

SH₂APED

STORAGE OF HYDROGEN: ALTERNATIVE PRESSURE ENCLOSURE DEVELOPMENT



Project ID	101007182
PRR 2024	Pillar 3 – H ₂ end uses: transport
Call topic	FCH-01-1-2020: Development of hydrogen tanks for electric vehicle architectures
Project total costs	EUR 1 993 550.00
FCH JU max. contribution	EUR 1 993 550.00
Project start - end	1.1.2021–30.9.2024
Coordinator	Plastic Omnium Advanced Innovation and Research, Belgium
Beneficiaries	Bundesanstalt für Materialforschung und -prüfung, Misal SRL, OMB Saleri SpA, Optimum CPV, University of Ulster

<https://sh2aped.eu/>

PROJECT TARGETS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?	SOA result achieved to date (by others)	Year for re-reported SOA result
Project's own objectives	Low-cost process for liner	€	1 million	1 million		3 million	2021
	Burst pressure (R134)	MPa	> 157.5	170	✓	157	2022
	Hydraulic pressure cycle test, 87.5 MPa at 20 °C	number of cycles	22 000	> 22 000		Not published	Not published
	H ₂ storage volume of estimated design space	%	> 45	43		41	2021
	Cost of tank system	€/kgH ₂	400	> 580		N/A	2022
	Permeation	Ncm ³ /l/h at 55 °C	-	Not yet available		N/A	N/A

PROJECT AND GENERAL OBJECTIVES

The goal of the SH₂APED project is to develop and test at technology readiness level 4 a conformable and cost-effective 70 MPa hydrogen storage system with increased efficiency and exceptional safety performance.

NON-QUANTITATIVE OBJECTIVES

Regarding certification procedures, the project aims to contribute to the revision of regulations.

PROGRESS AND MAIN ACHIEVEMENTS

- The first design of the assembly has been finalised (several types are available). The vessel design has also been completed and made available:
 - vessel design;
 - manifold and thermal pressure release device design;
 - vessel prototypes.
- System testing of the model's reaction to fire is in progress.

FUTURE STEPS AND PLANS

Frame design is ongoing.