



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project LOLIPEM

Long-life PEM-FCH & CHP systems at temperatures higher than 100°C

The present proposal aims at the development of SPG&CHP systems based on Polymeric Electrolyte Membrane Fuel Cell Hydrogen (PEMFCH). A drawback in the state-of-the-art systems is the too low operating temperatures (70-80°C) of PEMFCHs for cogeneration purposes. Operating temperatures above 100°C would have several advantages including easier warm water distribution in buildings, reduced anode poisoning due to carbon monoxide impurities in the fuel and improved fuel oxidation kinetics. A PEMFCH operating in the temperature range of 100-130°C is highly desirable and could be decisive for the development of SPG&CHP systems based on PEMFCHs. The main objective of the present project is to give a clear demonstration that long-life SPG&CHP systems based on PEMFCHs operating above 100°C can now be developed on the basis of recent knowledge on the degradation mechanisms of ionomeric membranes and on innovative synthetic approaches recently disclosed by some participants of this project. Main research tasks: (1) Develop long life (longer 40000 hrs) perfluoro sulfonic acid membranes and sulfonated aromatic polymer membranes operating at 100-130°C with current density of at least 4000A/m²; (2) Create new long-life catalytic electrodes and MEAs working in the above temperature range; (3) Perform accelerated ageing tests and long-term single cell tests to understand degradation mechanisms, to make lifetime predictions and to give input to objectives 1 and 2; (4) Develop a prototype of a modular SPG&CHP system based on multi-PEMFCHs realized with the new long-life MEAs; (5) Benchmarking the single-cell and the modular prototype performance at temperatures above 100°C against the best literature results. The project will benefit from the synergy arising from the know-how of leading research groups of universities and research institutes as well as from the technical knowledge and expertise of industries and utility companies involved in fuel cell development and testing.

Project Information

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Timing : 01/01/2010 > 31/12/2012

Project Budget : 2.677.298 €

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European Union through FCH JU: [Grant agreement 245339 - CORDIS link](#)

Project partners

Coordinator :

CNR - Consiglio Nazionale delle Ricerche

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Sub project 1

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Sub project categories

Research

Project Id: 1037

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