Hydrogen Europe:
European Hydrogen & Fuel cell Project Database

Project RAMSES

Robust Advanced Materials for metal Supported SOFC

The RAMSES project aims at developing an innovative high performance, robust, durable and cost-effective Solid Oxide Fuel Cell based on the Metal Supported Cell concept i.e. the deposition of thin ceramic electrodes and electrolyte on a porous metallic substrate. Both planar and tubular cells will be developed. By considering advanced materials tailored for this cell design, such cells will be able to operate at 600°C on methane steam reforming, with an ASR of 0.8 Ohm.cm² for planar cells and 1.0 Ohm.cm² for tubular cells and a degradation rate of 30 mOhm.cm²/khr. In addition it will be able of withstanding thermal/redox combined cycles. The achievement of such performance needs several key-developments to be addressed: first the manufacturing of a durable metallic substrate; second the deposition of the ceramic layers without affecting the substrate microstructure, with a special emphasis on the dense electrolyte deposition; third the proof-of-concept via the integration of the cells into a short stack, supported by inspection techniques to evaluate the good quality of components at each step of the process; and finally testing activities to determine the performance and durability of cells and stacks, and to investigate specific identified failure mechanisms. A cross multidisciplinary consortium has been defined to obtain each competence needed for the project, gathering 9 organisations from 4 member states (France, Italy, Sweden, Spain) and one associated country (Norway). In addition an IPHE country (Canada) with a significant background in the development of Metal Supported Cells will be associated to this project. The partnership covers all competences necessary to develop the new SOFC, embracing powder suppliers (HÖGANÄS, BAIKOWSKI), experts in materials and cell developments (CNRS-BX, CEA, SINTEF, IKL, NRC), testing (CEA, NRC, IKL), components and stack development and production (SP, IKL, COPRECI, NRC) and inspection techniques (AEA).

Project Information

Type of project : Research
Timing : 01/01/2011 > 31/05/2014
Project website: http://www.ramses-project.org/
Project Budget : 4.712.209 €

Funding

European Union through FCH JU: **Grant agreement 256768 - CORDIS link**

Project partners

Coordinator :

CEA - Commissariat à l'énergie atomique et aux énergies alternatives

Partners :

CNRS - Centre National de la Recherche Scientifique

SINTEF AS

SOLIDPOWER SPA

HÖGANÄS AB

BAIKOWSKI SAS

AEA s.r.l.

IKERLAN SCL

COPRECI S.COOP

NATIONAL RESEARCH COUNCIL CANADA

Sub project(s)

Sub project 1

Country: France

Address:

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Sub project categories

Research

Project Id: 1075

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