Hydrogen Europe:
European Hydrogen & Fuel cell Project Database

Project METSAPP

Metal supported SOFC technology for stationary and mobile applications

State of the art SOFC technology for stationary as well as for transportation application is to date being demonstrated with either planar or tubular ceramic anode-supported or electrolyte-supported SOFC cells. However, the SOFC technology faces many challenges when it comes to commercialization, since cost reduction, reliability and extended lifetime is required. In order to improve durability and cost efficiency of the cells the stacks and the system much of the development has in the past been focused on lower operation temperature, increased power density and material savings based on reduced cell and stack component thickness. Nevertheless, most of the demonstrations with ceramic cells in real system operation have until now revealed problems regarding these issues in combination with low robustness. Attention to these issues has especially been paid in connection with SOFC technology for mobile application, such as in APUs. Modelling studies as well as recent practical experience has proved how up-scaling of cells and stacks to larger more industrially relevant sizes generally leads to lower reliability in real system operation and intolerance towards system abuse and operation failures. These observations conform to the statistical distribution of mechanical properties governing the probability of failure of cells based on ceramic materials, whether it is for mobile or for stationary applications. The aim of the METSAPP project is to develop novel cells and stacks based on a robust and reliable up-scale-able metal supported technology with the following primary objectives: 1. Robust metal-supported cell design, ASRcell < 0.5 Ohmcm2, 650 C; 2. Cell optimized and fabrication upscaled for various sizes; 3. Improved durability for stationary applications, degradation < 0.25%/kh; 4. Modular, up-scaled stack design, stack ASRstack < 0.6 Ohmcm2, 650 C; 5. Robustness of 1-3 kW stack verified; 6. Cost effectiveness, industrially relevance, up-scale-ability illustrated.

Project Information

Type of project : Research
Timing : 01/11/2011 > 31/12/2015
Project website: http://www.metsapp.eu/
Project Budget : 8.021.949 €

Funding

European Union through FCH JU: **Grant agreement 278257 - CORDIS link**

Project partners

Coordinator :

DVGW - German Technical and Scientific Association for Gas and Water

Partners :

AVL
KIT - Karlsruher Institut für Technologie
elringklinger AG
SANDVIK MATERIALS TECHNOLOGY AB
TOPSOE FUEL CELL A/S
CHALMERS TEKNISKA HOEGSKOLA AB
THE UNIVERSITY COURT OF THE UNIVERSITY OF ST ANDREWS
ICE STROMUNGSFORSCHUNG GMBH
JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION

Sub project(s)

Sub project 1

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Sub project categories

Research

Project Id: 1047

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