

H2Haul Hydrogen Fuel Cell Trucks for Heavy Duty Zero Emissions Logistics

Constantin Tricaud
Consultant, ERM



www.h2haul.eu



Constantin.Tricaud@erm.com

//EU HYDROGEN
RESEARCH DAYS
15-16 NOVEMBER



ERM

Sustainability is our business



Co-funded by
the European Union

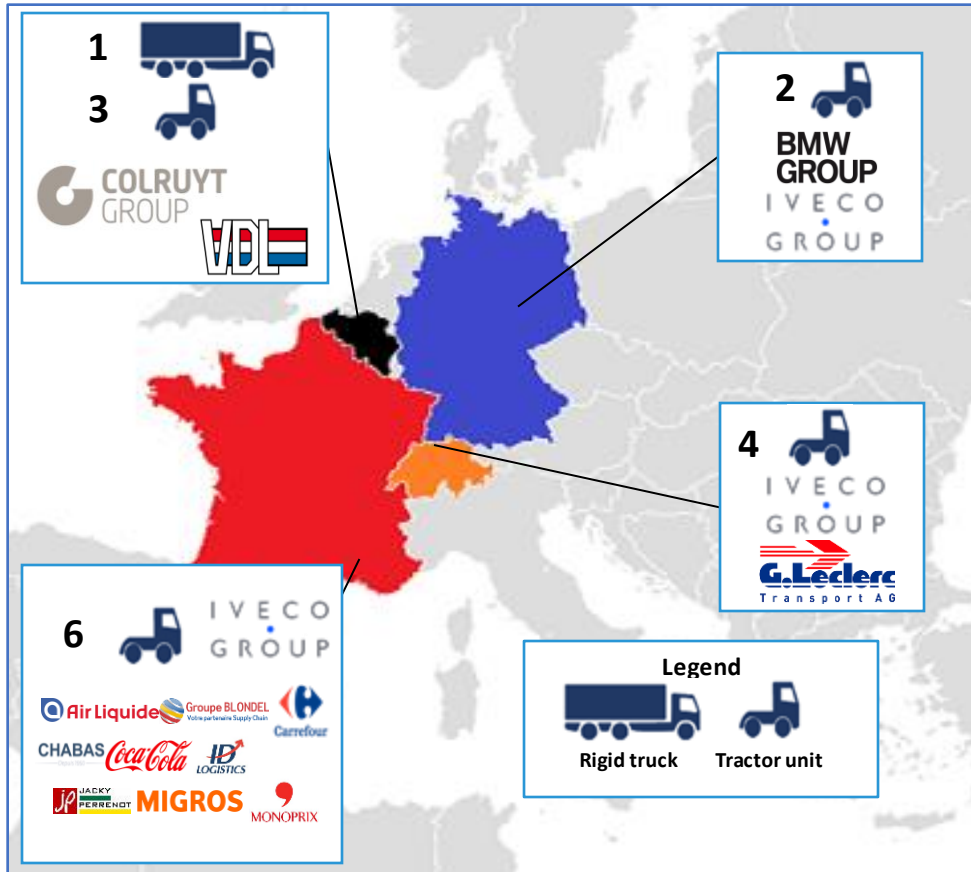
//EU HYDROGEN
RESEARCH DAYS
15-16 NOVEMBER

Project Overview

- Call year: 2018
- Call topic: FCH-01-1-2018 - Large Scale Demonstration of H2 fuelled HD Trucks with High-Capacity Hydrogen Refuelling Stations (HRS)
- Project dates: February 2019 - December 2025
- % stage of implementation 01/11/2023: 60 %
- Total project budget: 28,110,126.80 €
- Clean Hydrogen Partnership max. contribution: 12,000,000 €



Project Summary



Objectives

- Develop **long-haul heavy-duty (26-44t) fuel cell trucks** that meet customers' requirements in a range of operating environments
- **Homologate and test new fuel cell trucks**
- **Install hydrogen refuelling infrastructure** at each site and provide high reliability hydrogen supplies that maximise environmental benefits
- **Achieve >2 million kilometres** of day-to-day driving, proving the viability of the technology
- **Monitor the performance of the vehicles and infrastructure** to provide evidence on the availability, efficiency, and environmental benefits
- Develop the business case to **prepare the European market for further roll-out** of fuel cell trucks

H2Haul Delivery Phases



Specification of **truck requirements** and customisation or **build of vehicles**.



