

Italgas

Major Methane Emission Abatement
Achieved with Direct Measurements

PICARRO



154,000 km of gas distribution network

12.9M delivery points

4K municipalities

Largest gas distribution in Europe

Introduction

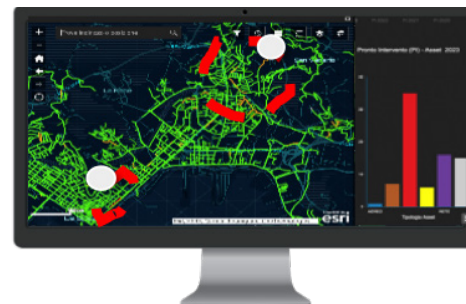
In 2018, Italgas began their journey to reduce methane emissions. They set an ambitious goal to achieve 83% emissions reduction by 2025 compared to their 2015 baseline emissions measurement.

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.

This case study outlines their approach and achievements, highlighting how direct methane emission measurements play 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 recall a study that was released in 2015 showing that direct methane emission measurements reveal an extremely skewed leak distribution, [see Figure 1] with emission rates spanning five orders of magnitude and with very few large leaks accounting for the majority of the total emissions (typically 5% of leaks accounting for 50% of total emissions).



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

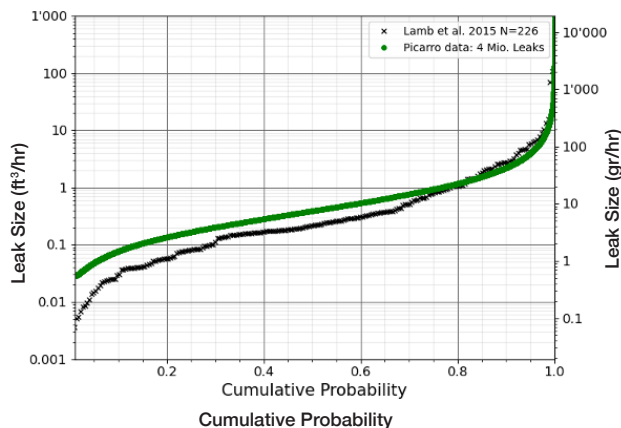


Figure 1 Lamb data and Picarro data charted in green.
Source: Lamb, B.K. "Direct measurements show decreasing methane emissions from natural gas local distribution systems in the United States", *Environ. Sci. Technol.*, 2015.

Since deploying the Picarro technology in 2018, Italgas has achieved an 87% reduction in methane emissions and has received the OGMP 2.0 Gold Standard designation for five consecutive years and was the first to achieve Level 5 in 2025.

Emissions Reduction From Base Year

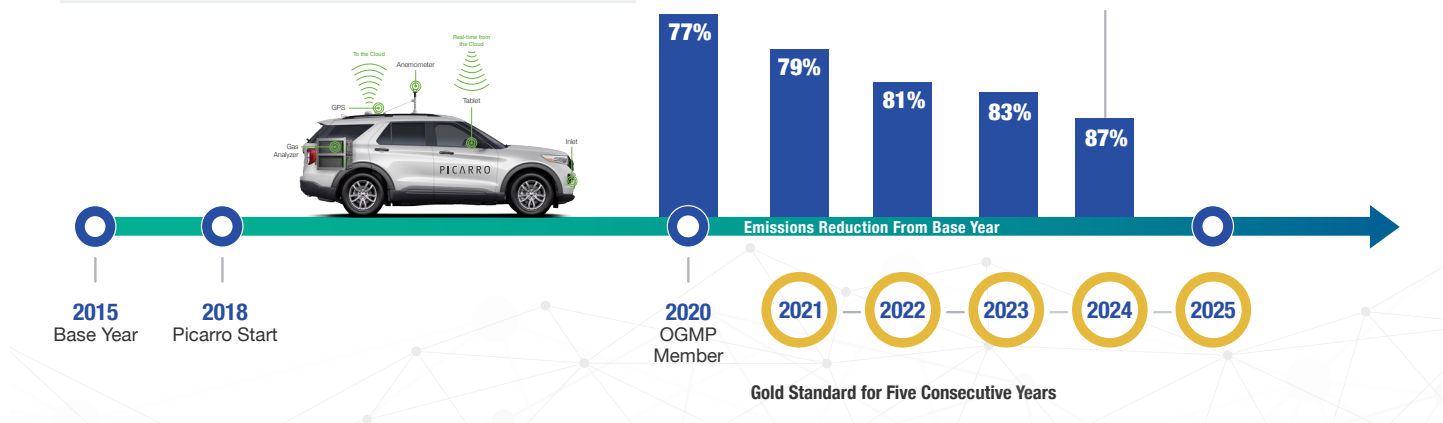


Figure 2 Italgas reaches reduction goals and OGMP reporting standards

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, and by 2024 an 87% reduction in emissions. They also now survey 170% of their network annually — surveying their vast network twice every 14 months. Their goal is to achieve 200% annual coverage by 2027. [see Table 1].

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	150%
2025	added regions	targeting 170%

Table 1 Italgas continues to scale data collection with Picarro

During their digital transformation, Italgas used Picarro’s Network Intelligence technology. This allowed them to collect and analyze data in real-time, helping detect and fix leaks proactively.

They expanded their operations to cover 150% of their network annually [Table 1]. This allowed them to focus on major leaks, reducing intervention times, and to further accelerate the progress in emission reduction.

Results Achieved

- By 2024 reached 87% emissions reduction from base year 2015.
- OGMP 2.0 Gold Standard reporting since 2021 and Level 5 since 2025.
- Direct methane emission measurements quickly find and fix major leaks (super emitters), cutting emissions.
- These measurements also lessen uncertainties in emission inventories 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.