

OPTIC FIBRE-BASED HYDROGEN LEAK CONTROL SYSTEMS (OPHYCS)

New sensor technology to increase safety and cost-effectiveness of H₂ applications

Project Objectives

OPHYCS project aims to develop a new optic fibre-based sensor technology to increase the safety level of H₂ applications, as well as minimise potential H₂ releases from production to storage and distribution, both in new infrastructure, working with pure H₂, and in natural gas repurposed installations and pipelines. Along these lines, it will limit the climate impact of H₂ uptake and will contribute to a safe and economically viable implementation of H₂ production, transport, and storage processes.

Conceptual areas

- A) Technology pillars analysis and definition of new sensor technology
- B) Validation of key use cases (pipelines, Hydrogen refuelling stations and midstream sites such as compression and metering stations) of the new technologies in 3 different controlled validation sites
- C) Aspects of the technologies derived from the use cases, including the assessment of the security and environmental risks evaluations and regulatory framework, and a scalability and cost efficiency study

Project Insights

The newly developed sensors will be able to adapt to existing facilities and new infrastructure and analyze and classify the types of releases and sources based on risk, location, leak impact, probability of severity, and predictability through continuous predictive maintenance combined with increased speed of response.

This sensor technology will be tested in several use cases with both pure H₂ and H₂ blended with natural gas: open and closed pipelines, H₂ refueling stations (HRS), midstream sites, and existing natural gas wells; the results obtained in these use cases will be used to tailor solutions to safety, environmental, and economic considerations.

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