OPERATIONAL EXCELLENCE

Qualification and calibration of gas measurement equipment

YOU ARE

- **Operator of gas infrastructures** (transmission, distribution, storage, LNG terminals) wishing to measure the flow rate and quality of gas passing through their facilities.
- **Producers of biomethane, biogas or synthesis gas**, who need to comply with regulatory requirements concerning the quality of gas produced and/or injected into the network.
- **Hydrogen producers** wishing to inject hydrogen into the public natural gas network.
- **Equipment manufacturer** wishing to qualify its metering equipment with a view to offering it to a gas infrastructure operator.
- **R&D organization** (GERG, PRCI, NMI...) wishing to qualify gas flow or quality metering equipment for natural gas or renewable gas.

YOUR CHALLENGES

Gas transport and distribution require the ability to accurately determine the quantity of energy transported, distributed and delivered at border points (network balance) and to end-users (billing), as well as to verify the quality of the gas, which must comply with current specifications. In addition, with the development of renewable gases, the metrological quality, robustness and operability of existing and new metering equipment must be validated.

This includes the development of dedicated metering equipment, test benches and test protocols for evaluating the technical characteristics of meters and analyzers with natural gas and renewable gas, with short response times compatible with industrial operation.

OUR RESOURCES

NaTran R&I's expertise in the field of measurement is based on recognized know-how:

- Expertise in calculating the physico-chemical properties (thermodynamics, heat transfer, etc.) of combustible gases;
- Evaluation of a wide range of gas analysis equipment (between 10 and 15 analyzers evaluated per year, for all types of compounds).
- Qualification of all sizes and technologies of air and natural gas volume meters;
- Testing of all natural gas and renewable gas volume meter technologies (min. gauge: G16);
- Qualification of all air and natural gas energy meter gauges and technologies;
- Statistical analysis of analysis parameters for evaluation and validation of analysis methods and equipment.

NaTran R&I has **test benches, state-of-the-art industrialized equipment and analysis resources** specific to the problem:

- Gas chromatography systems, fixed or portable, coupled with various detectors (FID, TCD, MS, PFPD), and preconcentration systems (TDS) enabling comparisons with the material under test;
- Sampling generation systems with controlled gaseous humidity;
- 316 stainless steel and treated stainless steel (Sulfinert® type) sampling systems for sulfur compounds;
- Climatic chamber to test the influence of outside temperature (-10°C; + 50°C) for equipment up to 19" in size;
- Dry air calibration bench: flow rate from 40 Nl/h to 10 Nm3/h and ambient temperature from - 20°C to +55°C ;
- Natural gas test bench from 10 Nm3/h to 8000 Nm3/h;
- Europe's only natural gas test bench from 100 Nl/h to 2000 Nm3/h;
- Analytical laboratory test benches, with a wide range of carrier gases available (helium, hydrogen, nitrogen, methane, mains natural gas, reconstituted air, compressed hydrogen air, etc.);
- Gas library dedicated to compounds that may be encountered in fuel gases, covering a wide range of concentrations.

Software:

- **GASPACK**, developed by the NaTran R&I teams, calculates all the thermo-physical properties of gases (natural gas and renewable gases) from a gas composition using the HCV according to the international standard EN ISO6976 ;
- **MACRO AGA8**, developed by NIST, calculates all the thermo-physical properties of gases (natural gas and renewable gases) from a gas composition
- **MACRO GERG2008**, developed by the University of Bochum, calculates all the thermo-physical properties of gases (natural and renewable) from a gas composition.

OUR REFERENCES

- Evaluation of the effect of standard gas calibration on chromatograph accuracy;
- Evaluation of 10 to 15 analyzers per year, all types of compounds for natural gas matrix, biomethane, H2-Natural gas mixture;
- Evaluation of 3 manufacturers of Clamp-On ultrasonic meters under actual installation conditions;
- Metrological qualification under real installation and operating conditions of all new meters on the NaTran market;
- Assessment of the impact of hydrogen (up to 20% by volume) on domestic meters (GRHYD project);
- Bibliographical study and mapping of the impact of renewable gases on existing transactional gas meters in Europe (EMPIR - NEWGASMET project).

YOUR CONTACTS

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