

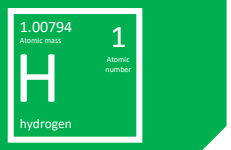
LH2CRAFT Project - Safe and Efficient Marine Transportation of Liquid Hydrogen



Project developments and overview of present and future of H₂ in waterborne transportation

POSIDONIA 2024, Athens, Greece, 07/06/2024





LH2CRAFT
Horizon Europe
GA 101111972



LH₂CRAFT Overview

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Innovation Hub Manager - Project Coordinator

HYDRUS ENGINEERING SA



POSIDONIA 2024, Athens, Greece, 07/06/2024



Project Overview

Key Facts

- **Call:** HORIZON-JTI-CLEANH2-2022-02
- **Activity:** HORIZON-JTI-CLEANH2-2022-02-06 - Development of large scale LH2 containment for shipping
- **Project Title:** Safe and Efficient Marine Transportation of Liquid Hydrogen (LH2CRAFT)
- **Project Duration:** 48 months
- **Project Coordinator:** HYDRUS Engineering SA
- **Type of Action:** RIA (Research & Innovation Action)
- **Expected TRL:** TRL5 by the end of the project

***TRL5 refers to technology validated in relevant environment*

Project Overview

Key Facts

Project dates:
01/06/2023– 31/05/2027

Total project budget:
7.664.269,67 €



14 partners
11 beneficiaries
3 associated partners
9 countries

Clean Hydrogen JU contribution:
5.627.595,94 €
Other financial contribution:
806.348,75 € UKRI
1.230.325,00 € HD KSOE

Project Overview

Consortium



HYDRUS - Project Coord.	NTUA
HD KSOE	TUD
ABS	UPATRAS
RINA	UoS
BV	GABADI
WEGEMT	ACTEMIUM
EASN	TWI

Main Objectives

LH2CRAFT aims at developing next generation, sustainable, commercially attractive, and **safe long-term storage and long-distance transportation of large amounts of Liquid Hydrogen (LH₂)** for commercial vessels.

The project focuses on developing an **innovative containment system of membrane-type for large capacity storage (e.g., 160-200K m³) at a temperature of -253 °C**, demonstrating and validating it on a **10 ton (180 m³) prototype**.

The **CCS** will achieve **AiP and General Approval** by ABS Classification Society, whereas **AiP** will be also issued for the concept design of the **auxiliary systems (HDMSS)**.

LH2CRAFT will also develop a **preliminary integrated LH2 carrier ship design**, while **alternative conceptual designs of CCS and LH2 carrier vessels**, including detailed safety and risk assessment, will be examined.

