# PILGRHYM

## PRE-NORMATIVE RESEARCH ON INTEGRITY ASSESSMENT PROTOCOLS OF GAS PIPES REPURPOSED TO HYDROGEN AND MITIGATION GUIDELINES

| | |
|---|---|
| **Project ID** | 101137592 |
| **PRR 2024** | Pillar 2 – $H_2$ storage and distribution |
| **Call topic** | HORIZON-JTI-CLEANH2-2023-02-02: Pre-normative research about the compatibility of transmission gas grid steels with hydrogen and development of mitigation techniques |
| **Project total cost** | EUR 3 999 073.75 |
| **Clean $H_2$ JU max. contribution** | EUR 3 999 073.75 |
| **Project period** | 1.1.2024–31.12.2027 |
| **Coordinator** | GRTgaz, France |
| **Beneficiaries** | Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Enagás Transporte SA, Fluxys Belgium SA, Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung EV, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón, Fundacion Tecnalia Research and Innovation, Groupe Européen de Recherches Gazières, Onderzoekscentrum voor Aanwending van Staal NV, Sintef AS, Snam SpA, Universidad de Burgos |

http://pilgrhym.eu/

### PROJECT AND GENERAL OBJECTIVES

The main goal of Pilgrhym is to provide a European roadmap for safely and efficiently integrating pure $H_2$ into existing natural gas infrastructure, contributing to the decarbonisation of the energy sector. To achieve this goal, Pilgrhym has set forth an ambitious objective of providing transmission system operators with comprehensive guidelines to assess the feasibility of using pure $H_2$ in existing natural gas pipelines.

To reach the previously stated goals, Pilgrhym has established seven technical and non-technical specific objectives (SOs), interconnected with the project's results, key performance indicators and work packages.

- Develop a database of material characterisation testing on representative steel grades of the EU gas grids, including tensile properties, fracture toughness and fatigue crack growth properties.
- Establish a harmonised testing protocol to support the repurposing of natural gas lines to accommodate hydrogen.
- Develop a numerical modelling approach for simulating and predicting hydrogen-assisted fracture and fatigue.
- Produce a more realistic fatigue crack growth rate master curve for the purpose of assessing fitness for service, in particular for low K values corresponding to the actual operating domain of the EU gas grids.
- Identify existing and/or innovative technologies for mitigation compatible with operational constraints.
- Engage with stakeholders to ensure cooperation and awareness.
- Facilitate the uptake and exploitation of Pilgrhym results by the academic community, technology developers and end users.



Clean Hydrogen Partnership
Co-funded by the European Union