

About H2ELIOS

The H2ELIOS project is an ambitious research and development project focused on the **development of an innovative hydrogen storage solution for aviation use.**

Hydrogen-powered aircrafts are seen as a promising solution to the problem of increasing CO₂ emissions from aviation.

Our goal is to **reduce emissions and minimize the environmental impact of the aviation industry by developing a lightweight and cost-effective solution for storing liquid hydrogen.**

The H2ELIOS project will be at the forefront of hydrogen storage technology in aviation. Our ultimate aim is to **develop a hydrogen storage system that can be seamlessly integrated into an aircraft's primary structure.**

We will be using **sustainable, lightweight polymer-based materials** for the tank structure and will employ **automated techniques for manufacturing** to ensure close tolerances and high-quality finishes. This will not only provide a **more environmentally friendly solution**, but also **improve the overall efficiency of the aircraft.**

Revolutionizing the aviation industry with innovative hydrogen storage technologies

Our Team



Connect
with
H2ELIOS



101102003

01.01.2023

46 months

Funding 9.9M€

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The project is supported by the Clean Aviation Joint Undertaking and its members.

Funded by the European Union.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Clean Aviation Joint Undertaking. Neither the European Union nor Clean Aviation JU can be held responsible for them.

Design by: EASN-TIS



Objectives

Innovative Technologies



Define **technical requirements** for a LH2 storage solution in aviation.

Design, develop and optimize a LH2 storage solution.

Characterize the functional behavior of a LH2 storage solution.

Build a storage prototype of the tank and its auxiliary subsystems.

Perform ground tests to demonstrate the feasibility of safe storage.

Assess the sustainability of the proposed solutions through Life Cycle Assessment (LCA).

Monitor costs through **Life Cycle Cost Analysis (LCCA)** and reduce them.

Tackle **refuelling challenges**.

Pave the way for future certification of the LH2 storage solution.

Build synergies with other relevant projects.

Disseminate results to relevant stakeholders in the aviation sector.

 LH2 storage solution	 Virtual models of LH2 Storage	 Integration	 Sustainability	 Testing Methodologies	 H2 Management & Safety
Inner tank	Thermodynamic & hydrodynamic digital twin	Integration at aircraft architecture level	Tank design optimization	Structural and functional full scale tests	Leak detection
External tank	LH2 Storage simulation	Tank as load bearing structure	Sustainability assessment	Damage tolerance	Cryogenic valves
Insulation system	Structural Digital Twin		Cradle - to - cradle LCA		Shut-off valves
Structural Health Monitoring					Pressure relief valves
					Internal H2 management system

Key Features

