

Fuel Cells & Hydrogen 2 Initiative: developing clean solutions for energy transport and storage

- Clean energy from fuel cells and hydrogen technologies;
- Boosting the European fuel cell and hydrogen sector;
- Leveraging public and private research funding to lower investment barriers;
- Creating more growth and jobs in downstream industries;
- Developing long-term strategic research and innovation agenda.



What is the challenge?

The EU needs to secure long-term clean energy supplies and reduce greenhouse gas emissions from its energy and transport sectors. Producing hydrogen using electricity generated from renewable sources such as solar and wind, and using fuel cells that convert different kinds of fuel - including hydrogen - into electricity more efficiently than conventional technologies could provide environmentally friendly answers. But major technological and infrastructure barriers need to be overcome before their use can be rolled-out on a commercially attractive basis. No single enterprise can overcome these barriers despite the eventual commercial and environmental gains. Europe must pool its private and public resources and expertise to exploit these new technologies.

What is the Fuel Cells and Hydrogen 2 (FCH2) Initiative?

This is a new phase of the first Fuel Cells and Hydrogen (FCH) Joint Technology Initiative (JTI) set up in 2008. It will continue to develop a portfolio of clean, efficient and

affordable fuel cells and hydrogen technologies to the point of market introduction and help secure the future international competitiveness of this strategically important sector in Europe.

The new FCH JTI is expected to start in 2014 and will end in 2024.

The first phase (budget €940 million) has already brought together over 1100 participants: 183 research organisations; 387 universities; 111 enterprises excluding 256 SMEs and other organisations.

What results and benefits do we expect?

Thanks to concentration of European fuel cells and hydrogen research and innovation under the umbrella of a Joint Undertaking, participants will benefit from: better use of Europe's limited public research funds; a more stable and safer investment climate; and better knowledge sharing. In addition, this public private partnership will leverage private investments in the technologies up to at least the same amount as the public funds.

European high-tech industries developing and producing FCH technologies, as well as those that incorporate them in their products (e.g. combined heat and power (CHP) units, backup power units, vehicles), will become more competitive, develop new markets and create jobs.

Specific objectives include:

- Reduce cost of fuel cell systems for transport applications by a factor of 10;
- Increase electrical efficiency of fuel cells for power production by 10%;
- Demonstrate the viability of large scale hydrogen production from electricity generated from renewable energy sources.

What will the new total budget be?

The proposed budget is €1.4 billion. The EU expected contribution will be up to €700 million from the Horizon 2020 programme budget. The private contribution of €700 million will consist of both in-kind contributions in calls for proposals activities and of complementary actions implemented in addition to the calls, contributing to the objectives of the initiative.

How will it be managed?

JTIs are partnerships between the EU and industry. They establish their own strategic research agendas. The projects will be selected through open and competitive calls for project proposals. The selection of the best proposals will be based on independent peer review and concluded by formal funding agreements. A small number of activities are implemented through calls for tender (i.e. public procurement).

The new FCH 2 JTI will be managed by a dedicated FCH 2 Joint Undertaking whose Governing Board - comprising representatives of the European Commission, the Industry Grouping and the Research Grouping - will take funding decisions.

What has the current JTI achieved so far?

Market introduction has already been achieved for some early applications such as forklifts and small back-up power units. For both energy and transport applications, progress

Zero emission buses in European Cities

The Clean Hydrogen In European Cities (CHIC) project has provided an essential next step towards full market commercialisation of hydrogen fuel cell powered buses. The project involves integrating 26 hydrogen fuel cell powered buses into daily public transport operations and bus routes in five locations across Europe – Aargau (Switzerland), Bolzano/Bozen (Italy), London (UK), Milan (Italy), and Oslo (Norway). The project has 25 partners from across Europe, which includes industrial partners for vehicle supply and refuelling infrastructure. CHIC has already demonstrated a significant reduction in fuel consumption of over 50% with respect to previous “clean bus” generations, and a very high level of availability of hydrogen refuelling stations (over 98%) in the test regions. It proves that by pooling resources and expertise concrete commercially promising results can be demonstrated and this will lower risks towards further development.

Video on the CHIC project:

<http://www.youtube.com/watch?v=K5pwoDkuWeA&list=PLvpwjZTs-LgH8ePd58pwh0sMwNCMK9TO>



CHIC's hydrogen-powered buses on Europe's streets

has been achieved notably in the materials performance, durability, and costs reduction for both components and systems of transport and stationary power applications.

The FCH JTI has also been successful in attracting SME participation, which accounts for 25% compared to 18% across FP7.

Useful links

Fuel Cells and Hydrogen Joint Undertaking:
www.fch-ju.eu