

PROJECT PARTNERS



Consiglio Nazionale delle Ricerche - CNR (coordinator)
www.itae.cnr.it



ITM Power (Trading) Limited
www.itm-power.com



Solvay Specialty polymers Italy S.p.A.
www.solvayplastics.com



EWII Fuel Cells A/S
www.ewiifuelcells.com



Stadtwerke Emden GmbH
www.stadtwerke-emden.de



Hochschule Emden/Leer
www.hs-emden-leer.de



Uniresearch B.V.
www.uniresearch.com



FACTS and FIGURES

Full name: High Performance PEM Electrolyzer
for Cost-effective Grid Balancing Applications
Acronym: HPEM2GAS
Grant Agreement: 700008
Start date / Duration: 1 April 2016 / 36 months
Total budget / funding: 2,5 M€

The consortium consists of 7 partners from 5 different European Countries.



CONTACTS

Project Coordinator: Dr. Antonino Salvatore Aricò - CNR - ITAE
Project Manager: Dr. Anna Molinari - Uniresearch
Exploitation Manager: Dr. Nick Van Dijk - ITM Power plc



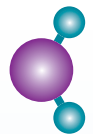
This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No700008. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and Hydrogen Europe and N.ERGHY"

High Performance PEM Electrolyzer for Cost-effective Grid Balancing Applications



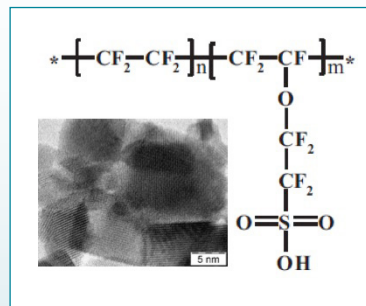
HPEM2GAS is a 3-years FCH JU Horizon 2020 project addressing the topic 'Improved electrolysis for Distributed Hydrogen production'

www.hpem2gas.eu



CONCEPT

HPEM2GAS's ambition is to realise breakthroughs in Proton Exchange Membrane water electrolysis technology for Distributed Hydrogen Production and to bring the innovative solutions demonstrated in previous FCH JU projects from TRL 4 to TRL 6. The project deals with optimisation of system, system design and cells for prototyping and validation in field tests.



RESULTS and IMPACT

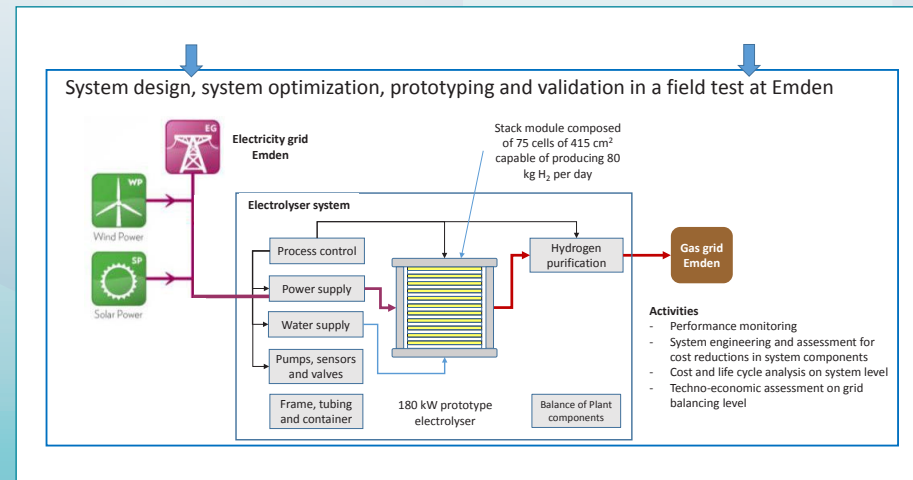
R&D in innovative hydrogen production from grid-service and renewable energy sources (Power to Gas) is one of the priorities of the FCH JU MAWP as it can bring about a zero carbon hydrogen economy.

The aim of the project is to develop a highly efficient, flexible and durable water electrolysis system with size of 180kW. The system will be shipped to Emden and interfaced to the city's electricity and gas grids for a > 6 months field test to achieve TRL 6.



AIM and OBJECTIVES

- Develop, validate and demonstrate robust, flexible and rapid-response self-pressurising PEM electrolyser technology.
- Demonstrate advanced cost-effective components and novel solutions for interfacing to the grid.
- Prove the potential to reach the KPIs, CAPEX and efficiency targets as reported in the MAWP 2015 at a realistic production scale and volume.



EXPLOITATION

HPEM2GAS brings novel PEM electrolyser technology with high current density and enhanced dynamic behaviour. It demonstrates a 180 kW PEM electrolyser system (TRL 6) optimised for grid-balancing services in an integrated field test in Emden and will prepare a design and cost calculation for a 1 MW PEM electrolyser system.

The next phase comprises:

- The building and Demonstration of a 1-3 MW size PEM electrolyser system using the technology developed in this project that is fully integrated in the grid, tested and validated at a customer site (TRL 7/8),
- Scaling up of the manufacturing processes for BoP and stack components and stack assembly,
- R&D focusing on further improvement of stack performance and lifetime and further cost reductions.

