

H₂TRUST



FCH JU Grant agreement number: **325357**

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h2trust.eu



PROJECT OVERVIEW

- **Title:** Development of H₂ Safety Expert Groups and due diligence tools for public awareness and trust in hydrogen technologies and applications
- **SP1-JTI-FCH.2012.5.5:** Assessment of safety issues related to fuel cells and hydrogen applications
- **Duration:** 01/06/1013 - 28/02/2015
- **Budget:** 1,208,416.22 € (796,678 € funded by the FCH JU)
- **Purpose:** To foster a smooth and well managed transition to full scale commercialization of FCH applications in Europe and, from a safety perspective, to aid the process by which all industry stakeholders are informed, prepared and confident.
- **Stage of implementation:** 83%

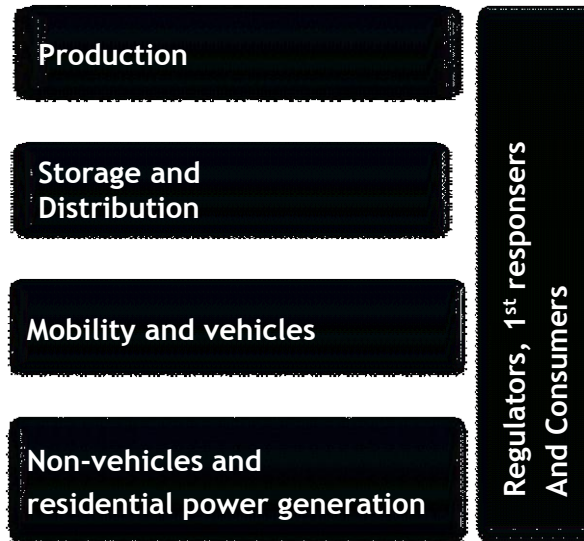


PROJECT TARGETS AND ACHIEVEMENTS

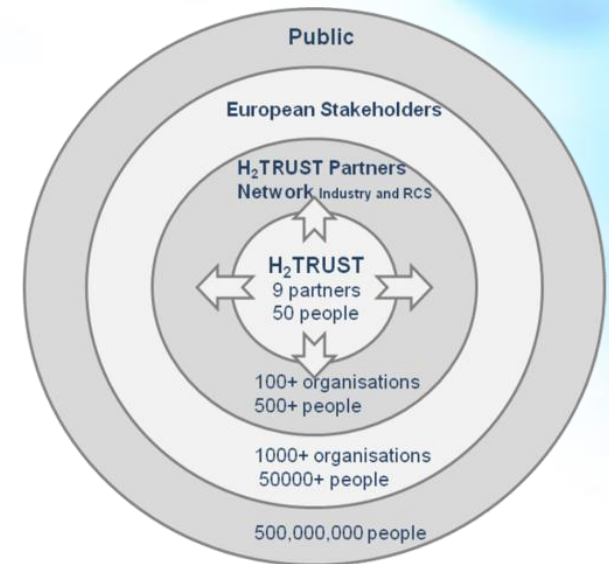
RESEARCH



ANALYSIS AND RECOMMENDATIONS



DISSEMINATION



PROJECT TARGETS AND ACHIEVEMENTS

Status before project	MAIP target	Project Target	Current status/achievements	Expected final achievement
Development of the HIAD (Hydrogen Incident and Accident Database) at EU level.	Education and public awareness.	<ul style="list-style-type: none"> • Industry assessment and recommendations. • Documented responses. • Dissemination. 	<ul style="list-style-type: none"> • FCH Safety issues, industry best practices and recommendations, and safety assessment, reports are finished. • Website available. 	<ul style="list-style-type: none"> • Demo set-ups for safety demonstrations are under development.
HyFACTS project provided information for Regulators and Public Safety Experts.	Identify and prioritize Regulations, Codes and Standards (RCS) and Pre-normative Research (PNR) needs.	<ul style="list-style-type: none"> • Data collection from the regulatory and safety stakeholders, consumers and incident response bodies. 	<ul style="list-style-type: none"> • RCS have been considered in all the deliverables. 	<ul style="list-style-type: none"> • To influence, since all the reports address the needs of their harmonisation in different countries.

