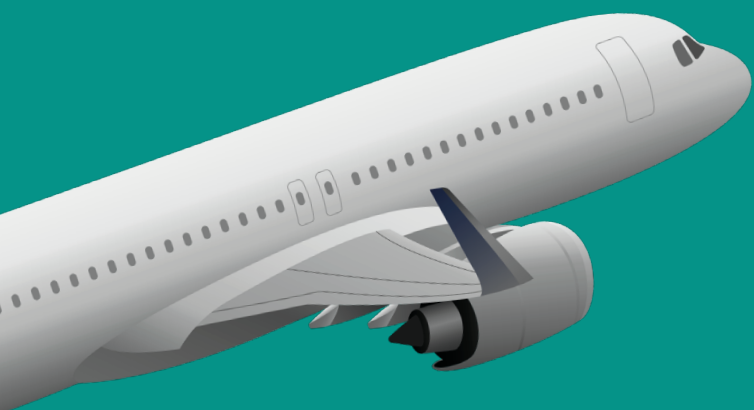




ALRIGH2T

Airport-level demonstration of ground refuelling of liquid hydrogen for aviation



SHAPING THE FUTURE OF AVIATION:
Advanced LH2 refuelling technologies
at the forefront

The main objective of the ALRIGH2T project is to develop and test innovative technologies and processes for the refuelling of future liquid hydrogen (LH2) aircrafts under real airport conditions, with the goal of reducing the environmental impact of the aviation sector.

Emphasizing safety and standardization, ALRIGH2T positions at the forefront of hydrogen-powered aviation and green airport transformation, aligning with Clean Aviation and Clean Hydrogen objectives to boost industry standards.



IMPACTS



Drive the shift towards zero-emission mobility with scalable liquid hydrogen refuelling technologies for airports.

Advance hydrogen refuelling technologies to reduce aviation's environmental impact.

Accelerate the deployment of hydrogen-powered ground-moving vehicles across airports of different capacities.

Develop logistics strategies for hydrogen aviation, assessing infrastructure and market potential for short- to medium-haul hydrogen aircrafts.

Address regulatory, certification, and operational requirements for liquid hydrogen use at airport and airline levels.

OUR OBJECTIVES

ALRIGH2T works on 9 specific objectives:

Define technical requirements for feasible LH2 refuelling in European airports.



Develop a new system for the supply and management of LH2.



Demonstrate the feasibility of LH2 refuelling technologies and ground movement at EU airports.



Ensure sustainability and low environmental impact of the proposed solution.



Assess and validate LH2 demand models for air transportation ground infrastructures.



Build and test a direct LH2 refuelling system with the support of a full digital twin model.



Improve safety in ground refuelling operations with new technologies and procedures.



Pave the way for the future certification of LH2 storage and refuelling solutions.