Project Overview

Work Packages

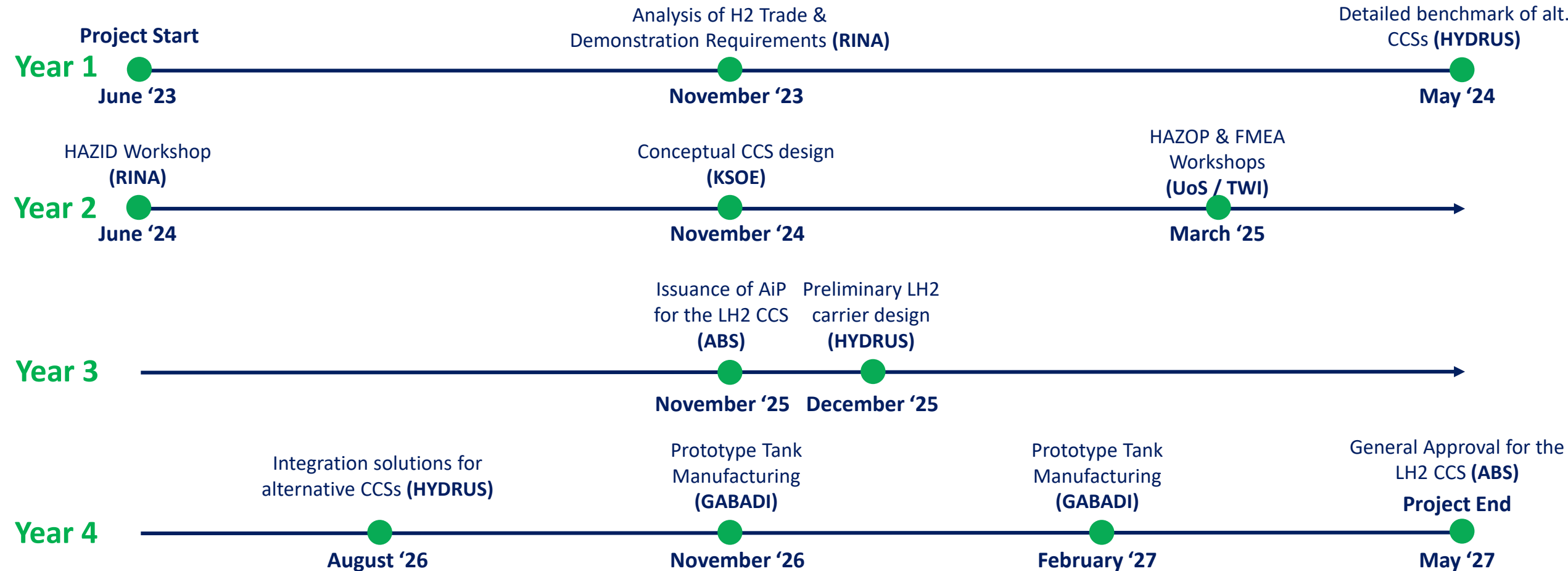
WP	LEADING PARTNER
WP1 - Project Management	HYDRUS
WP2 – LH2 Containment Implementation Plan and Evaluation Criteria	RINA
WP3 – Conceptual Engineering Design for the LH2 Tank Storage & Scalability Scenarios	HD KSOE
WP4 – Preliminary Integrated Ship Design for an Innovative LH2 Carrier	HYDRUS
WP5 – Engineering Design Process for Handling, Distribution & Monitoring Subsystems (HDMSS)	NTUA
WP6 – Subsystems testing for thermo-mechanical validation	TUD
WP7 – Assembly, Manufacturing, Demonstration and Functionality Testing of the Prototype	GABADI
WP8 – Safety and Risk Assessment of the LH2 CCS	UoS
WP9 – Approval-in-Principle and General Approval of the LH2 CCS and HDMSS	ABS
WP10 – Technical Assessment KPIs and LCA	TWI
WP11 – Dissemination, Exploitation and Communication	HYDRUS

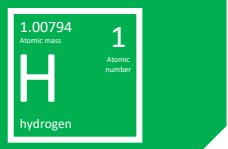
Core Technologies

Core technology	Way towards materialization	Goal TRL
Design of insulation system to accommodate LH2 temperatures (-253 °C) and minimizing boil-off rate	Expand the corresponding existing LNG containment system technology to meet the new stringent requirements	5 by M48
Modular and adaptable CCS design, to fit in cargo holds of various shapes and sizes	CCS comprised of modular, repeatable unit modules. Standardized connecting modules for joints with specific angle values.	5 by M48
Technology for integrating the proposed CCS into the hull structure	Expand the corresponding existing LNG containment system technology	5 by M48
Technology for manufacturing the CCS and erecting it inside a vessel cargo hold	Expand the corresponding existing LNG containment system technology	5 by M48

Project Timeline

Key Milestones / Checkpoints





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<https://www.linkedin.com/showcase/lh2craft/>

Thank you!



<https://lh2craft.eu/>



UK participation in LH2CRAFT Project is funded by UK Research and Innovation (UKRI) under the UK government's Horizon Europe guarantee [grant numbers 10070575 and 10082044].