Press release
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Innovation / Logistics / Hydrogen

ROAD TRHYP: a strategic partnership to reduce the carbon footprint of hydrogen transport

- *SEGULA Technologies is actively participating in the European ROAD TRHYP project, an initiative led by Air Liquide, supported by the European Union and funded by the Clean Hydrogen Joint Undertaking.*

- *This key project for logistics and environmental performance aims to optimise hydrogen transport by increasing the storage capacity of trucks in order to reduce their number on the roads and, consequently, their environmental impact.*

The ROAD TRHYP project aims to optimise hydrogen transport logistics. (photo: ©Air Liquide).

As part of the European ROAD TRHYP project led by Air Liquide, SEGULA Technologies and its partners **are rethinking hydrogen transport**. The aim is to optimise logistics and significantly reduce the costs and carbon footprint of hydrogen transport.

ROAD TRHYP is therefore fully in line with the objectives of the European Green Deal, which aims to make hydrogen an essential energy carrier by 2030.

Launched in 2023, the project has already led to **three promising innovations**:

- **1st innovation: optimisation of hydrogen gas tube assembly**

As part of the project, SEGULA Technologies has designed **a new architecture for assembling and maintaining hydrogen gas tubes** within MEGC (*Multiple Element Gas Containers*). This innovative device strengthens the mechanical integration of high-pressure tanks, while increasing their storage density. This improved architecture reduces the number of trips required to deliver the same amount of hydrogen by up to 38%, resulting in a significant reduction in CO_2 emissions (up to 28% over 500 km).

- **2nd innovation: a more flexible container architecture**

The project also innovates by offering a **new modular and segmented container architecture** to facilitate the adaptation of the transport system to the varied needs of distribution sites, while improving payload capacity. **The result is a significant reduction in transport, maintenance and operating costs, as well as improved infrastructure profitability.**

Thanks to the use of cutting-edge materials, this new architecture will enable a cost of €400/kg of stored hydrogen to be achieved, compared to €650-700/kg for current solutions. In addition, by supplying high-pressure hydrogen (700 bar), ROAD TRHYP reduces the size and operating time of compressors by around 20%. The solution also reduces the cost of decontaminating pipes.

- **3rd innovation: an advanced safety system to ensure risk-free transport**

SEGULA Technologies, responsible for designing the trailer, is developing **an innovative valve and ventilation system to enhance the safety of hydrogen gas transport**. This device ensures controlled ventilation of the compartments and incorporates safety measures that comply with the most demanding standards. The first tests on 700-bar hydrogen tubes, scheduled for early 2026, will enable the fire resistance of the cylinder to be assessed, the appropriate mitigation barriers to be defined and, therefore, the reliability of the system under real conditions to be ensured. At the same time, the teams are modelling failure scenarios to anticipate risks and reinforce the robustness of the design.

European recognition for a strategic project

The three innovations resulting from the ROAD TRHYP project have been identified by the European Commission as high-potential technologies and included in **the Innovation Radar**, a tool that aims to promote the results of EU-funded projects and accelerate their access to the market. This recognition demonstrates the scientific and industrial relevance of the project, which **is helping to structure the European hydrogen value chain** for more sustainable mobility and more efficient logistics.

The goal is to bring the solution to market by 2030.

[Key figures]

Estimated gains with ROAD TRHYP:

- +66% transport capacity thanks to 700 bar compression
- -38% fewer journeys thanks to V-type tubes
- -28% CO_2 emissions over a 500 km journey (-9% over 150 km)
- -40% transport cost: towards a cost of £400/kg of stored hydrogen

PHOTO

Click on the photo to download it in high resolution:

The ROAD TRHYP project aims to optimise logistics and significantly reduce the costs and carbon footprint of hydrogen transport. (©Air Liquide)

About SEGULA Technologies

SEGULA Technologies is a global engineering group serving the competitiveness of all major industrial sectors: automotive, aerospace, energy, rail, naval and life sciences. Present in more than 30 countries, with 140 locations worldwide, the Group prioritises close relationships with its customers thanks to the skills of its more than 15,000 employees. As a leading engineering firm that places innovation at the heart of its strategy, SEGULA Technologies carries out large-scale projects, ranging from studies to industrialisation and production.
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