

# Putting fuel cells to the test

Fuel cell testing and international standardization  
FCH JTI reference function and performing fuel cells research

## EU policy and fuel cell technologies

The EU's transition towards a secure and competitive low-carbon society with energy and transport that are sustainable in economic, social and environmental terms is one of the main themes of the Energy Strategy for Europe 2020. This strategy builds on the established role of the Joint Research Centre (JRC) in energy technologies, particularly for fuel cells and in facilitating innovation and standardisation.

JRC-IET performs and leads collaborative R&D activities within international forums such as the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) and the Advanced Fuel Cell Implementing Agreement of the International Energy Agency (IEA). The action helps boost the European Energy Research Area through the organisation of summer schools and on-the-job-training for researchers from Member States, (potential) candidate countries and European Neighbourhood Policy countries.



Fuel cells are often described as a continuously operating battery. They produce electricity via an electrochemical process: hydrogen from a hydrogen-containing fuel is combined with oxygen. Because of their high conversion efficiency, reduced pollution and low noise, fuel cells in the future can play a major role in energy conversion, and can partly substitute current power generation technologies in many end use sectors.

For fuel cell technologies to realise their full potential in climate change, security of energy supply, sustainable development, economic growth, and competitiveness, we must rise to meet the remaining technical and economical challenges. Among these, the development and establishment of globally accepted Regulations, Codes and Standards (RCS) are a key enabler of innovation.

The FIST (Fuel cell testing and International STandardization) and FCREF (Implementing FCH JTI reference function and performing fuel cells research) projects help speed up the innovation process by establishing, harmonising and validating early standards, especially for cross-cutting activities through pre-normative research and underpinning research.

## Contact:

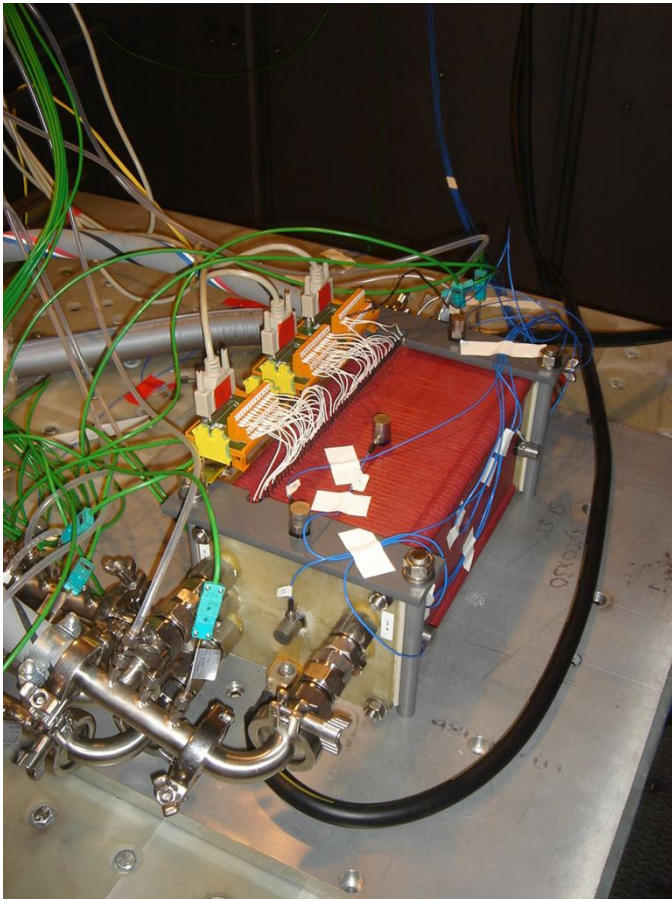
Dr. Georgios Tsotridis  
European Commission • JRC  
Institute for Energy and Transport (IET)  
Tel.: +31 (0)224 56 5122  
Email: [georgios.tsotridis@ec.europa.eu](mailto:georgios.tsotridis@ec.europa.eu)

## FIST

FIST leads and contributes to the development of international standards under the International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC), and of EU standards under the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC).

## FCREF

Operates state-of-the-art polymer electrolyte fuel cell (PEFC) and solid oxide fuel cell (SOFC) test facilities that are reference laboratories for the assessment of performance and durability in the European Joint Technology Initiative on Fuel Cells and Hydrogen (FCH JTI), and for the promotion of electro-mobility in Europe. Develops numerical models to evaluate the complex physical and chemical phenomena in fuel cells.



**Electrification of road transport:** Operation of a European reference laboratory, to assess and standardise innovative, cleaner and efficient transport technologies.

**Standardisation and regulations:** Participating in international standardisation activities of the IEC Technical Committee (TC) 105 and ISO TC 197 (standards drafting, convening of working groups, and referencing fuel cell technologies in EU legislation).

**Reference function on fuel cell-related activities in the FCH JTI:** Providing expert opinions on R&D needs and priorities, and the operation of reference laboratories to quantify and verify scientific and technical progress within JTI-funded projects, as well as offering technical support at programme level on strategic matters.

**Pre-normative & underpinning research for development and improvement of performance characterisation of fuel cells, systems and power chains:** Validation and benchmarking of test methods and measurement methodologies for transport and stationary applications, and on the execution of competitive projects. Underpinning research with the aim of better understanding the operation of fuel cell components, single cells, and systems, using mathematical modelling and simulations, experimental model validation, and investigation of newly developed non-noble metal catalysts for low-temperature fuel cells.