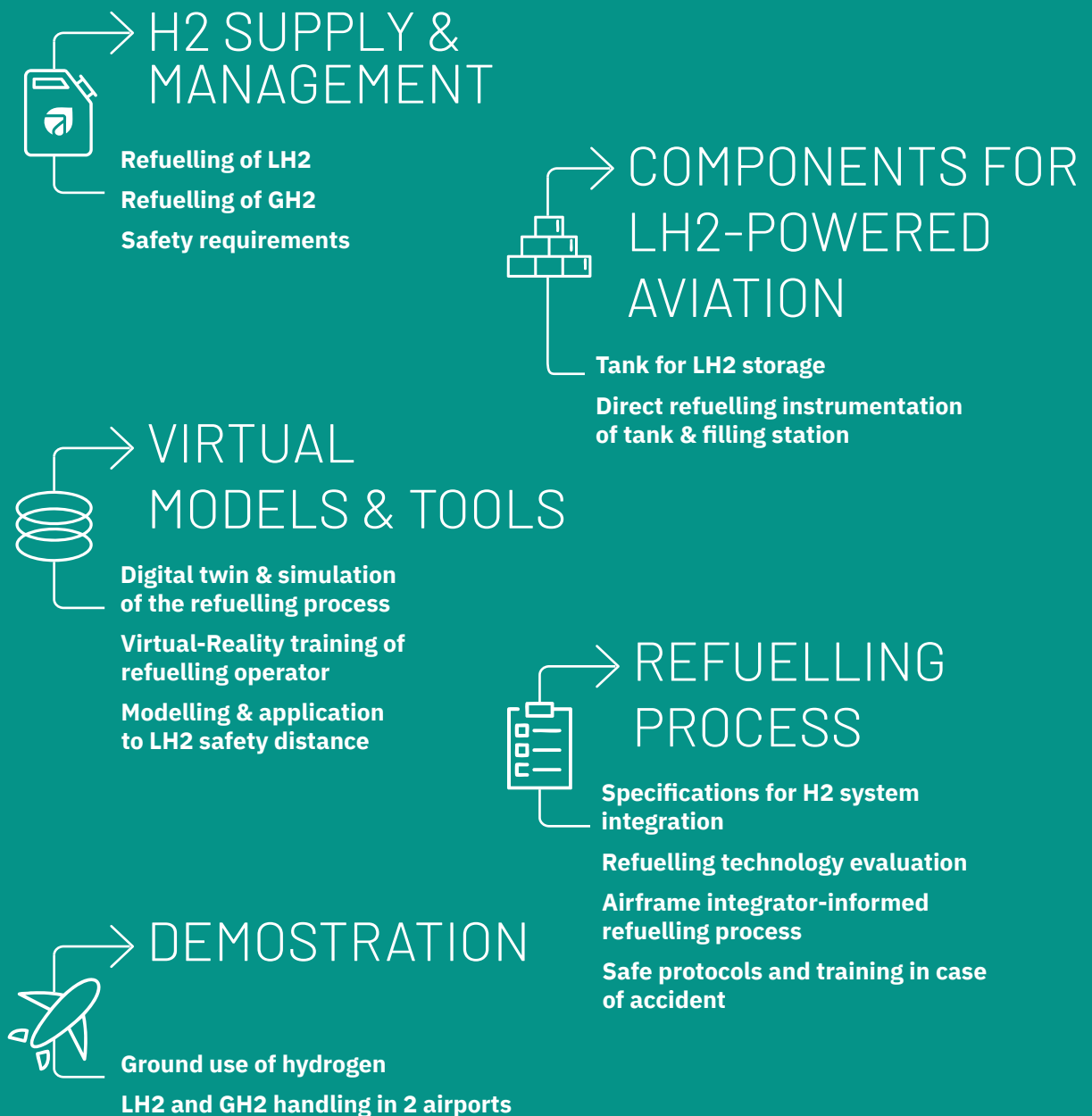


Build synergies with relevant projects and EU initiatives.



H2 REFUELLING INNOVATIONS

The project focuses on creating cutting-edge concepts and technologies for hydrogen-based aviation, pushing the boundaries of current advancements in the field.



INNOVATION CONCEPT

LH2 DIRECT REFUELLING TECHNOLOGY & DEMO

ALRIGH2T aims to develop and demonstrate direct liquid hydrogen refuelling systems through the following key actions.

Operational protocols

Define safe and efficient LH₂ refuelling procedures using a risk-based approach.

Preparation of control and instrumentation system

Integrate sensors and assemble the LH₂ tank and its components.

Digital Twin

Develop a digital model of the direct refuelling process, including transient behaviours, supporting control, and benchmarking with sensor and experimental data.

Integration

Design, manufacture, and integrate the entire LH₂ tank system into the P180 aircraft fuselage.

Production of a complete LH2 tank system

Design and test an LH₂ transfer pump along with the complete tank system.

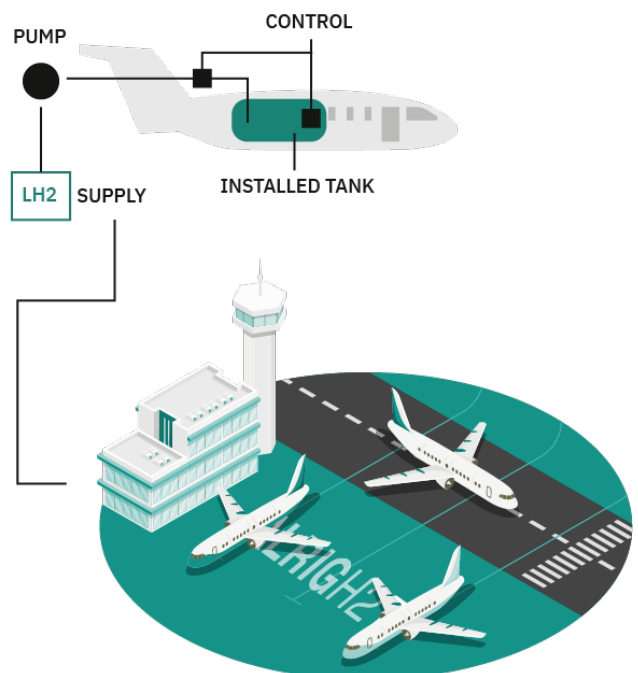
Lab testing

Conduct lab tests of the refuelling system and its integration into a real aircraft fuselage to validate the developed technology.

