Case Study

Italgas

Major Methane Emission Abatement Achieved with Direct Measurements

PICARRO

79,406 Km of gas distribution network
7.8 M delivery points
1,983 municipalities (140 in Greece)
Largest gas distribution in Italy
3rd largest gas distribution in Europe

Introduction

In 2018, Italgas began their journey to reduce methane emissions. They set an ambitous goal to achieve 83% emissions reduction by 2025 compared to their 2015 baseline emissions measurement.

As part of their digital transformation, Italgas quickly recognized the importance of direct methane measurements and began evaluating various technologies to achieve their emission reduction goals.

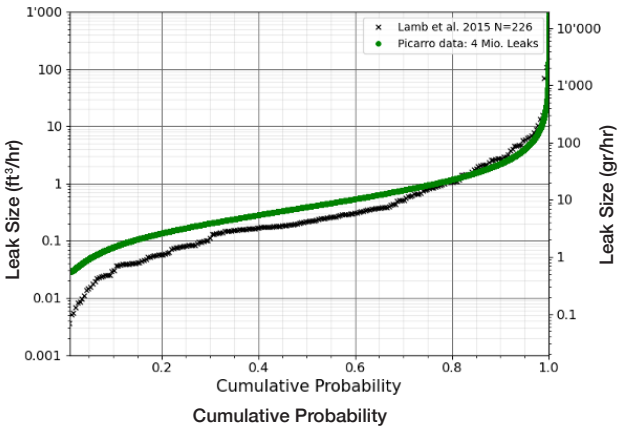

Figure 1 Lamb data and Picarro data charted in green. Source: Lamb, B.K. "Direct measurements show decreasing methane emissions from natural gas local distribution systems in the United States", Environ. Sci. Technol., 2015.

This case study outlines their approach and achievements, highlighting how direct methane emission measurements played a crucial role in significantly reducing emissions and advancing towards predictive maintenance.

Project Description

To understand why Italgas decided to collect direct methane emission measurements, it is important to understand a study that was released in 2015 showing that direct methane emission measurements reveal an extremely skewed leak distribution, [see Figure 1] with only 5% of leaks accounting for 50% of total emissions.

Figure 2

This presents a significant opportunity for the gas industry: repairing just a few leaks can lead to substantial emission reduction, gains in network safety, and a reduction in odor calls. The challenge lies in locating these large leaks, which can occur anywhere in the distribution grid. Only direct emission measurements can identify their location and size.

To address these opportunities, in 2018, Italgas started using Picarro technology to detect and quantify leaks on their distribution grid [see Figure 2]. By locating all leaks and prioritizing repair of the largest and riskiest leaks, they gathered the

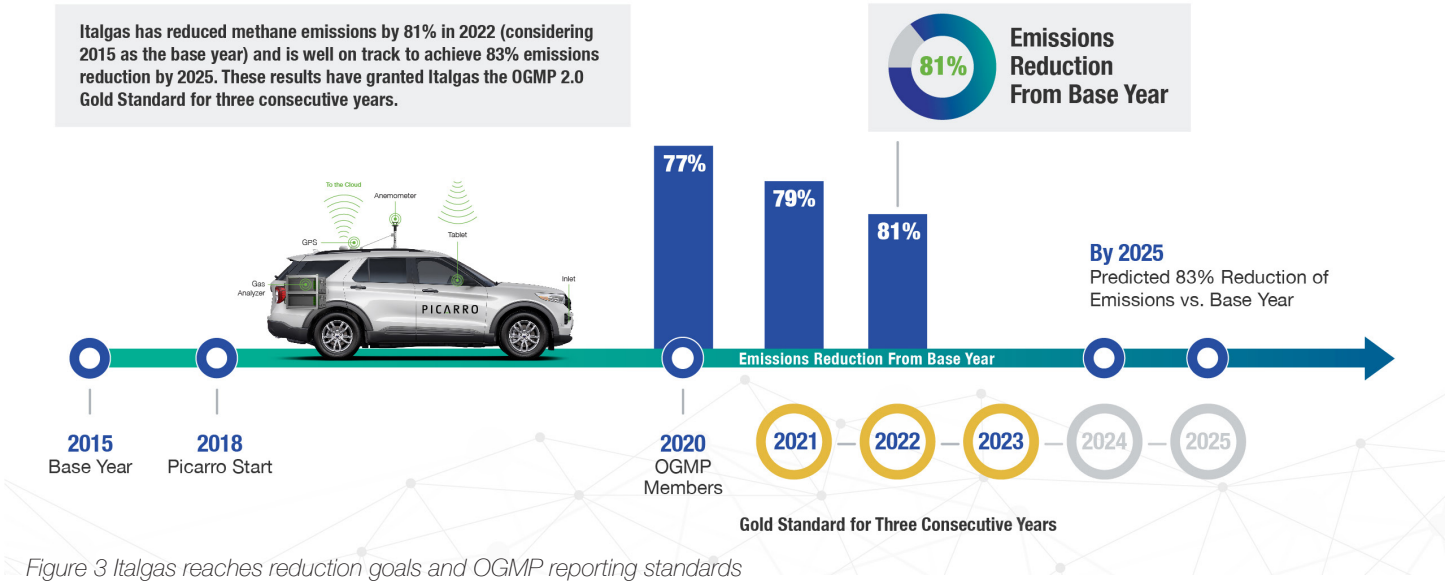

Figure 3 Italgas reaches reduction goals and OGMP reporting standards

data needed for a proactive emissions strategy and established a scalable and accurate data set for emissions quantification and reporting.

Approach

Since its pilot launch in 2018, Italgas has progressively scaled its use of Picarro technology. By 2020, they achieved a 77% reduction in emissions, followed by a 79% reduction in 2021 [see Figure 3].

Year	Phase	% of network data collected
2018	pilot	15%
2019	scaling	26%
2020	at scale	100%
2021	at scale	100%
2022	innovating	106%
2023	added regions	120%
2024	scaling	targeting 150%

Table 1 Italgas continues to scale data collection with Picarro

During their digital transformation, Italgas used Picarro technology for smart maintenance. This allowed them to collect and analyze data in real-time, helping detect and fix leaks proactively.

They expanded their operations to cover 100% of their network annually [Table 1]. This helped them focus on major leaks, reducing intervention times, analyzing correlations, and using predictive maintenance models.

Results Achieved

- By 2022 reached 81% emissions reduction from base year 2015.
- OGMP 2.0 Gold Standard reporting since 2021.
- Direct methane emission measurements quickly find and fix major leaks (super emitters), cutting emissions.
- These measurements also lessen uncertainties in emission counts and pinpoint emission hotspots.

With Picarro Italgas achieved substantial emission reductions, exceeded targets, and set new standards in reporting and sustainability.

Conclusion

Italgas's experience shows how direct emission measurements can transform emission management. As they continue to innovate, they highlight how technology drives environmental responsibility in the gas sector.

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