



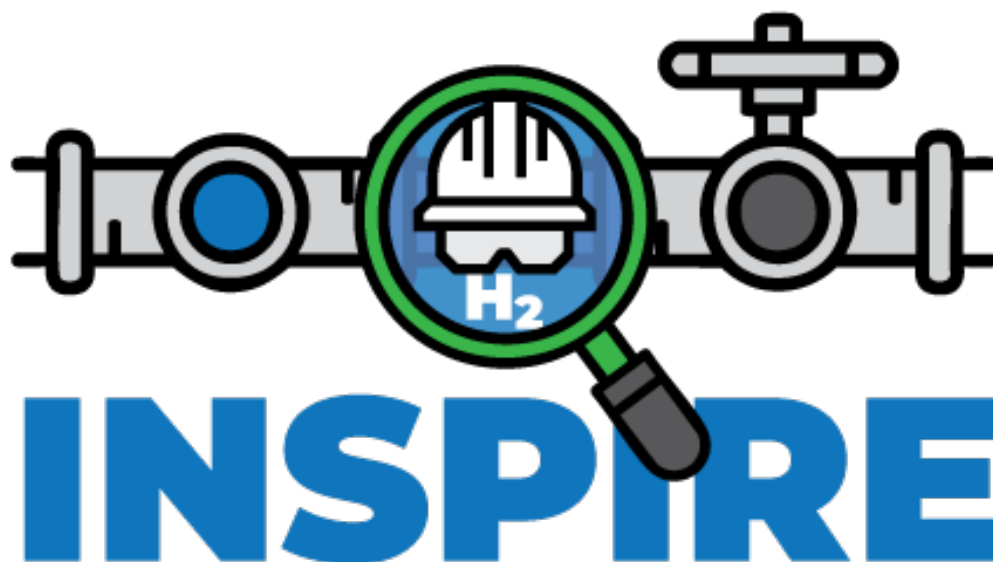
Revision of the contents related to H₂ pipelines
Additional Training Modules on Hydrogen Pipeline Inspection

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Revision	Date	Author/Organisation	Description
1 st	09.06.2025	EWf	Template shared with partners. Ensuring of common structure and format
2 nd	11.06.2025	WGI	Inputs from WP2 collected and added. Base content forms
3 rd	17.06.2025	WGI, CESOL, SHY, AC-TECH, TTPSC, EWf	Revision and expanding of the content. Adding technical and strategic details
4 th	17.07.2025	EWf	Cleaning and refining of the document. Prepared for internal peer review
5 th	16.01.2026	WGI, CESOL, SHY, AC-TECH, TTPSC + EWf	Updates with Train the Trainers inputs



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Introduction

The Hydrogen Pipeline Welding Inspection training modules have been developed under the INSPIRE project to address the urgent need for qualified professionals capable of inspecting hydrogen (H₂) pipelines. As hydrogen becomes a key energy carrier in the transition to a low-carbon economy, ensuring the safety, integrity, and compliance of hydrogen infrastructure is critical.

This training is designed as an additional modular specialisation to be presented within the existing European Welding Inspector (EWI) framework. It focuses on equipping welding inspectors with hydrogen-specific knowledge, skills, and competencies related to materials behaviour, safety risks, standards, and advanced inspection techniques.

The training consists of two independent **Competence Units (CUs)**:

- **CU-H2-01: H₂ Material Integrity and Safety**
- **CU-H2-02: Inspection and Testing for Hydrogen Pipelines**

Developed within the framework of the INSPIRE project, the training CUs support the upskilling and reskilling of professionals involved in the inspection, testing, and quality assurance of hydrogen pipeline systems.

These Competence Units have been developed as specialised modules within the European Welding Inspector (EWI) qualification framework and are intended for professionals holding, as a minimum, the EWF/IIW European or International Welding Inspector (EWI/IWI) Basic Level qualification, or an equivalent qualification in welding inspection or welding technology.

Training Structure

The programme is organised into two dedicated Competence Units (CUs):

CU 1 – H₂ Material Integrity and Safety

This Competence Unit introduces participants to the effects of hydrogen on metallic materials and welded structures, including hydrogen-related degradation mechanisms and safety considerations associated with hydrogen transport infrastructure. The module also addresses health, safety, and environmental aspects relevant to hydrogen applications, together with protective coating used in industrial practice.



CU 2 – Inspection and Testing for Hydrogen Pipelines

This module focuses on inspection and testing activities applicable to hydrogen pipeline systems. Participants are introduced to non-destructive testing techniques, inspection documentation, acceptance criteria, and relevant international standards used in hydrogen-related projects and pipeline inspection activities.

Learning Approach

The INSPIRE training modules are designed using a blended learning methodology that combines:

- Theoretical training
- Case-based learning
- Practical inspection scenarios
- Digitally supported educational activities (Augmented Reality)

Particular emphasis is placed on immersive and digitally supported learning experiences through the use of Augmented Reality (AR) training scenarios developed within INSPIRE.

The modular structure allows the programme to be delivered either as standalone upskilling units or as part of broader professional training schemes in welding inspection and quality assurance.

Target Audience

The training programme is intended for professionals already active in welding, inspection, and quality control activities, holding at least one of the following qualifications or certifications:

- ISO 9712 – Non-Destructive Testing (NDT), Level 2 or equivalent
- Certification Under an ISO 17024-Compliant Welding Inspection Scheme
- Minimum level EWF/IIW European/International Welding Inspector (EWI or IWI) – Basic Level
- Minimum level EWF/IIW International/European Welding Specialist (IWS or EWS)
- Proven knowledge in Welding Technology and | or Inspection



Assessment and Recognition

Participants are assessed through written examinations designed to evaluate the knowledge and skills acquired during each Competence Unit. Candidates who successfully achieve the required passing score shall receive a Record of Achievement for the respective Competence Unit examined.