

Hydrogen For Innovative Vehicles

FCHJU Grant: 621219

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PROJECT OVERVIEW

- **Hydrogen for Innovative Vehicles**
- **Topic 1.1** Large-scale demonstration of road vehicles and refuelling infrastructure VI
- April 2014 - September 2017
- **Budget: € 38,418,137 with FCH JU contribution: € 17,970,566**
- The overall purpose of project is to deploy **110 vehicles and 6 refuelling stations in 3 European regions** and tackle all of the final technical and social issues which could prevent the commercial roll-out of hydrogen vehicles and refuelling infrastructure across Europe. We are currently 20% in the project.



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PROJECT TARGETS AND ACHIEVEMENTS

Status before project	MAIP target	Project Target	Current status/ achievements	Expected final achievement
Light Duty Vehicles (mainly cars) at 3 additional sites with 3 new stations	~ 500	Ambition to deploy 110 new FC passenger cars and six new HRS in three clusters across Europe	30 vehicles deployed. 5 sites in final discussions. 1 site under construction	100%
Appropriate H2 supply chain to match Transport, Stationary and Early Markets requirements.	10 - 20% of general H2 demand should be produced via carbon free processes	>50% of hydrogen to be sourced from renewables	On-site hydrogen production via water electrolysis using renewable electricity	100%

PROJECT TARGETS AND ACHIEVEMENTS

Status before project	AIP target	Project Target	Current status/ achievements	Expected final achievement
Vehicle Operation lifetime	>2,000 hrs	>2,000 hrs initially, min. 3,000 hrs as project target	Too early in the Project to say	100%
Minimum vehicle operation during the project	12 months or 10,000 km	12 months or 10,000 km	Vehicles in operation for more than 4 months	100%
Vehicle availability	95%	95%	So far target reached	100%
Tank-to-wheel	>40% NEDC	>40% NEDC	-	100%

PROJECT TARGETS AND ACHIEVEMENTS

Status before project	AIP target	Project Target	Current status/ achievements	Expected final achievement
Availability of refuelling	98% measured as usable operation time	98% measured as usable operation time of the whole station	-	100%
HRS refuelling capacity	min. 50kg/day at start of project,	All HRS will have a capacity of >80kg/day initially and the network in each cluster will exceed the 200kg/day target	HRS design and deployment activities are underway for each cluster	100%

PROJECT TARGETS AND ACHIEVEMENTS

- HyFIVE will lead to considerable improvement in the state of the art for fuel cell passenger cars deployed in Europe. These vehicles will be the closest to market vehicles deployed to date in Europe in terms of technical readiness and cost.

The Consortium Focus for next year is on:

- Organising more test drives across the three clusters to identify end users and place more FCEVs orders.
- Finalising discussions on the sites for London and Copenhagen and beginning the build of the stations.
- Using milestones in the project to disseminate information about it to local and national government, decision makers, potential early adopters and members of the public.

RISKS AND MITIGATION

- **Risk:**

- Delays in design and construction; HRS siting permitting issues

- **Mitigation:**

- The six new refuelling stations will be highly modular in nature and make use of standardised equipment, we do not expect delays in the construction and delivery of the stations.
- Each of the HRS deployment partners (ITM Power, OMV, and CHN) have a solid experience in the HRS planning permission process, having previously deployed several HRS in a number of European and national projects in each of the HyFIVE countries.
- If there are delays in identifying the sites the vehicles will need to rely on the existing network of stations and/or temporary back-up solutions to ensure the smooth operation of the HyFIVE vehicles and a maximum refuelling availability across the local networks.

RISKS AND MITIGATION

- **Risk:**

- Inability to place vehicles with end users

- **Mitigation:**

- The end-user identification is facilitated by the way the HyFIVE budget is structured, which allows the OEMs to offer lower cost vehicles to the end users than under previous projects.
- Partners started the end-user identification process during the project negotiation phase in each city / region, thus well in advance of the project start.
- The OEMs will collaborate with their local dealers and distributors to help in end user selection. These deployments will be supported by the cluster coordinators.

SYNERGIES WITH OTHER PROJECTS AND INITIATIVES

- **Copenhagen:**

The city has been the main focus of Denmark's hydrogen and fuel cell activities and is a partner in the HyTEC project, which includes ten FCEVs and three new refuelling stations.

- **London:**

The three new HRS delivered through HyFIVE will expand the existing refuelling infrastructure to create an integrated and strategic network for hydrogen transport users in the city. HyFIVE will make use of stations deployed through CHIC and HYTEC.

