



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project PREMIUM ACT

Predictive Modelling for Innovative Unit Management and Accelerated Testing Procedures of PEFC

Premium Act is an ambitious project on the durability of PEFC (Polymer Electrolyte Fuel Cells), targeting one of the main hurdles still to overcome before successful market development of stationary fuel cell systems. PEFC systems are now very near, or even already comply with market requirements for cost and performance. But durability targets, up to several tens of thousands of hours, are much more difficult to reach. Premium Act proposes a very innovative approach, combining original experimental work on PEFC systems, stacks and MEAs (Membrane Electrodes Assembly), including locally resolved studies of components durability, components characterisation using the most advanced techniques in order to quantify ageing phenomena, and an original mechanistic, multi-scale modelling approach able to take into account materials degradation processes and all reactions occurring and competing at each instant in a PEFC. These combined experimental and modelling tools will provide understanding of the fundamentals of degradation, with new insight on the coupling of degradation mechanisms in PEFC components, thus enabling the consortium to innovate on: - operating strategies, enhancing lifetime of given MEAs in a given stack and system, - the design of a lifetime prediction methodology based on coupled modelling and composite accelerated tests experiments. Premium Act will establish this innovative approach on two strategic fuel cell technologies for stationary markets: DMFC power generators and CHP systems fed by reformat hydrogen, both sharing similar MEA materials. This will show that the strategy is adaptable to the multiple PEFC requirements and give a competitive edge to European providers of stationary fuel cell systems.

## Project Information

**Type of project :** Research

**Timing :** 01/03/2011 > 28/02/2014

**Project website:** <http://www.mrtfuelcell.polimi.it/premiumact.html>

**Project Budget :** 5.370.190 €

---

## Funding

European Union through FCH JU: **Grant agreement 256776 - CORDIS link**

---

## Project partners

**Coordinator :**

[CEA - Commissariat à l'énergie atomique et aux énergies alternatives](#)

**Partners :**

[EWII Fuel Cells AS](#)

[Polimi - Politecnico Milano](#)

[DLR - German Aerospace Center](#)

ICI CALDAIE SPA

JRC - JOINT RESEARCH CENTRE - EUROPEAN COMMISSION

SOPRANO INDUSTRY

---

**Sub project(s)**

**Sub project 1**

**Country:** France

**Address:**

RUE LEBLANC 25 75015 PARIS 15

**Sub project categories**

Research

---

Project Id: 1067

This project datasheet was last updated on : 09.05.2020

**[Modify this project datasheet](#)**