Liquid Hydrogen Refuelling Station for Aviation: Insights from DELHYVEHR's project

Florian Jalia: R&D Project Manager[1], Rémi Linotte: R&D Engineer[1], Stefano Minellono: R&D Engineer[1], Hamza Filali: Liquefaction Lab Manager[1], FD, Tobias Weide, Project Manager[2]

[1] *ENGIE Lab CRIGEN : 4, Rue Joséphine Baker, 93100 Stains, France*

[2] *European Research Institute for Gas and Energy Innovation, Rue Belliard 40, 1040 Brussels, Belgium*

EGATEC2024 The 6th European Gas Technology Conference

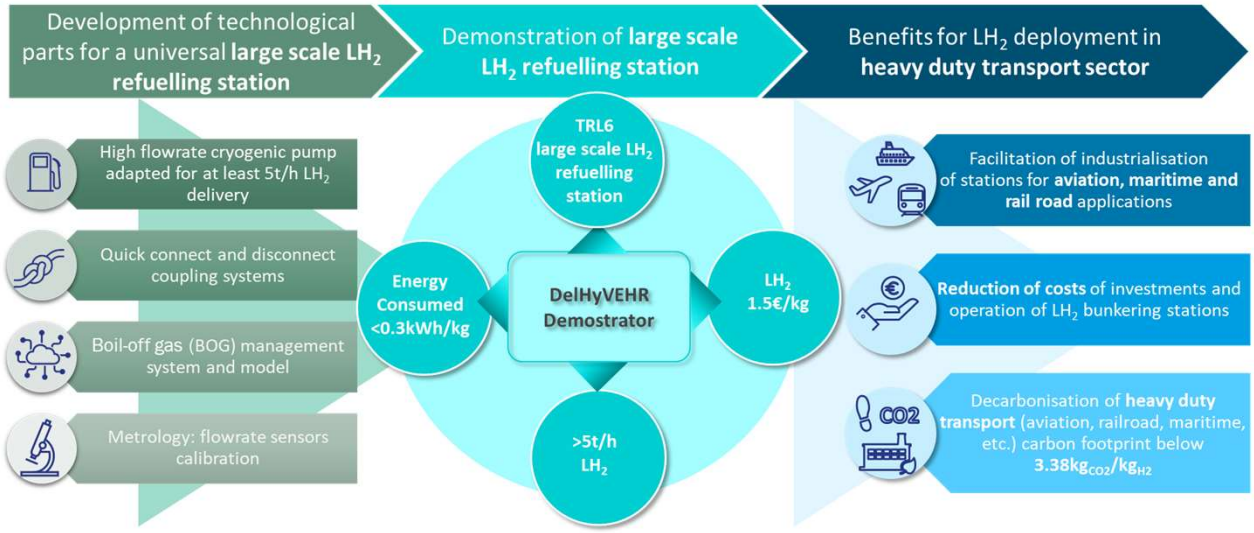
The European Research Project **DeLHyVEHR**, co-funded by the European Union, the Swiss State Secretariat for Education, Research and Innovation (SERI), and the UK Research and Innovation, is coordinated by ENGIE and develops a liquid hydrogen **(LH_2) high-rate bunkering station** with a refueling flowrate **>5TPH** and **zero boil-off losses** mainly dedicated to **aviation** but also to **maritime** and **railroad** applications. The project is expected to achieve its **demonstration by end 2026**. Alongside with market maturity **the cost** of distribution is expected to be **divided by 2 by 2030**.

High-Rate LH_2 Distribution
Dedicated to Heavy Duty Mobilities

Demonstration TRL4 →TRL 6
From prototypes to full-scale station

Partnership & Network
With 13 partners from 6 countries and 9 end-users

Project Goals and Impact



The successful demonstration of the **DeLHyVEHR** LHRS will mark a significant advancement in LH_2 refuelling technology, with the potential to halve distribution costs by 2030. This will catalyse the broader adoption of LH_2 in heavy-duty transport sectors, paving the way for a sustainable and economically viable zero-emission future. **DeLHyVEHR** represents a major leap in developing the necessary infrastructure for LH_2-fueled transportation. By resolving current technological gaps and demonstrating practical, scalable solutions, this project contributes decisively to the decarbonization of critical mobility sectors.

Project-Team and Responsibilities

In the **DelHyVEHR** project, **ENGIE** leads overall project management and the development of Boil-Off Gas (BOG) management systems, ensuring the project aligns with industry standards and integration strategies. **FIVES** focuses on developing and commercializing a high flow-rate cryogenic pump, while **Absolut System** takes on the development and future commercialization of the BOG management system. **CESAME** is tasked with developing advanced metrology systems, essential for precise fuel handling. **TRELLEBORG** from France and the UK leads in creating robust loading and dispensing systems, including secure coupling mechanisms. **ArianeGroup** is responsible for the integration and demonstration of the large-scale hydrogen refuelling station (LS-LHRS) and contributes to the station's manufacturing and assembly processes. **Elengy** explores the dual usage and repurposing of LNG import terminals to support hydrogen technologies. **DEKRA** provides regulatory guidance to ensure safe operation according to international standards, while **Benkei**, a consultancy firm, aids in EU project management to keep the project compliant and effective. Additional contributions come from **Ulster University**, which supports hydrogen safety management, and **EPG**, conducting technical, economic, and environmental studies to assess and enhance the project's performance and replicability. **ERIG** is taking care of the EU wide communication and dissemination of the project and its results. Together, these partners push forward the development and commercialization of comprehensive solutions for large-scale hydrogen fuelling infrastructure.

Clean Hydrogen Partnership

The project is supported by the Clean Hydrogen Partnership and its members.

Co-funded by the European Union

Project funded by
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

UK Research and Innovation