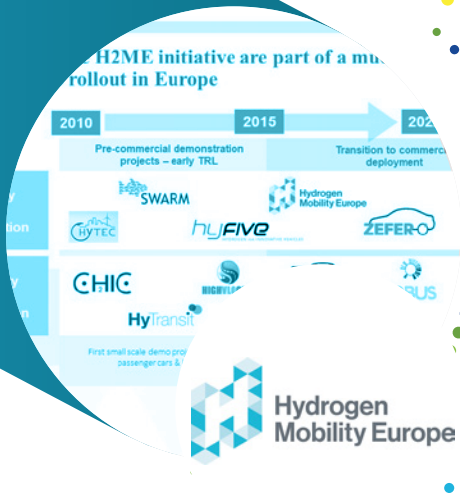
H2ME 2

HYDROGEN MOBILITY EUROPE 2



Project ID:	**700350**
PRD 2023:	**Panel 3 – H2 end uses – transport**
Call topic:	**FCH-03.1-2015: Large scale demonstration of hydrogen refuelling stations and FCEV road vehicles – including buses and on site electrolysis**
Project total costs:	**EUR 100 015 655.40**
Clean H_2 JU max. contribution:	**EUR 34 999 548.50**
Project period:	**1.5.2016–31.12.2023**
Coordinator:	**Element Energy Limited, United Kingdom**
Beneficiaries:	ERM France, HYGO – Hydrogene Grand Ouest, R-Hynoca, Hysetco, Reseau GDS, Toyota Norge AS, Toyota Danmark AS, Mercedes-Benz AG, McPhy Energy Italia Società a Responsabilità Limitata, Element Energy, Stichting Cenex Nederland, B. Kerkhof & ZN BV, Tech Transports Compagnie, Air Liquide France Industrie, Alphabet Fuhrparkmanagement GmbH, Linde Gas GmbH, Islenska Vetnisfelagid EHF, Communauté Urbaine du Grand Nancy, Stedin Diensten BV, HYPE, H2 Mobility Deutschland GmbH & Co. KG, HYOP AS, Brintbranchen, New Nel Hydrogen AS, Compagnie Nationale du Rhone SA, Hydrogene De France, Honda R&D Europe (Deutschland) GmbH, Gnvert SAS, AGA AB, Symbio, Air Liquide Advanced Technologies SA, Elogen, Société d'économie mixte des transports en commun de l'agglomération nantaise (Semitan), Ministerie van Infrastructuur en Waterstaat, Intelligent Energy Limited, Manufacture Francaise des Pneumatiques Michelin, ITM Power (Trading) Limited, CENEX – Centre of Excellence for Low Carbon and Fuel Cell Technologies, Københavns Kommune, hySOLUTIONS GmbH, McPhy Energy, Mercedes-Benz Fuel Cell GmbH, WaterstofNet VZW, Nissan Motor Manufacturing (UK) Limited, Air Liquide Advanced Business, Renault Trucks SAS, NEL Hydrogen AS, Icelandic New Energy Ltd, Eifer Europäisches Institut für Energieforschung EDF KIT EWIV, Stedin Netbeheer BV, Renault SAS, Bayerische Motoren Werke AG, Audi AG, Open Energi Limited, Daimler AG, The University of Manchester

https://h2me.eu/

PROJECT AND OBJECTIVES

H2ME 2 brings together actions in 10 countries in a 7-year collaboration to deploy 20 hydrogen refuelling stations (HRSs) and around 1 000 vehicles. The project has performed a large-scale market test of a large fleet of fuel cell electric vehicles operated in real-world customer applications across multiple European regions. In parallel, it has demonstrated that the hydrogen mobility sector can support the wider European energy system via electrolytic hydrogen production.

NON-QUANTITATIVE OBJECTIVES

- A minimum of 1 000 fuel cell vehicles and 20 HRSs are to be deployed by the end of the project.
- The project aimed to demonstrate the electrolyser-integrated HRS operating in grid balancing. H2ME 2 included a dedicated work package to assess how electrolytic hydrogen production in the mobility sector can link to the wider energy system.
- Multiple original equipment manufacturers (OEMs) supplied vehicles, including cars and utility vehicles. H2ME 2 aimed to deploy cars and light-duty vans from OEMs including Mercedes, Honda, Symbio (Renault and Stellantis), Hyundai and Toyota.
- H2ME 2 aimed to ensure the cross-fertilisation of knowledge acquired in the project. A dedicated work plan and a dissemination and exploitation plan were developed to achieve this. Three observer countries are included in the coalition.

PROGRESS AND MAIN ACHIEVEMENTS

- There were c. 800 vehicles and 15 HRSs in operation as of Q1 2023 (in the H2ME 2 project alone).
- Demonstration in real-world operation has been under way since 2015 – jointly with H2ME – for over 1 100 vehicles from five OEMs (Mercedes, Honda, Hyundai, Symbio and Toyota) across 10 countries and c. 50 HRSs from 10 suppliers across six countries (Denmark, France, Iceland, the Netherlands, Sweden and the United Kingdom).
- The demonstration of positive business cases under H2ME 2 has led to further commitments from partners to expand fleets in Denmark, Germany and France.
- The project is building a rich dataset for Europe, jointly with H2ME. Since 2015, 25 million km have been driven and 377 t of H_2 distributed in 148 600 events (figures from November 2022).

FUTURE STEPS AND PLANS

- All 20 planned HRSs are expected to have been commissioned and be in operation by the end of the project. The commissioning of new HRSs has been affected by the COVID-19 pandemic and by the lack of experience at the local level for reviewing and approving permits.
- Over 1 100 vehicles are planned for deployment in H2ME 2 by the end of the project. The deployment of vehicles has been affected by the COVID-19 pandemic and its restrictions (lockdowns, curfews), which have delayed delivery and affected demand.
- The project has built a solid and growing base of operational data from vehicles and HRSs, and undertaken further fact-based analysis of vehicles' and HRSs' performances.
- Prior to H2ME, there were few large deployments of fuel cell hydrogen vehicles in Europe. The H2ME projects have contributed to the deployment of one third of fuel cell hydrogen vehicles on the road and 20 % of operational HRSs in Europe. In addition, H2ME has encouraged further activity in other vehicle segments (including buses and trucks) by supporting the deployment of HRSs.
- Across H2ME and H2ME 2, c. 100 reports have been prepared, with the majority publicly available on the project's website.

QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?	SoA result achieved to date (by others)	Year of SoA target
Project's own objectives, MAWP addendum (2018–2020) and AWP 2015	**HRSs**						
	HRS availability	%	98	96	⚙	98	2017
	Min. HRS operation	months	36	58	✓	32	
	Hydrogen purity	%	99.99	99.99	✓	99.99	
	Fuel cell vehicles						
	Min. vehicle operation during the project	months	36	60	✓	12	2017
	Vehicle availability	%	98	≈ 100	✓	98	

Clean Hydrogen Partnership
Co-funded by the European Union