PROJECT TARGETS AND ACHIEVEMENTS

Status before project	MAIP target	Project Target	Current status/ achievements	Expected final achievement
HySAFE (about competences and experience from various researches and industrial fields). “h2incidents.org” “h2bestpractices.org” from the U.S.	Application of existing knowledge and lessons learnt from past experience.	<ul style="list-style-type: none"> • Compile information. • Map the safety issues. • Identify best practices. • Safety risk assessment and public safety assessment. • Recommendations. 	<ul style="list-style-type: none"> • Online library • FCH Safety issues, industry best practices and recommendations report. • Safety risk assessment report 	<ul style="list-style-type: none"> • Demo set-ups for safety demonstrations (banner, video, brochure, book, presentation). • Online assessment tool.
HIAD Database at EU level, h2incidents.com from the US	Identification of hazards and their prevention.	<ul style="list-style-type: none"> • Hazard and risk assessment, map safety issues and recommendations. 	<ul style="list-style-type: none"> • Public safety assessment report • Website 	

PROJECT TARGETS AND ACHIEVEMENTS

Status before project	AIP target	Project Target	Current status/ achievements	Expected final achievement
FCH JU projects related with H ₂ such as HySAFE or HyFACTS .	<ul style="list-style-type: none"> •Coverage by standards and/or regulations of the relevant safety requirement; and ability to respond to the public's and authorities' safety concerns. 	<ul style="list-style-type: none"> •Make recommendations for further safety efforts by FCH community. 	<ul style="list-style-type: none"> •FCH Safety issues, industry best practices and recommendations report. •Safety risk assessment report 	<ul style="list-style-type: none"> •Demo set-ups for safety demonstrations (banner, video, brochure, book, presentation). •Online assessment tool.
FCH JU projects related with H ₂ such as HySAFE or HyFACTS .	<ul style="list-style-type: none"> •Preparedness to emergency situation and effectiveness of emergency response measures. 	<ul style="list-style-type: none"> •To manage public reaction to incidents. •To reinforce best practices and assure public confidence. 	<ul style="list-style-type: none"> •Public safety assessment report •Website •Participation in conferences 	

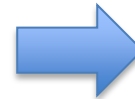
RISKS AND MITIGATION

- **Target:** data gathering for the application of existing knowledge and lessons learnt from past experience. Gap analysis.

Bottlenecks and risks

Poor availability of data and information at EU level

- The databases available (e.g. HIAD) report only macro-statistics, without detailed information on the incidents/accidents, etc.
- Not detailed enough information due to incomplete answers of the questionnaires sent.
- Safety data are usually considered as “sensible data” by companies and stakeholders.



Suggested nature of revision

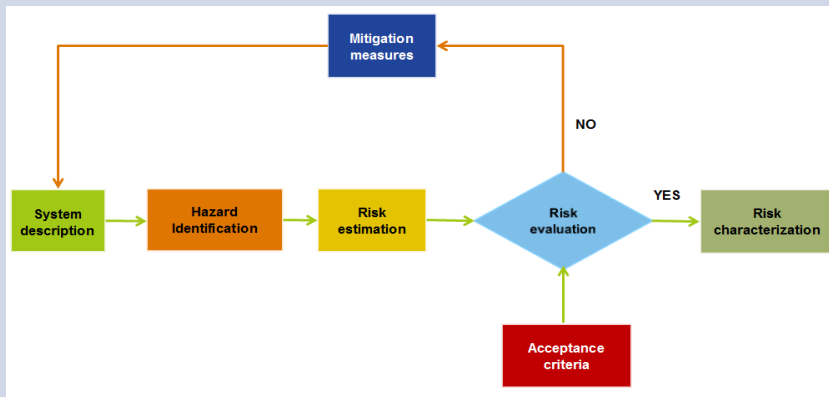
The data gathering was mainly based on case studies and document review

RISKS AND MITIGATION

- **Target:** Coverage by standards and/or regulations of the relevant safety requirement regards to design requirements, design qualification, manufacturing quality, installation requirements; and ability to respond to the public's and authorities' safety concerns

Bottlenecks and risks

•The **few data available in some areas** (i.e. in hydrogen production) shared between industrial partners, hindered the validated safety risk assessment methodology to cover all application area of hydrogen.



Suggested nature of revision

No revision. It should be noted that the methodological approach was validated according to the existing data.

SYNERGIES WITH OTHER PROJECTS AND INITIATIVES

-  has been considered the **starting point** of the project with a partner in common 
- The analysis assessment has been carried out taking into account the **HIAD**.
- H₂TRUST project builds on previous projects' results such as



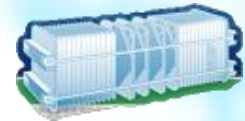
to assess industry efforts to assure FCH technology is safe.

