THOR

THERMOPLASTIC HYDROGEN TANKS OPTIMISED AND RECYCLABLE

Project ID:	**826262**
PRD 2023:	**Panel 3 – H2 end uses – transport**
Call topic:	**FCH-01-3-2018: Strengthening of the European supply chain for compressed storage systems for transport applications**
Project total costs:	**EUR 2 969 253.29**
Clean H_2 JU max. contribution:	**EUR 2 853 958.75**
Project period:	**1.1.2019–30.9.2022**
Coordinator:	**Faurecia Systemes d'Echappement SAS, France**
Beneficiaries:	Centre national de la recherche scientifique, Centre technique des industries mécaniques, Cetim Grand Est, COVESS NV, École Nationale Supérieure de Mécanique et d'Aérotechnique, ETIM, Air Liquide SA, Norges teknisk-naturvitenskapelige universitet, Rina Consulting – Centro Sviluppo Materiali SpA, Sirris het collectief centrum van de technologische industrie, Université de Poitiers

https://thor-fch2.eu/

PROJECT AND OBJECTIVES

The project aims to validate hydrogen technology and its associated process regarding a recyclable thermoplastic composite tank for the storage of high-pressure gaseous hydrogen for mobility.

NON-QUANTITATIVE OBJECTIVES

- THOR will conduct health and safety monitoring using optical fibres, for temperature control and fire detection. Tests were scheduled to take place in July 2022.
- The project aims to create a recycled panel of thermoplastic reinforced with carbon fibres. Recycling activities are scheduled to take place at the end of the project. The performance of the panels will be tested to define their best use.
- The tanks are intended to be recyclable.
- The project is working on the reuse of the end-of-life tank with a recycling process for producing carbon-fibre composite sheets (the materials and the manufacturing process for the reused sheets are being prepared).

PROGRESS AND MAIN ACHIEVEMENTS

- Fifteen tanks have been prepared by CETIM.
- Burst results were below the qualification threshold (94 % of the burst pressure), meaning hydrogen could not be used for the final test.
- Recycling activities: recycled panels have been manufactured and prototypes' formed parts have been prepared successfully.

FUTURE STEPS AND PLANS

The project ended in September 2022.

QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?
MAWP (2014–2020)	Gravimetric efficiency	%	> 6 %	4.35	
	Cost of tanks	€/kg of H_2	400	760	
	AWP 2018	Burst pressure	bar	1 575	

Clean Hydrogen Partnership
Co-funded by the European Union