



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project HyGrid

Flexible Hybrid separation system for H₂ recovery from NG Grids

The key objective of the HyGrid project is the design, scale-up and demonstration at industrially relevant conditions a novel membrane based hybrid technology for the direct separation of hydrogen from natural gas grids. The focus of the project will be on the hydrogen separation through a combination of membranes, electrochemical separation and temperature swing adsorption to be able to decrease the total cost of hydrogen recovery. The project targets a pure hydrogen separation system with power and cost of < 5 kWh/kgH₂ and < 1.5 €/kgH₂. A pilot designed for 25 kg/day of hydrogen will be built and tested. To achieve this, HyGrid aims at developing novel hybrid system integrating three technologies for hydrogen purification integrated in a way that enhances the strengths of each of them: Membrane separation technology is employed for removing H₂ from the "low H₂ content" (e.g. 2-10 %) followed by electrochemical hydrogen separation (EHP) optimal for the "very low H₂ content" (e.g. <2 %) and finally temperature swing adsorption (TSA) technology to purify from humidity produced in both systems upstream. The objective is to give a robust proof of concept and validation of the new technology (TRL 5) by designing, building, operating and validating a prototype system tested at industrial relevant conditions for a continuous and transient loads. To keep the high NG grid storage capacity for H₂, the separation system will target the highest hydrogen recovery. The project will describe and evaluate the system performance for the different pressure ranges within 0.03 to 80 bar (distribution to transmission) and test the concept at pilot scale in the 6-10 bar range. HyGrid will evaluate hydrogen quality production according to ISO 14687 in line not only with fuel cell vehicles (Type I Grade D) but also stationary applications (Type I Grade A) and hydrogen fueled ICE (Type I grade E category 3). A complete energy and cost analysis will be carried out in detail.

Project Information

Type of project : Research

Timing : 01/05/2016 > 30/04/2019

Project website: <http://www.green-industrial-hydrogen.com/home/>

Project Budget : 2.847.710 €

Funding

European Union through FCH JU: Grant agreement 700355 - [CORDIS link](#)

Project partners

This site uses cookies to enhance your visitor experience. By continuing your visit to this site, you accept the use of cookies to offer services and offers tailored to your interests ([privacy statement](#) - [terms of use](#)).

I UNDERSTAND

[Edit](#)



Coordinator :

TECHNISCHE UNIVERSITEIT EINDHOVEN

Partners :

[TECNALIA Research & Innovation \(TECNALIA\)](#)

[HyGear Technology & Services B.V.](#)

[HyET Hydrogen BV](#)

SAES GETTERS S.P.A.

QUANTIS

NATURGAS ENERGIA DISTRIBUCION SA

Sub project(s)

Sub project 1

Country: Netherlands

Address:

GROENE LOPER 5 5612 AE EINDHOVEN

Sub project categories

Research

Project Id: 1001

This project datasheet was last updated on : 21.11.2017

Modify this project datasheet