

# COCOLIH<sub>2</sub>T


COMPOSITE CONFORMAL LIQUID H<sub>2</sub> TANK

COCOLIH<sub>2</sub>T

Project ID	101101404
PRR 2024	Pillar 3 – H <sub>2</sub> end uses: transport
Call topic	HORIZON-JTI-CLEANH2-2022-03-07: Development of specific aviation cryogenic storage system with a gauging, fuel metering, heat management and monitoring system
Project total costs	EUR 8 726 769.50
FCH JU max. contribution	EUR 8 726 769.50
Project start - end	1.2.2023–31.1.2026
Coordinator	Collins Aerospace Ireland Ltd, Ireland
Beneficiaries	Avions de Transport Régional, Crompton Technology Group Ltd, Goodrich Aerospace Europe SAS, Microtecnica SRL, Novotech Aerospace Advanced Technology SRL, Simmonds Precision Products Inc. (a part of Collins Aerospace), Stichting Koninklijk Nederlands Lucht- en Ruimtevaartcentrum, Technische Universiteit Delft, Unified International, Utc Aerospace Systems Wroclaw Sp z.o.o.

<https://www.cocolih2t.eu/>

## PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives	Maximum diameter	m	< 1	
	LH <sub>2</sub> tank capacity	kg	57	
	Boil-off	%/day	< 2	
	Tank gravimetric efficiency	%	0.25	
	Venting rate	%/day	< 2	
	Dormancy	hours	> 24	
	Insulation vacuum	mbar	10 <sup>-5</sup>	

## PROJECT AND GENERAL OBJECTIVES

Improvements to existing state-of-the-art solutions include better utilisation of the available space for fuel storage, adequate insulation techniques to minimise heat leak, continued safe operations and weight reduction through the use of low-weight materials – such as thermoset or thermoplastic composites – all while addressing those materials' inherent challenges (permeability, microcracking, thermal fatigue).

## NON-QUANTITATIVE OBJECTIVES

The project aims to push the boundaries of the composite design of liquid hydrogen storage systems, and those of pressure management systems, cryogenic fluid controls, prognostic and structural health systems, hazard analyses, integration and systems testing, gauging sensors, leak sensors and so much more.

## PROGRESS AND MAIN ACHIEVEMENTS

- Completion of preliminary and critical design reviews of the Cocolih<sub>2</sub>t liquid hydrogen storage system.
- Development to technology readiness level 3 of cryogenic valves, prognostic health monitoring algorithms and liquid hydrogen fuel gauging technology.

## FUTURE STEPS AND PLANS

A manufacturing readiness review is planned for summer 2024, and the first demonstration system is planned to be shipped from Novotech in Italy to the Netherlands Aerospace Centre before the end of the year.

