PROJECT

THOR

Thermoplastic Hydrogen tanks Optimised and Recyclable

Funding: European (Horizon 2020)

Duration: Jan 2019 - Dec 2021

Status: Ongoing

Total project cost: €2,853,959

EU contribution: €2,853,959

Call for proposal: H2020-JTI-FCH-2018-1

CORDIS RCN : 221485

Objectives:

THOR aims at developing a cost-effective thermoplastic composite pressure vessel for hydrogen storage both for vehicle and for transportation applications. Thermoplastics appear as a promising solution to the challenges faced by conventional tanks in terms of compatibility with hydrogen service and with mass automotive market requirements. The use of thermoplastic materials, advanced numerical modelling techniques and innovative manufacturing processes will boost the performance, improve safety, enable optimized tank geometry and weight (reduction of 10%) and reduce the cost for mass production (400€/kg of H2 stored for 30 000 tanks/year).

A series of tests extracted from demanding automotive standards will validate all the requirements and demonstrate that thermoplastic tanks outperform thermoset ones. The consortium is representative of the hydrogen supply chain, from technology developer to manufacturer and end-user enhancing market uptake: a disruptive technology provider with successful commercial experience of thermoplastic tanks (COVESS), an ambitious Tier One supplier targeting a wide market introduction towards all OEMs (FAURECIA), an industrial gas expert with a long history related to hydrogen and a complementary end-user of tanks for hydrogen supply and refuelling station operations (AIR LIQUIDE).

This core industrial team is limited in purpose to avoid possible future commercial conflicts of interests and backed up with top research expertise to address all the identified challenges: an innovation centre for material research with important tank scale testing capacity (CSM), a technology centre in the fields of composite materials, manufacturing, automation, and testing (SIRRIS), academic teams with strong experience of composite materials and non-destructive testing (NTNU) and of thermo-mechanical materials behaviour under fire aggression (CNRS) and a technical centre with an innovative recycling technology for thermoplastic composites (CETIM-CERMAT).

Parent Programmes:

H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Other programmes: FCH-01-3-2018 Strengthening of the European supply chain for compressed storage systems for transport applications

Lead Organisation:

Faurecia Sièges D'automobile

Address:
2 RUE HENNAPE
92000 NANTERRE
France

Organisation Website:
http://www.faurecia.com

EU Contribution: €427,694

Partner Organisations:

Cetim Grand Est

Address:
21 RUE DE CHEMNITZ
68068 MULHOUSE
France

EU Contribution: €157,688

Sirris Het Collectief Centrum Van De Technologische Industrie

Address:
BOULEVARD AUGUSTE REYERS 80
1030 BRUXELLES
Belgium

Organisation Website:
http://www.sirris.be

EU Contribution: €474,188

Centre National De La Recherche Scientifique

Address:
3 rue Michel-Ange
75794 PARIS
France

Organisation Website:
http://www.cnrs.fr

EU Contribution: €260,615

Covess Nv

Address:
MONNINXSTRAAT 52
3510 HASSELT
Belgium

EU Contribution: €618,393

L Air Liquide Sa

Address:
QUAI D ORSAY 75
75007 PARIS 07
France

Organisation Website:
http://www.airliquide.com

EU Contribution: €247,903

Norges Teknisk - Naturvitenskapelige Universitet

Address:
Hogskoleringen 1
7491 TRONDHEIM
Norway

Organisation Website:
http://www.ntnu.no/

EU Contribution: €366,605

Rina Consulting - Centro Sviluppo Materiali Spa

Address:
VIA DI CASTEL ROMANO 100
00128 ROMA
Italy

Organisation Website:
http://www.c-s-m.it

EU Contribution: €300,875

Technologies:

Fuel cells and hydrogen fuel
Hydrogen storage system

Development phase: Research/Invention

STRIA Roadmaps:
Transport electrification, Vehicle design and manufacturing, Low-emission alternative energy for transport

Transport mode: Multimodal transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Environmental/Emissions aspects, Decarbonisation

Geo-spatial type: Other