

THE FACTS & FIGURES

Full name: GRid ASsiSting Modular HydrOgen
PEM PowER Plant

Acronym: GRASSHOPPER

Start date: 1 January 2018

Duration: 36 months

Total budget: 4.4 M€

EC funding: 4.4 M€

EC contract: 779430

Work packages:

WP1: Coordination (INEA)

WP2: Flow field modeling and validation (ZBT)

WP3: Realization of improved MEAs with long
lifetime and lower costs (Johnson Matthey)

WP4: Improved stack design and pilot production
(Nedstack)

WP5: System modeling and performance
optimization (Politecnico di Milano)

WP6: Development and validation of modular, low-
cost power plant (Abengoa Innovación)

WP7: Platform for FCPP to Grid integration (INEA)

WP8: Dissemination and exploitation (Abengoa
Innovación)

THE CONSORTIUM

PARTNERS

ABENGOA

INEA Informatics
Energy
Automation

JM Johnson Matthey
Inspiring science, enhancing life

Nedstack
PEM FUEL CELLS

 **POLITECNICO**
MILANO 1863

ZBT

ADVISORY BOARD

Nouryon

 **GOFLEX**

SWW
wunsiedel
wir bewegen

Tennet
Taking power further

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GRASSHOPPER
Grid Assisting Modular Hydrogen PEM Power Plant



Next generation of **Modular,**
Flexible and Cost Effective
Fuel Cell Power Plant



This Project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under the European Union's Horizon 2020 Research and innovation programme under grant agreement No 779430.

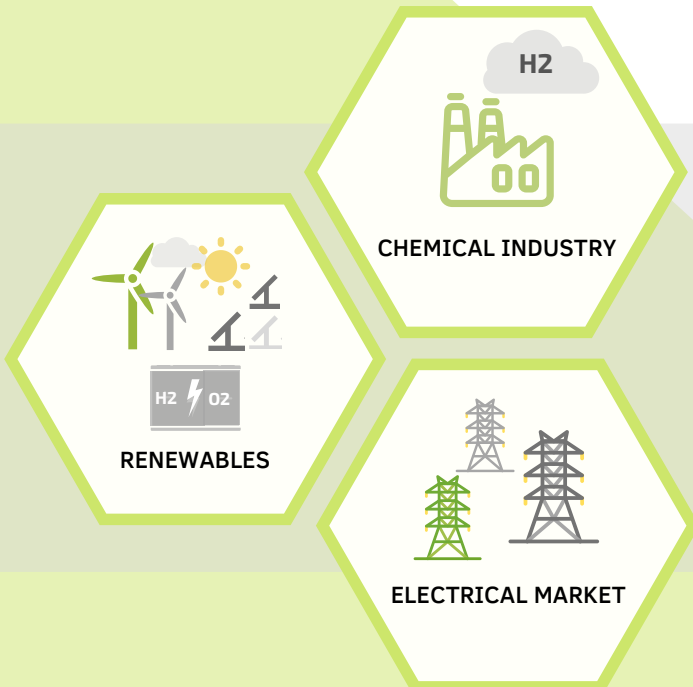


WHY GRASSHOPPER?

Technical feasibility of PEM MW Fuel Cell Power Plants (FCPP) has been well demonstrated, but a major step in fuel cell stacks and system costs is still needed.

In addition, dynamic operating capability is a new necessary feature to participate in renewable energy markets.

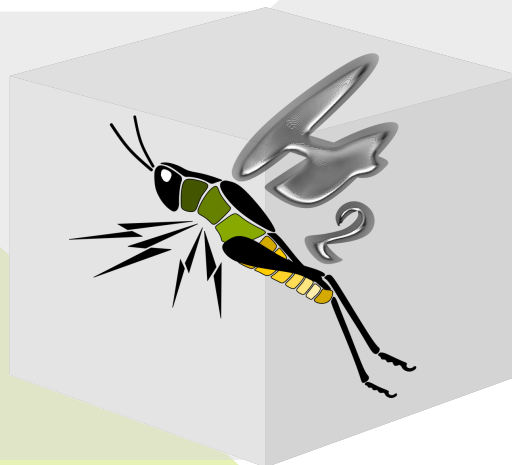
GRASSHOPPER proposes major coherent improvements on MEAs, stacks and system design to reduce CAPEX and add flexibility.



THE OBJECTIVES

GRASSHOPPER aims to create a next-generation MW-size FCPP which is more cost-effective and flexible in power output, accomplishing an estimated CAPEX < 1500 €/kWe at a yearly production of 25 MWe.

The MW-size FCPP unit will be based on the learnings from a 100 kW pilot plant design, implementing newly developed stacks and MEAs. This pilot plant is large enough to implement cost savings and validate operation flexibility and grid stabilisation capability via fast response.



THE ACTIVITIES



- Development of durable low-cost MEAs
- Development of larger size low-cost stacks
- Design & validation of 100 kW pilot plant at Nouryon facilities in Delfzijl
- Design of low cost, flexible and modular MW size FCPP
- Design & validation of a platform to integrate grid support functionality