Demo

Perform ground testing of the system with liquid hydrogen (LH₂).

DIRECT LH2 AIRCRAFT REFUELLING



GASEOUS HYDROGEN REFUELLING DEMO

ALRIGH2T works to establish a replicable, end-to-end hydrogen logistics model for airport refuelling, integrating key technologies such as filling depots, transport systems, and airport infrastructure.

Technology Development & System Validation

Develop and test key hydrogen technologies across the supply chain, and demonstrate a complete refuelling logistics chain within an airport environment.

Deployment, Efficiency & Decarbonisation

Deploy and operate a hydrogen-powered ground handling vehicle, achieving a fully green turnaround process.

Risk Assessment & Safety

Conduct a comprehensive risk assessment and define safety procedures to ensure the safe implementation of hydrogen technologies at the airport.



AIRPORTS DEMOS

MILAN MALPENSA AIRPORT

Liquid hydrogen direct
refuelling demo.

Gaseous hydrogen ground
movement demo.

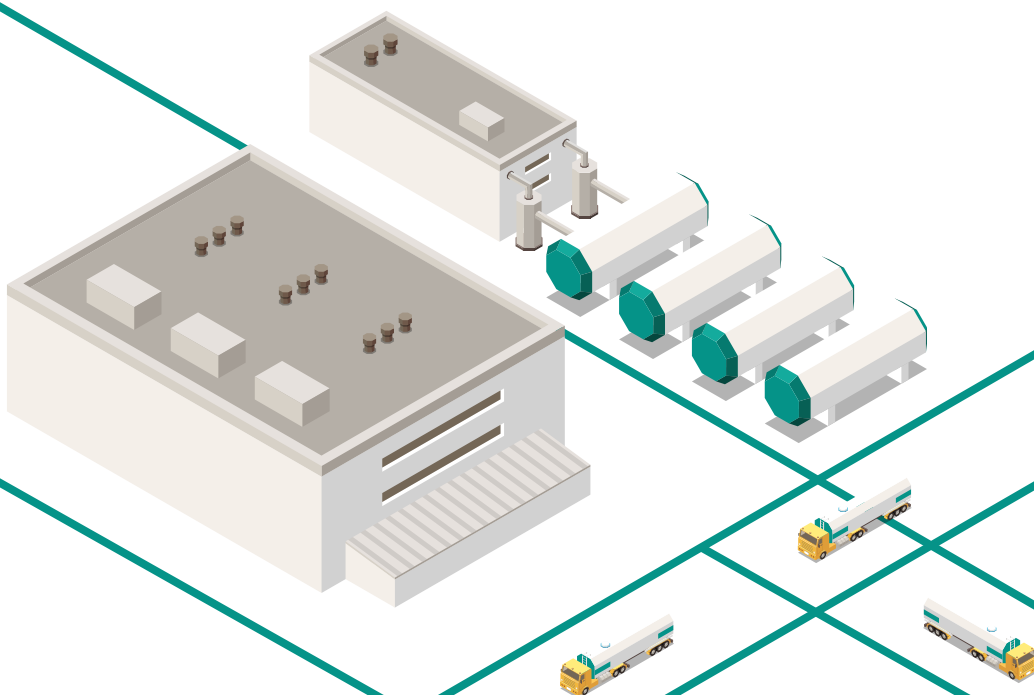
PARIS-ORLY AIRPORT

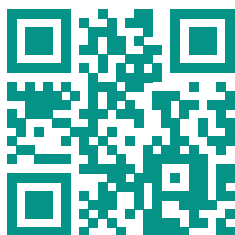
Gaseous hydrogen ground
movement demo.

100% green turnaround demo.

PUMP DEMO

Prototype system
demonstration of a novel pump
at Linde's facility in Leuna
(Germany), for potential use in
future LH₂ aircraft refuelling
applications.





www.alrigh2t.eu

WEBSITE



LINKEDIN



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YOUTUBE



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