



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project PEMICAN

PEM with Innovative low cost Core for Automotive applicatioN

Up to now, much work has been performed on the catalyst but much on the active layers' structure and on the two other major components (carbon and electrolyte) whereas they do have a major impact on the MEA's performance and on Pt utilization. Based on this analysis, PEMICAN proposes to reduce the Pt loading for automotive application down to 0.15 gram of Pt per kW, by a twofold approach: 1.to increase Pt utilization and power density by improving effective transport properties of ALs by tuning some properties of the electrolyte and by adding special carbon blacks in order to improve catalyst, electrolyte distribution and water management; 2.to reduce Pt loading by controlling its distribution: very thin layer on the anode side and gradients of Pt on the cathode side. These structured layers will be defined in order to optimise the utilization of the Pt. The combination of these two approaches will allow reducing the total mass of Pt for a given power density. Whereas the main objective of PEMICAN is to develop and manufacture MEAs with reduced quantity of Pt, it is supported by numerical modelling to help defining the best Pt distribution. Special structural and electrochemical characterizations will be done to improve the existing models and to analyse the performance of our MEAs as a function of manufacturing processes and properties of components. Performance and durability tests under automotive conditions will be performed and analysed. PEMICAN will demonstrate gains in terms of Pt cost (g Pt/kW) obtained by improving the design and properties of the ALs. Its results will be useful also In the future when non pure Pt is available. The Consortium is built-up on the expertises of 6 European organisations with complementary skills: 2 Research Institutes (CEA and INASMET), 1 University (IMPERIAL COLLEGE), 2 industrial suppliers (SOLEXIS, TIMCAL) and 1 automotive OEM (OPEL). Among these partners, 4 of them are active members of the FCH JTI.

## Project Information

**Type of project :** Research

**Timing :** 01/04/2011 > 31/03/2014

**Project Budget :** 3.955.219 €

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## Funding

European Union through FCH JU: **Grant agreement 256798 - CORDIS link**

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## Project partners

**Coordinator :**

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

**Partners :**

[TECNALIA Research & Innovation \(TECNALIA\)](#)

ADAMOPELAG

SOLVAY SPECIALTY POLYMERS ITALY S.P.A.

IMERYS GRAPHITE & CARBON SWITZERLAND SA

IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE

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**Sub project(s)**

**Sub project 1**

**Country:** France

**Address:**

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**Sub project categories**

Research

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Project Id: 1064

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