H_2HAUL

HYDROGEN FUEL CELL TRUCKS FOR HEAVY-DUTY, ZERO EMISSION LOGISTICS

Project ID	826236
PRR 2024	Pillar 3 – H_2 end uses: transport
Call topic	FCH-01-1-2018: Large scale demonstration of H_2 fuelled HD trucks with high capacity hydrogen refueling stations (HRS)
Project total costs	EUR 28 110 126.80
FCH JU max. contribution	EUR 12 000 000.00
Project start - end	1.2.2019–31.12.2025
Coordinator	Environmental Resources Management Ltd, United Kingdom
Beneficiaries	Air Liquide Advanced Business, Air Liquide Advanced Technologies SA, Air Liquide France Industrie, Bayerische Motoren Werke AG, DATS 24, Element Energy Ltd, ElringKlinger AG, EOLY, Environmental Resources Management France, Etablissementen Franz Colruyt NV, FPT Industrial SpA, FPT Motorenforschung AG, H2 Energy AG, Hydrogen Europe, Hydrogenics GmbH, IRU Projects ASBL, Iveco SpA, Plastic Omnium New Energies Wels GmbH, PowerCell Sweden AB, Robert Bosch GmbH, Sphera Solutions GmbH, TotalEnergies Marketing Deutschland GmbH, Union internationale des transports routiers, VDL Enabling Transport Solutions BV, VDL Special Vehicles BV, WaterstofNet VZW

https://www.h2haul.eu/

PROJECT AND GENERAL OBJECTIVES

H_2Haul brings together two major original equipment manufacturers for European trucks (Iveco and VDL) and the fuel cell stack/system suppliers (Plastic Omnium, Bosch and PowerCell) to develop and demonstrate fleets of heavy-duty trucks in day-to-day commercial operations in four sites across four countries. The overall objective of H_2Haul is to prove that hydrogen trucks can be a practical zero-emission and zero-carbon solution for much of Europe's trucking needs and, in doing so, pave the way for the commercialisation of fuel cell trucks in Europe. The project is currently at the end of the planning and pre-deployment phase, and all trucks and hydrogen refuelling stations (HRSs) funded by the project are expected to be deployed in the next 12 months.

NON-QUANTITATIVE OBJECTIVES

- H_2Haul aims to develop long-haul heavy-duty (26 t and 44 t) fuel cell trucks that meet customers' requirements in a range of operating environments. The trucks' design and specifications are being finalised in alignment with specific customer requirements and mission profiles. The objectives are expected to be met.
- The project aims to homologate three fuel cell truck types to certify that they are safe to use on Europe's roads. Original truck equipment manufacturers are working closely with hydrogen safety experts and the relevant certification bodies to secure all necessary safety approvals for using the trucks on public roads in Europe.
- The project aims to develop the business case for the further roll-out of heavy-duty fuel cell trucks. H_2Haul will provide a valuable database of real-world performance information and insights into the next steps required for the commercialisation of this sector. The business case is to be developed based on fuel cell truck designs that meet customers' needs. The operation of fuel cell trucks and the subsequent data collection will highlight the costs of the technology. Analyses will be carried out to highlight the economics of the more ambitious deployment of many tens of vehicles or more.
- H_2Haul aims to prepare the European market for the further roll-out of fuel cell trucks through (i) developing innovative commercial models and (ii) disseminating information from the project to a wide audience of relevant stakeholders. H_2Haul's dissemination activities will share key findings with relevant audiences to prepare the market for the wider roll-out of fuel cell trucks on a commercial basis. Communication activities in the first and second years of the project stimulated significant interest from relevant audiences.

PROGRESS AND MAIN ACHIEVEMENTS

- The fuel cell truck technical specifications were finalised. Data were gathered on the technical specifications of the fuel cell trucks and HRSs.
- All three project-funded HRSs were deployed.
- The second observer group meeting took place.

FUTURE STEPS AND PLANS

- H_2Haul will deploy the VDL and Iveco trucks. The VDL trucks will be delivered to Colruyt in July 2024 to start commercial operation. The Iveco beta trucks are currently being assembled with fuel cells from Bosch and will serve as prototypes for the 12 gamma trucks that will be delivered to end users in France, Germany and Switzerland between May and June 2024.
- The H_2Haul team will continue their high-profile dissemination and lobbying work through attending and delivering presentations at key conferences and events. Other stakeholder engagement activities will also continue. The results will be disseminated extensively.

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PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives and MAWP addendum (2018–2020)	Operational period of trucks	months	With the period of operation including the ramp-up phase: ≥ 24	
	Distance travelled by trucks	km	≥ 30 000 per truck per year, on average per site	
	Availability of trucks	%	> 90 % for the fleet after an initial ramp-up phase lasting a maximum of 6 months	
	Specific fuel consumption of trucks	kg / 100 km	Rigid truck at 30–50 % load, for inner city delivery (< 25 km/h on average): < 7.5; tractor with semi-trailer at 30–50 % load, for long-haul delivery (> 65 km/h on average): < 8.5	
	Availability of stations (by end of project)	%	99	
	MDBF	km	> 2 500	
	WTW CO_2 emissions	$kgCO_2$/km	$kgCO_2$/km (per vehicle type; average across fleet)	
	Speed of hydrogen dispensing	kg/min	> 2.5	
	Cost of hydrogen dispensed to HRS	€/kg	7.5	
	Amount of hydrogen dispensed to trucks deployed in the project	kg/year	> 2 500	

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