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EUROPEAN COMMISSION

Community research

European Hydrogen and Fuel Cell Technology Platform

Reliable, Durable Energy Efficient and Cost Effective SOFC Systems

The aim of the Integrated Project Real-SOFC is to solve the persisting generic problems of ageing with planar Solid Oxide Fuel Cells (SOFC) in a concerted action of the European fuel cell industry and research institutions. This includes gaining ~~full~~ understanding of degradation processes, finding solutions to reduce ageing and producing improved materials that will then be tested in stacks. In this process further consideration will be given to the design of cost effective materials, low cost components and optimised manufacturing processes.

Main goals

Materials (ceramics, steels)
- durability, low ageing, tolerant towards fuel and air impurities
- thermal cycling (matching of materials thermal expansion)
- redox cycling
- cost reduction

Cells
- high power density vs. reduction of operating temperature
- improved mechanical properties
- industrial manufacturing processes

Stacks
- thermal cycling (sealing materials)
- weight and volume reduction

Manufacturing
- cost efficient manufacturing of all components

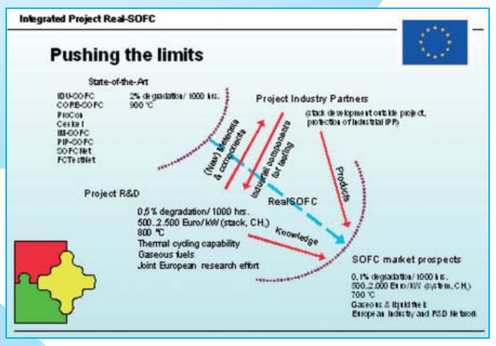
Systems
- cost reduction
- efficient Balance of Plant (BoP) components
- simplification / integration / packaging

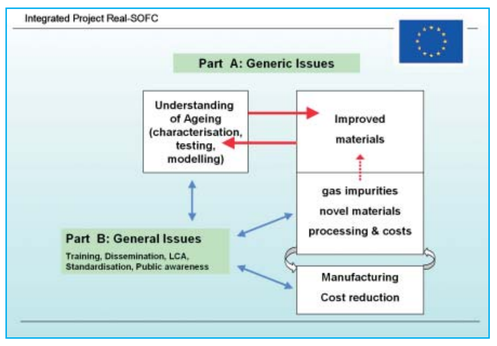
Modelling
- ~~understanding of electrochemical and thermodynamical processes~~
- ~~prediction of cell, stack and system performance~~
- understanding of ageing processes

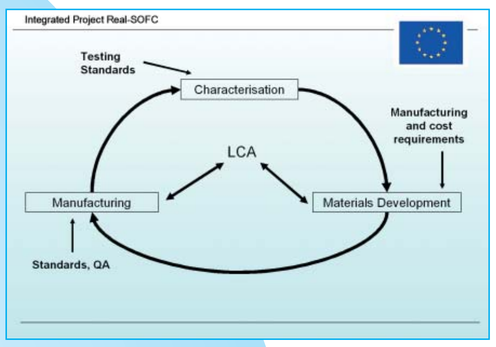
Besides the materials development, the project addresses the topics of

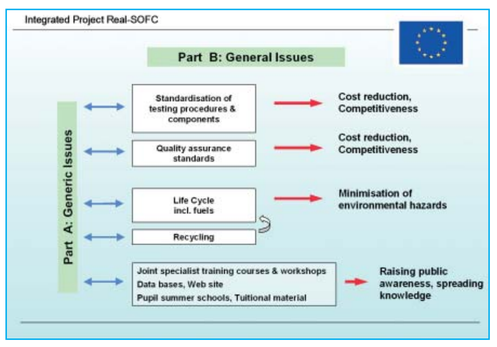
- Life Cycle Analysis as an essential tool for assessing the environmental impact and recycling of the materials used,
- industrial standardisation as a means of lowering costs and improving industry competitiveness, and
- training and dissemination as a tool of human resource management and a contribution towards gender equality.

Project approach:









Additional information:

Realising Reliable, Durable Energy Efficient and Cost Effective SOFC Systems
Acronym: Real-SOFC
Instrument: Integrated Project
Projected total cost (m€): 18.259.429.36
Total support of the EC (m€): 8.999.000.50
Project web site: http://www.real-sofc.com
Co-ordinator's e-mail address: r.steinberger@fz-juelich.de
Partners: Forschungszentrum Jülich GmbH (FZJ), Rolls-Royce plc (R-R plc), Ugine-Alz (Groupe Arcelor) (U&A), Commisariat à l´Energie Atomique (CEA), University of St Andrew (USTAN), Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Entwicklungs- und Vertriebsgesellschaft Brennstoffzelle mbH (EBZ), Energy Research Centre of the Netherlands (ECN), Electricité de France (EDF), Swiss Federal Laboratories for Materials Testing and Research (EMPA), ENERGOPROECT AD – Science Research and Technological Institute (ENERGO), Gaz de France (GDF), H.C. Starck GmbH (HCST), Haldor Topsøe A/S (HTAS), HTceramix SA (HTc), The Imperial College (Imperial), Foundation for Research & Technology Hellas (FORTH-ICEHT), Plansee AG (Plansee), Risø National Laboratory (Risø), Stiftelsen for industriell og teknisk forskning ved Norges (SINTEF), Sulzer Hexis Ltd (SH), University of Birmingham (UBHAM), University of Chemical Technology & Metallurgy, Sofia (UCTM), Technical Research Centre of Finland (VTT), Wärtsilä Corporation (Wärtsilä), University of Genoa (UNGE)

SIXTH FRAMEWORK PROGRAMME