marcogaz

Metering technologies for non conventional gases

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ABOUT MARCOGAZ

Founded in 1968, MARCOGAZ represents 28 member organisations from 20 countries. Its mission encompasses monitoring and policy advisory activities related to the European technical regulation, standardisation and certification with respect to safety and integrity of gas systems and equipment, rational use of energy as well as environment, health and safety issues. It is registered in Brussels under number BE0877 785 464.

DISCLAIMER

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1. Introduction

The use and injection of so-called unconventional gases into existing European gas distribution and transmission networks should contribute to the decarbonization of industries and help achieve European emission reduction targets, etc.

In order to initiate the transition to the use of new gases, demonstration projects (where the generation technology is not yet mature), industrial projects (where the technology is mature, and some regulation is in place) have been initiated.

These projects have started to identify specific needs depending on the type of gas.

During 2022 MARCOGAZ has been working to collect information about the measurement system for the projects related with the non-conventional gases. In order to do so, a questionnaire was launched to collect the information related with the kind of project and the measurement technology. This information is the base of study to detect some market needs or any other necessity regarding with the use of these new gases.

The idea is that this questionnaire can be a tool for recurrent use to detect trends, needs and to promote new activities within the MARCOGAZ's experts on the topic.

In this first summary of the information shared by the partners who have collaborated, some points have been identified, which we will now group into two main groups:

- Projects aimed at injecting new gases (non-conventional gases) into existing pipelines.

- Projects aimed at measuring new gases (non-conventional gases).

The questionnaire attempts to collect information that can characterize the measurement technologies used in each project, the methods for determining energy, the regulatory framework and even the legislation that covers each project/initiative.

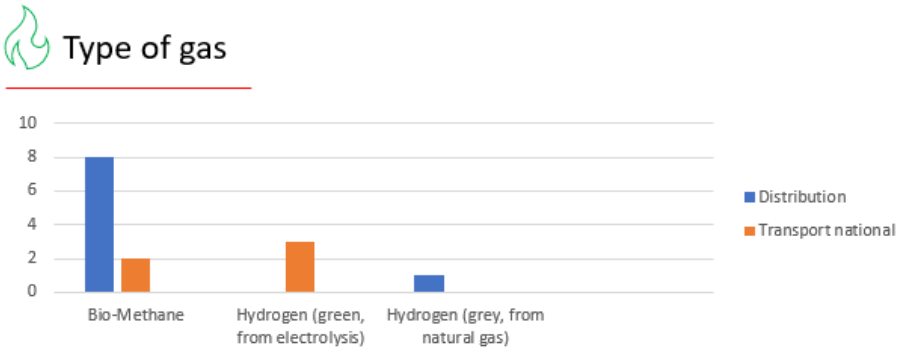
The data collected in the document corresponds to each of the questionnaires received. Some of the responses correspond to more than one project of the same type, so they have been only counted once (i.e. biomethane plants in France).

2. Projects aimed at the injection of new gases (non conventional gases) into existing pipelines

We can categorize projects according to gas types, type of service, measurement technology, energy determination technology, etc.

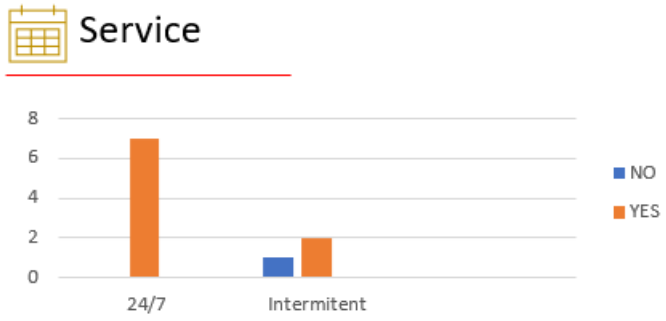
2.1. Project by gas type

Most of the projects developed are based on the use of biomethane and almost all of them are based on distribution networks. On the other hand, hydrogen projects, depending on their origin, are mostly present in connections with transport networks.



2.2. Projects by type of service provided

Most of the projects are oriented towards having permanent injection points, i.e. constant over time

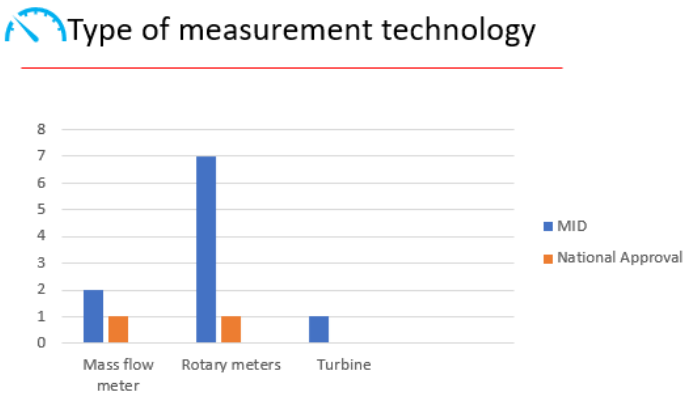


The type of service expected depends on the project conditions, the type of equipment and operation of each.

