

THE PARTNERS

The LASER-CELL Consortium includes partners from 4 EU member states: Belgium; Finland; German; UK

AFC Energy

Effort led by Dr Martin THOMAS

www.afcenergy.com

Cencorp Oyj

Effort led by Dr Henrikki PANTSAR

www.cencorp.com

VTT Technical Research Centre of Finland
– Teknologian Tutkimuskeskus

Effort led by Petri LAAKSO

<http://www.vtt.fi/laser>

Air Products

Effort led by Ms Diana RAINE

<http://www.airproducts.co.uk/>

Nanocyl S. A.

Effort led by Dr-Ing. Matthieu HOULLÉ

COORDINATOR'S CONTACT DETAILS

The LASER-CELL project coordinator is AFC Energy

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The coordinating team is composed of:

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LASER-CELL coordinator
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Scientific and technical manager
Dr Thomas is Senior Project Engineer of AFC Energy
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3. **Mark BOLAND**
Project administration and Dissemination
Mr Boland administers AFC Energy's publicly funded projects and is the main contact point for general enquiries.
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Mr Williamson is the CEO of AFC Energy
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Delivering low-cost, zero-emission
electricity from alkaline fuel cells

www.laser-cell.eu

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PROJECT OBJECTIVES

1. Designing a novel AFC based on laser-processed substrates with optimised technical/commercial characteristics.
2. Assessing and adapting laser manufacturing techniques and incorporating their benefits in the fuel-cell design.
3. Designing an innovative fuel-cell stack to operate in industrial stationary settings, which delivers safety, mass manufacture, ease of assembly, recyclability, serviceability and optimal performance.
4. Combining the above objectives in order to establish the cost-competitiveness of the AFC technology in comparison with all competing technologies – confirming for the first time the commercial viability of AFCs in large-scale stationary applications.

PROJECT SUMMARY

The alkaline fuel cell (AFC) is one of the most efficient devices for converting hydrogen into electricity. Project LASER CELL will develop a novel, mass producible AFC and stack design for stationary, industrial applications utilising the latest laser processing technology.

This economically viable, sophisticated technology will enable design options not previously possible, that will revolutionise the functionality and commercial viability of the AFC.

PROJECT SUMMARY CTD

Key parameters that will dictate fuel cell and stack design are; safety, reduced part count, ease of assembly, durability, optimised performance, recyclability and increased volumetric power density in a way which achieves a cost of under €1,000 per kW.

To realise this vision, proprietary cell and stack features that have never before been incorporated into an AFC system will be employed and deliver a flawlessly functioning stack. In order to achieve these ambitious objectives, the consortium comprises world leading specialists in the fields of alkaline, polymer electrolyte and solid oxide fuel cells, advanced laser processing technologies, conductive nano composites, polymer production and large scale, stationary power plants.

A cell design tool, based on physical and cost models, will be produced. This disseminated tool will provide design rational for material selection and geometric design and will, in principle, be applicable to all low temperature fuel cells. Commercially viable porosity forming processes developed in this project will enable organisations working with other fuel cell types to re-evaluate the fabrication and design of their core technologies.

Impacts will also be felt in other sectors, including; solar cells, aviation, medical and automotive industries, for whom the partners' achievements are potentially beneficial. The ability to convert 'waste' hydrogen into electricity and achieving the status of 'pull through' technology for carbon capture and storage (CCS), would enable AFCs to play a crucial role in helping the EU meet its reduced CO₂ emission targets and improve Europe's energy security.

FUNDING AGENCY



The **Fuel Cells and Hydrogen Joint Undertaking** (FCH JU) is a unique public private partnership between the European Commission, European industry and research organisations. Its mission is to accelerate the development and deployment of fuel cell and hydrogen technologies.

Among the goals of the FCH-JU:

- **Overcoming barriers to deployment:** The research needed to develop these technologies is so complex that a collaborative approach is often the best way to address the problems faced by the sector.
- **Pooling together resources:** A budget of approx. 1€BN, jointly contributed by the members, supports a six-year programme within FP7. Funding is offered through an annual competition to European consortia of industrial and academic partners to carry out collaborative research relevant to fuel cell and hydrogen industries. Funding is offered on generous terms, in the form of a grant which does not have to be repaid.*
- **Market focus:** the lead role played by industry in defining the FCH-JU's priorities together with contributions from the European Commission and the research community, ensures that the agenda is focused on market introduction of fuel cell and hydrogen technologies.

There are many ways for stakeholders to become involved with the FCH-JU: check the website (www.fch-ju.eu) for details of public events and funding opportunities.

* Subject to FCH-JU funding rules