

PROJECT

## HYDRUS

### high-pressure HYdrogen booster for DistRibUted small-medium refuelling Stations

**Funding:** European (Horizon 2020)

**Duration:** Feb 2017 - Jul 2017

**Status:** Complete

**Total project cost:** €71,429

**EU contribution:** €50,000



[CORDIS RCN : 207943](#)

#### Background & policy context:

The market of hydrogen refuelling stations is expected to thrive, with more than 400 stations by 2023 in Germany alone. Hydrogen mobility is today the only reliable alternative to electric vehicles since it does not suffer the limits in autonomy and charging time affecting electric vehicles, opening promising perspective to decarbonise the transport mass-market.

A widespread geographic coverage of the refuelling infrastructure is an unavoidable step to boost the hydrogen mobility, but the main bottleneck in the realization of this target is currently the high cost of refuelling stations. New cost-effective technologies for development of small-medium refuelling stations are eagerly demanded to give the initiative the proper initial sustainability.

#### Objectives:

The HYDRUS is aimed at providing a breakthrough high-performance compressor and a flexible and modular architecture for the refuelling station enabling:

- limit the initial costs of investments;
- scale the size of the infrastructure by later addition of new modules;
- increase the resilience, reliability and security of the refuelling infrastructure, by significantly reducing the size (or potentially avoid) of the high-pressure storage.

The core of HYDRUS proposal is a "Hydraulic driven intensifier" booster, allowing

- Compression capacity above 90 MPa to cope with the new fuelling protocols set by the SAE J2609 guideline;
- High flow rate (200-600 Nm<sup>3</sup>/h) during refilling of vehicles to fulfil the customers' expectations of fuelling time in 3-5 minutes.

Our vision is to introduce a disruptive refuelling technology to make infrastructures more sustainable, safe and adaptable to evolving needs of H<sub>2</sub> mobility.

#### Methodology:

The feasibility study aims to assess the opportunities and risk, as well as to plan the activities necessary

- To industrialize Hydrus booster
- To validate the HYDRUS architecture refuelling infrastructure
- To test the potential target market to achieve a successful business exploitation

#### Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

**Lead Organisation:**

**Idro Meccanica Srl**

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Italy

**EU Contribution:** €50,000

**Technologies:**

Fuel cells and hydrogen fuel  
Hydrogen storage system

**Development phase:** Research/Invention

Transport

**STRIA Roadmaps:** electrification

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Environmental/Emissions aspects, Societal/Economic issues

**Geo-spatial type:** Other