Hydrogen Europe:
European Hydrogen & Fuel cell Project Database

Project THOR

Thermoplastic Hydrogen tanks Optimised and Recyclable

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 modeling 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 refueling 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 center for material research with important tank scale testing capacity (CSM), a technology center in the fields of composite materials, manufacturing, automation, and testing (SIRRIS), academic teams with strong experience of composite materials and nondestructive testing (NTNU) and of thermo-mechanical materials behavior under fire aggression (CNRS) and a technical center with an innovative recycling technology for thermoplastic composites (CETIM-CERMAT).

Funding

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Project partners

Coordinator :

CNRS - Centre National de la Recherche Scientifique

Partners :

L'AIR LIQUIDE S.A

NTNU - Norwegian University of Science and Technology

CETIM GRAND EST

COVESS NV

ECOLE NATIONALE SUPERIEURE DE MECANIQUE ET D'AEROTECHNIQUE

RINA CONSULTING - CENTRO SVILUPPO MATERIALI SPA

SIRRIS HET COLLECTIEF CENTRUM VAN DE TECHNOLOGISCHE INDUSTRIE

UNIVERSITE DE POITIERS

Sub project(s)

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