Assessment of proposed HRS sites. **Preparation** or expansion of **HRS**.



Launch of hydrogen fuel cell vehicles. Commence **real world operations** and maintenance. Scale-up of tests to **challenge performance** capabilities.



Continuous **collection, monitoring** and **analysis** of operational data, controlled in line with the **data management** principles.



Evaluation of performance and results. **Sharing of information** to consortium partners and selected end users throughout the project to leverage **learnings and best practices** to influence future developments.

Progress/Actions - Truck Development



Achievement to-date

Project start



H2Haul trucks start operation

Key Progress

- Development of fuel cell truck specifications & designs
- Work on functional prototype fuel cell systems integrated into the trucks for testing
- Truck construction, testing & homologation activities ongoing and undergoing final stages prior to delivery to customers and operation early 2024
- Official opening of the IVECO Ulm manufacturing site
- Unveiling of the H2Haul FC trucks at the IAA (IVECO in 2022, VDL in 2023)

IVECO
GROUP



Progress/Actions - HRS Development



Achievement to-date

Project start



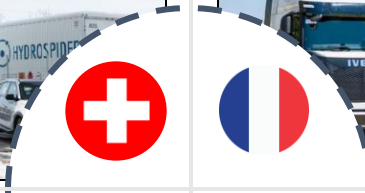
5 HRS
deployed in
H2Haul

25%

50%

75%

Rothenburg
In operation since 2021
Refuelling trucks at 350 bar



Fos-sur-Mer
In operation since 2023
Refuelling trucks at 700 bar

Ollignies
In operation since 2023
Refuelling trucks at 350 bar



Nuremberg & Leipzig
Under development, expected
commissioning 2024
Refuelling trucks at 700 bar

Risks, Challenges and Lessons Learned

Risks and Challenges:

350 bar vs 700 bar refuelling



Routes & mission profiles: 250-600km



Customer requirements (e.g. specific trailer)



Lessons Learned:

- Collaboration with other industry projects is essential:

PRHYDE	IMMORTAL	STASHH	AEVETO
Refuelling protocol	Durability and lifetime of heavy-duty FC stacks	Standardisation of FC modules for heavy-duty	Cluster of EU electric and H2 heavy-duty truck projects

- Divergent country-specific HRS planning/permitting procedures and approvals
- Built-in HRS redundancy enables stable freight operations
- High utilisation a key component for heavy-duty business case



//EU HYDROGEN
RESEARCH DAYS
15-16 NOVEMBER

Communication and Dissemination Activities



Hydrogen Europe
Communication lead



WaterstofNet
ERM
Sustainability is our business
Communication support partners



[Website](#)



[Linkedin](#)



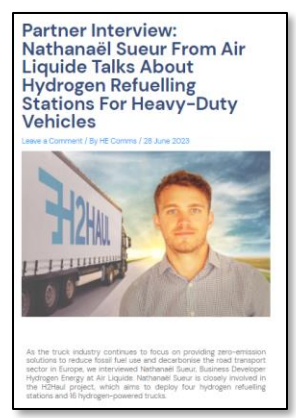
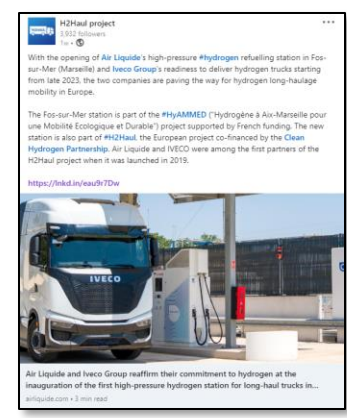
[X \(ex Twitter\)](#)



Events



Observer Group





//EU HYDROGEN
RESEARCH DAYS
15-16 NOVEMBER



Co-funded by
the European Union