Also, to make sure there is:

- Adequate regulation, hazard awareness, incident readiness.
- Ability to respond to public concerns an assessment and analysis of the safety issues.

SYNERGIES WITH OTHER PROJECTS AND INITIATIVES

- One of the main sources of information is the U.S. hydrogen database “**H₂ Lessons Learned from incidents and Near-Misses**” (h2incidents.org) supported by the Department of Energy (DoE).



Hydrogen Lessons Learned (H₂LL)
from Incidents and Near-Misses

- We have contacted the **Pacific Northwest National Laboratory (PNNL)**, which is working with the **Hydrogen Safety Panel (HSP)** funded by DoE.
- We have contacted with the **JRC (Institute for Energy)** in order to collaborate on the **HIAD database** and also collaborate in the detection of the **gaps analysis** related with safety.



HORIZONTAL ACTIVITIES

Training and education

- Development of an online portal (h2trust.eu) where resources, findings and deliverables will be available.
- Develop H₂ safety due-diligence methodology.

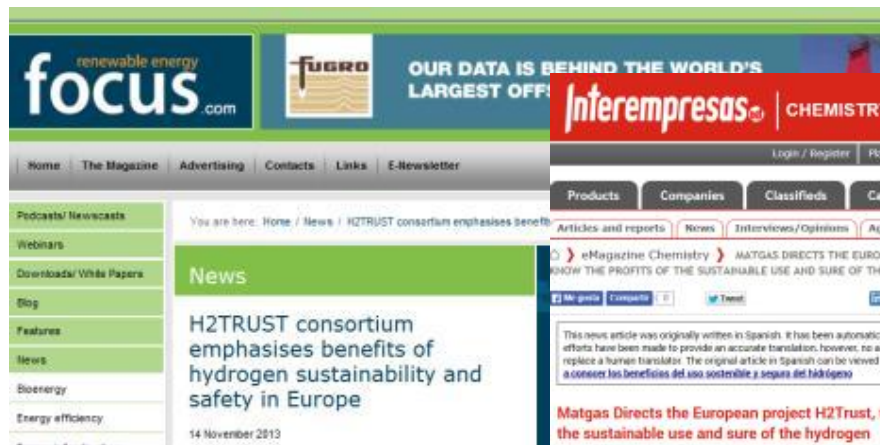


Safety, Regulations, codes and standards

- Collect safety information on Regulators, 1st Responders, Consumers.

HORIZONTAL ACTIVITIES

- Public awareness - Press Release, November 2013, published in:
 - [Fuel Cell Bulletin](#)
 - [Fuel Cell today](#)
 - [Renewable Energy Focus.com](#)
 - [Hydrogen fuel new](#)
 - [Interempresas](#)
 - [Innovation Place](#)



DISSEMINATION ACTIVITIES

Participation in conferences:

- International Conference on Hydrogen Safety (ICHS2013), 9-11 September 2013, Brussels (POSTER).
- **Programme Review Days 2013**, 11-13 November 2013, Brussels (POSTER).
- European Fuel Cell (EFC13), 11-13 December 2013, Rome (POSTER).
- International Discussion on Hydrogen Energy and Applications (idHea), 11-13 May 2014, Nantes, France (ORAL).
- **CIMTEC 2014**. 6th Forum on New Materials, 15-19 June 2014, Montecatini Terme, Italy (POSTER)
- Iberoamerican Congress of Hydrogen and Fuel Cells (IBERCONAPPICE), 15-17 October, Barcelona, Spain (ORAL).



DISSEMINATION ACTIVITIES

- "First International Workshop on Hydrogen Safety Training for First Responders" (HyResponse) 3-4 of September 2014, Aix en Provence, France. (POSTER)



Referrals in newsletters and websites:

- An [introduction](#) about H₂TRUST has been included in the Spanish Hydrogen Association's September newsletter.
- A link and introduction to H₂TRUST will be added to the European Hydrogen Association website and newsletter and to the Italian Hydrogen and Fuel Cell Association
- The introduction of H₂TRUST will be also included in the 22 national associations newsletters and Federation of the Scientific and Technical Associations newsletter.



EXPLOITATION PLAN/EXPECTED IMPACT

- The results from this project are expected to be used as a **reference not only by experts in this field but also by the society in general**. For this purpose:
 - All the deliverables will be public.
 - An online library has been created.
 - Demo set-ups for safety demonstrations will be prepared (banner, video, brochure, presentation).
 - A dissemination book is under development.
 - The project has been presented in several conferences.
- Establish lasting links and collaborations with equivalent associations outside Europe.

