

# ECOHYDRO

## ECONOMIC MANUFACTURING PROCESS OF RECYCLABLE COMPOSITE MATERIALS FOR DURABLE HYDROGEN STORAGE

ecohydro

Project ID	101138008
PRR 2024	Pillar 8 – Strategic research challenge
Call topic	HORIZON-JTI-CLEANH2-2023-07-01: Advanced materials for hydrogen storage tanks
Project total cost	EUR 9 617 290.00
Clean H <sub>2</sub> JU max. contribution	EUR 9 617 290.00
Project period	1.1.2024–31.12.2027
Coordinator	Institut Mines-Télécom, France
Beneficiaries	Airbus, Arkema France SA, Basaltex NV, Centre Technologique Nouvelle-Aquitaine Composites & Matériaux Avancés, Chemical & Intermodal Logistics, Electra Commercial Vehicles Limited, FEV TR Otomotiv ve Enerji Araştırma ve Mühendislik Limited Şirketi, Katholieke Universiteit Leuven, Luxembourg Institute of Science and Technology, M.D.P. Materials Design & Processing SRL, MAHYTEC SARL, Politechnika Wroclawska, Promat Research and Technology Centre, Temsa Škoda Sabancı Ulaşım Araçları Anonim Şirketi

<https://ecohydro-project.eu/>

### PROJECT AND GENERAL OBJECTIVES

Ecohydro's global objective is to ensure an economic process for manufacturing recyclable composite materials for durable hydrogen tanks through the usage of high-strength carbon fibre, low-viscosity thermoplastic liquid resin and instant *in situ* photopolymerisation for composite pressure vessels.


Ecohydro has six ambitious general objectives:

- identify and develop multifunctional sustainable materials enabling a circular design and reducing the whole-life cost of hydrogen storage solutions;
- develop standardised inspection and repair methods that improve safety aspects of hydrogen storage and increase the lifetime

of hydrogen storage solutions;

- develop smart solutions that allow for cross-application uses of hydrogen storage to reduce the total number of storage tanks produced;
- demonstrate increased storage size and reduced capital cost for aboveground storage of hydrogen;
- demonstrate increased tube trailer payload, reduced capital cost and increased operating pressure for road transport of hydrogen;
- demonstrate increased gravimetric capacity, conformability, reduced capital costs and increased tank gravimetric efficiency for onboard storage of H<sub>2</sub> in heavy-duty truck and aviation applications.

### PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives	Trailer payload	kg	1 500	
	Operating pressure	bar	700	
	Trailer capital cost	€/kg	350	
	Gravimetric capacity	%	7	
	Cost	€/kg	600	
	Tank gravimetric efficiency	wt%	35	
	Storage size	t	20	
	Storage tank capital cost	€/kg H <sub>2</sub>	300	