



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project FERRET

A Flexible natural gas membrane Reformer for m-CHP applications

The potential for fuel CHP units in Europe as a large market in the future is in general well recognised. Although the size of this market is large and is undisputed when the cost targets of m-CHP units is reached, it is often overlooked that it is a very segmented market. All micro-CHP units, as new heating appliances, will have to be certified against the Gas Appliance Directive (90/396/CE). The latest legislation in Europe and some specific countries, which is expected will be adopted by other countries will lead to a broader range of natural gas specifications per country with larger differences of natural gas qualities. - And last and most important: the gas quality is allowed to change more rapidly in time. In future, more oxygen will be present in natural gas. Now, in Europe actions are taken (regulatory actions) to allow even more fluctuations of the gas composition in time over a day. This means that not only the fuel processor should be efficient in reforming NG to hydrogen, but should be also very robust and flexible, reducing the possibility of hot spots and low selectivity when the oxygen content increases. Within FERRET, we will design the reactor, balance of plant and revise the controls to allow the sudden change of natural gas specification that can be expected in the field in the coming years. According to the problems mentioned above, FERRET project will:

- Design a flexible reformer in terms of catalyst, membranes and control for different natural gas compositions.
- Use hydrogen membranes to separate pure hydrogen and help shifting all the possible H<sub>2</sub> production reactions towards the products, thus reducing side reactions.
- Scale up the new H<sub>2</sub> selective membranes and catalysts production
- Introduce ways to improve the recyclability of the membranes.
- Integrate the novel reforming in a CHP system
- Optimize of the BoP for the novel reforming CHP system
- Simulate and optimize of the reformer integration with the entire system.

## Project Information

**Type of project :** Research

**Timing :** 01/04/2014 > 31/03/2017

**Project website:** <http://www.ferret-h2.eu/>

**Project Budget :** 3.202.767 €

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## Funding

European Union through FCH JU: Grant agreement 621181 - [CORDIS link](#)

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## Project partners

**Coordinator :**

TECHNISCHE UNIVERSITEIT EINDHOVEN

**Partners :**

[TECNALIA](#)

[Polimi - Politecnico Milano](#)

[HyGear B.V.](#)

[JOHNSON MATTHEY PLC](#)

[ICI CALDAIE SPA](#)

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**Sub project(s)**

**Sub project 1**

**Country:** Netherlands

**Address:**

DEN DOLECH 2 5612 AZEINDHOVEN

**Sub project categories**

Research

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Project Id: 966

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