2.3. Projects by type of meter technology

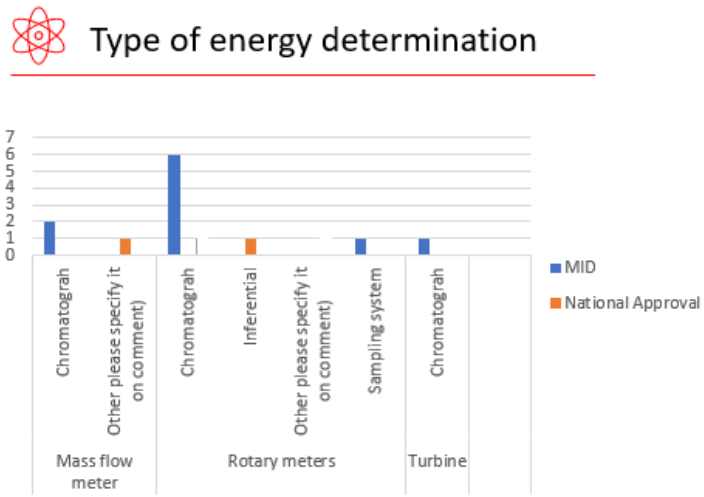
Due to the type of flow rates (intermittent/continuous) and peak values, most of the projects have been developed with measurement by rotary piston meters.

In addition, most of them have the MID directive as their regulatory framework. There is a presence of mass measurement technology, motivated by the low values of flow rates to be measured.



2.4. Projects according to the type of energy determination

In terms of energy determination, most projects are based on the qualification of gases by gas chromatography technology, although other techniques are starting to be used, such as Inferential(*).

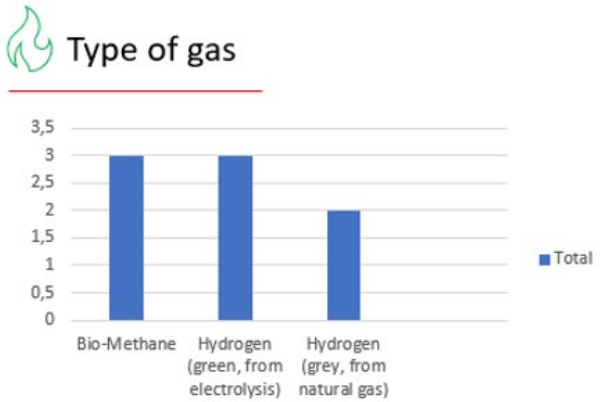


*: MID apply to meters and EVC, so these data refer to these instruments.

3. Projects oriented to the measurement of new gases (non conventional gases)

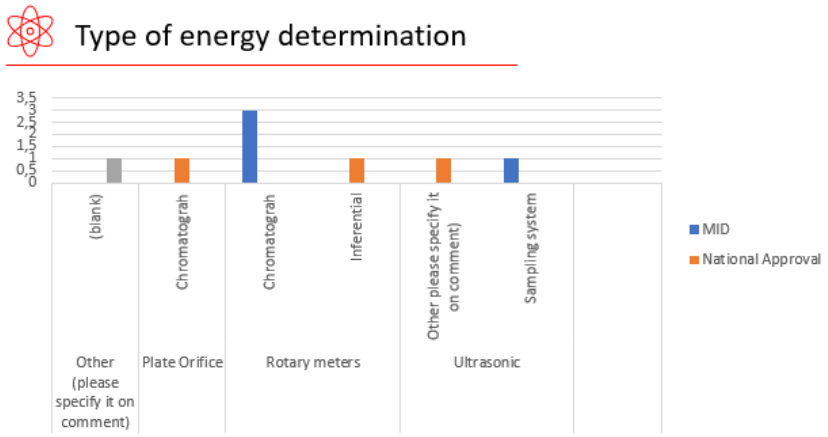
3.1. Projects by type of gas

Since the uncertainty of measurement of new non-conventional gases is higher for hydrogen (especially when considering the use of the same infrastructures we have today); the projects are mostly focused on hydrogen measurement (in any of its classes).



3.2. Projects according to the type of energy determination

As for energy determination, most projects are based on gas qualification by gas chromatography technology and, as for injection projects, most use rotary piston measurement technology (*).



*: MID apply to meters and EVC, so these data refer to these instruments.

Similarly, the normative basis on which most of the projects are based is the European MID directive. In these projects, ultrasonic meters are introduced, but there are no projects based on mass measurement.

4. Legislations on new non conventional gases

Finally, and with the idea of identifying any type of need in the regulations - legislation to be applied for these new non-conventional gases, about the legislation to be applied, we can see that, for the moment, if it exists and depending on the type of gas, it is based on the regulations of each country; there is no harmonised standard.