahydrothiophene, Mercaptans

Alkanes
Methane, Ethane, Propane, Butane, Pentane, Hexane, Cyclohexane, Heptane, Octane, Nonane, Decane, Undecane, Dodecane

Alkenes
Ethylene, Propylene, Trans-2-Butene, 1-Butene, Isobutene

POWER SUPPLY

24 Vdc, 2 A

GC COLUMNS

Thermal Conductivity Detector (TCD)
Range
from ppm to %

Loop volume
2 o 20 µL

REPEATABILITY

RSD below 0.1% for concentration above 60% and 1% for lower concentration

OPERATING CONDITIONS

Environmental temperatures
-20°C – +60°C

Relative humidity
25-75%
(non-condensing)

Column temperatures
40°C – 140°C
(isothermal)

Injector temperatures
80°C – 120°C

Column pressures
0.5 – 2 bar
± 0.01 bar