- **Southern Cluster:**

Bolzano is one of the five cities partnering in the FCH JU-funded CHIC project by deploying five FC buses and one hydrogen refuelling station. This station, operated by IIT and capable of both 350 bar and 700 bar refuelling, will be made available to HyFIVE vehicles.

HORIZONTAL ACTIVITIES

- **Refuelling infrastructure:**

Partners will collaborate in the development of training materials for three groups:

- First responders - require information on how to deal with incidents at the HRS.
- Vehicle users - require easy to use information on the fuelling procedures and specific health and safety issues around the use of unmanned HRS.
- Technicians - involved in installing and maintaining the HRS.

- **Vehicles:**

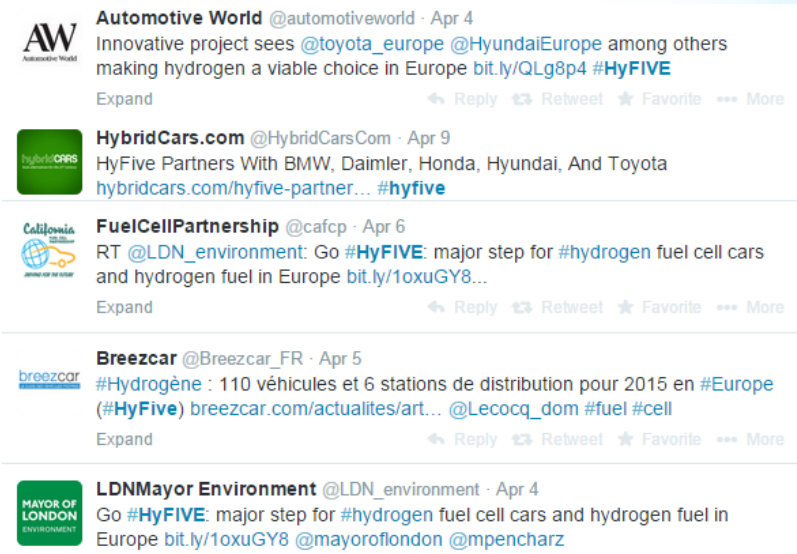
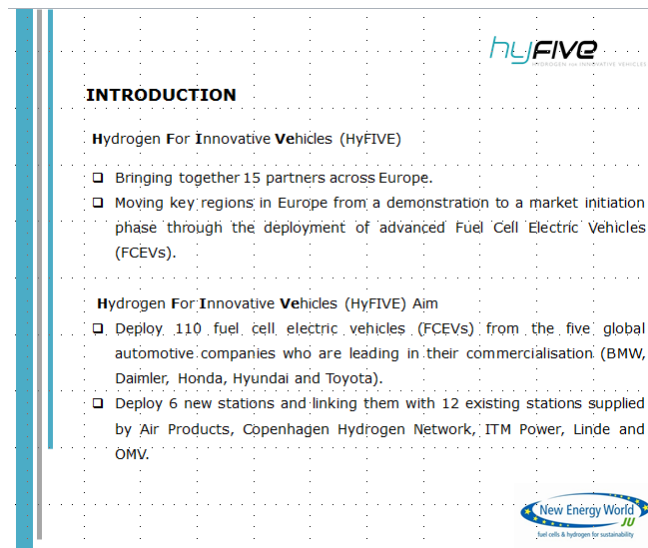
In each of the clusters where the OEMs deploy vehicles, they will establish / adapt after-sales support infrastructure. This infrastructure will not only support the vehicles deployed in this project, but will also act as the start of the full commercial supporting service which is required for the full commercial roll-out stage.

DISSEMINATION ACTIVITIES



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- On average members of the consortium have attended 3 large events per month and have presented the project, transmitting key messages set out in the project's Communication Plan.
- Over 20 publications in regional newspapers and over 50 online articles.



EXPLOITATION PLAN/EXPECTED IMPACT

- HyFIVE will be a key aspect of the FCH JU's efforts to commercialise hydrogen technology across the transport and hydrogen production sectors.
- The HyFIVE vehicles represent a major step towards the affordable fuel cell vehicle which the sector requires and the large fleet of vehicles allows HRS operators to make investments to test a network of HRS.
- HyFIVE will place Europe at the forefront of fuel cell and hydrogen technologies worldwide by deploying vehicles and HRS on a scale and with a diversity of leading global OEMs which is comparable to any other deployment project occurring worldwide.
- Each of HyFIVE's partners has joined the project consortium and will be investing considerable resources in the project's activities in order to exploit the project's learning for their hydrogen transport activities and ultimately to secure a stake in the emerging hydrogen and FCEV market.