



H₂ Leak Detection & Quantification

Explained in a Nutshell

Introduction

Aellia leverages decades of expertise and powerful SFEMP software to help you control and cut hydrogen emissions efficiently.

- Get a top-level overview in your cloud-based dashboard platform.
- Obtain **credible and compliant emission reports**, audits, and training.
- Identify and Quantify Hydrogen Leaks in your facilities.

H2 – Sniffers

Our hydrogen-specific sniffing devices detect concentrations between 0 and 100% LEL, simultaneously measuring hydrogen and methane. With intuitive displays, internal pumps, and data logging, they provide fast, accurate, and actionable results.

Leak Detection & Quantification

For environmental and cost losses concerns. We provide leak detection and quantification either with **high flow sampler** or **acoustic cameras** validated by studies and the market.

Leak quantification is necessary in order to prioritize repairs of the bigger leaks and to have a scope of the mass balance (for example companies that provide hydrogen storage).



Leak Detection

Detection done by high flow samplers or acoustic cameras

Hydrogen Regulations

Compliance with all applicable measurement standards.

Project Methodology

Plan to identify, measure, and reduce hydrogen emissions.

The Technology

Learn more about the acoustic camera or H2-Sniffers.

Hydrogen Regulations

According to the Directive (EU) 2024/1788, each operator of a hydrogen network, storage or terminal shall be responsible for: Taking all reasonable steps to prevent and **minimize hydrogen emissions** and **regularly conduct leak detection** and repair surveys of relevant components. Operators must submit annual reports.

Project Methodology

At Aellia, we follow a proven approach to perform hydrogen measurement campaigns:



1. **Preparation:** Safety plan, kick-off meeting, and collection of input data (P&IDs, pipeline data, flow diagrams).
2. **Source Inventory:** Updating P&IDs and source lists.
3. **Field Measurements:** Hydrogen leaks are detected using acoustic cameras and H2 sniffers, then quantified with acoustic methods or high-flow samplers. Combined detection techniques deliver optimal accuracy, supported by close cooperation with client maintenance teams and re-measurement after repairs where possible.
4. **Data Processing & Reporting:** All measurements are uploaded for structured analysis. Final reports include emission losses, financial impact, payback factors, historical emission data, and detailed repair orders with photos and P&ID extracts.

Innovative Quantification Technologies

Acoustic Camera

Quickly visualizes hydrogen leaks as hotspots on a digital image by overlaying acoustic data for precise leak localization. Ideal for rapid screening and leak detection, it also provides an initial estimate of hydrogen mass loss to support field assessments.



High Flow Sampler

The preferred solution for accurate hydrogen leak quantification. By directly measuring hydrogen leak rates, it delivers precise, real-time data for reliable emissions reporting and verification. Compact and field-ready, it supports a wide range of systems while helping ensure compliance with safety and regulatory standards.

Validated through controlled-release testing

In a September 2025 hydrogen controlled-release benchmarking study, High Flow Samplers showed the highest consistency and lowest quantification error among tested technologies. Acoustic cameras provided fast localization but showed higher uncertainty for standalone quantification.

Empowering a Cleaner Future

Through advanced technology, rigorous methodology, and expert collaboration, we help industries minimize hydrogen losses, enhance safety, and move confidently toward a more sustainable, zero-leak future.

Sniff Out Hydrogen Emissions

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