Partners

Italy

Coordinator

Consiglio Nazionale delle Ricerche

Institute on Membrane Technology (ITM-CNR)
www.itm.cnr.it
Contact: **Dr. Giuseppe BARBIERI**
+39 0984 492029
g.barbieri@itm.cnr.it
giuseppe.barbieri@cnr.it

University of Rome "Tor Vergata"
Department of Chemical Science and Technology

University of Roma Tor Vergata
www.uniroma2.it
Contact: **Prof. Maria Luisa Di Vona**
divona@uniroma2.it
+39 0672594385

EDISON

EDISON: www.edison.it
Contact: **Davide Marco Lidio Beretta**
Davide.Beretta@edison.it
+39 11 6482 830

Germany

UNIVERSITÄT DES SAARLANDES

Saarland University
www.uni-saarland.de
Contact: **Prof. Dr. Rolf Hempelmann**
r.hempelmann@mx.uni-saarland.de
+49 681 302 4750

fumatech
Funktionelle Membranen und Anlagentechnologie

FuMA-Tech GmbH: www.fumatech.de
Contact: **Dr. Michael Schuster**
Director R&D Membranes
schuster@fumatech.de
+49 6894 9265 0

France

Laboratoire CHIMIE Provence

University of Provence
www.lc-provence.fr
Contact: **Prof. Philippe Knauth**
philippe.knauth@univ-provence.fr
+33 491 637 114

Spain

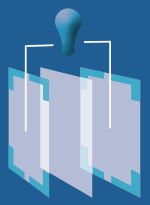
MATGAS

MATGAS 2000 A.I.E.: www.matgas.com
Contact: **Dr. Lourdes F. Vega**
MATGAS Director
vegal@matgas.com
+34 935 929 950

Poland

POLITECHNIKA KRAKOWSKA

Technology Transfer Center
Cracow University of Technology:
www.transfer.edu.pl
Contact: **Bogna Grochola**
grochola@transfer.edu.pl
Anna Stachowicz
stachowicz@transfer.edu.pl
+48 12 628 26 60



LoLiPEM

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

SEVENTH FRAMEWORK PROGRAMME

LoLiPEM is co-financed by the European Commission under the 7th Framework Programme

Project

LoLiPEM is a research project devoted to the development of **new membranes, electrodes** and a **CHP** module for **stationary power generation & combined heat and power (SPG&CHP)** systems, based on Polymeric Electrolyte Membrane Fuel Cell Hydrogen (**PEMFCH**).

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.

LoLiPEM aims to operate in this temperature range **above 100°C** exceeding the state-of-the-art (70-80°C) which represents the main drawback for the PEMFCH development. 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, improved fuel oxidation kinetics, etc.

The **main objective of the LoLiPEM** 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.

Some key points in the research activities are:

1. development of **long life** (longer 40000 hours) **perfluoro sulfonic acid membranes and sulfonated aromatic polymer membranes** operating at a current density of at least 4000 A m^{-2}
2. development of long-life catalytic electrodes and **Membrane Electrode Assemblies** (**MEAs**)
3. development of **a prototype of a modular SPG&CHP system** including more PEMFCHs built with the new long-life MEAs
4. The understanding of **degradation mechanism**, by means of accelerated aging tests and long-term single cell measurements, in order to predict the life-time and give feedback to the developing of membranes and electrodes
5. **benchmarking** of the performance of a single-cell and the modular prototype against the best literature results.

The operating **temperature of interest for the LoLiPEM project is in the range of 100-130°C** for both new membranes, electrodes, MEAs and the whole modular system.

The project will benefit of 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.