Hydrogen lightweight & innovative tank

H2ELIOS

for zero-emission aircraft

Revolutionizing the aviation industry with innovative hydrogen storage technologies

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 CO_2 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**.

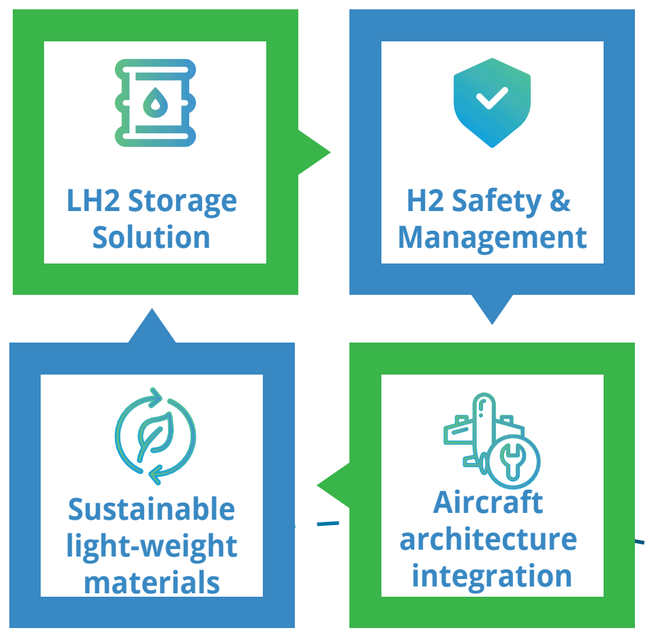
The H2ELIOS project will be at the forefront of hydrogen storage technology in aviation. Our ultimate aim is to **develop a hydrogen storage system that can be seamlessly integrated into an aircraft's primary structure**.

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.**

Innovative Technologies

LH2 storage solution	Virtual models of LH2 Storage	Integration	Sustainability	Testing Methodologies	H2 Manage-ment & 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



Objectives

- 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.

Enabling a sustainable clean aviation future

Our Team

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https://h2elios.eu

CLEAN AVIATION

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