



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project CATION

### Cathode Subsystem Development and Optimisation

The main objectives of this proposal is to evaluate different process alternatives and find optimal process and mechanical solutions for the cathode and stack subsystems with the aim of having commercially feasible and technologically optimised subsystem solutions ready for future ~ 250 kWe atmospheric SOFC systems. The aspects taken into account in the development are mainly electrical efficiency, controllability, reliability, mass production and costs effectiveness of developed subsystems and individual components. This project is focused on the development of SOFC system's air side fluid and thermal management and mechanical solutions, i.e. cathode subsystem and individual components. In large SOFC systems the cathode subsystem is typically the largest source of auxiliary losses and a major factor decreasing electrical efficiency of the system. The reason for this is that almost all components are based on existing products developed for some other purposes and are not optimized for certain SOFC systems. By making cathode side components from the SOFC system point of view, i.e. optimizing the overall system solutions, significant improvements in terms of costs, reliability, performance and lifetime will be achieved. A parallel optimization of the anode subsystem is carried out in the EU funded ASSENT project. The project will further focus on the integration of SOFC stacks in large systems. If large SOFC systems would be realized by simple multiplication of smaller SOFC stacks, the cost of the so-called Balance of Stack components would be very large. The Balance of Stack components includes air- and gas manifolding, stack compression, thermal insulation, electrical insulation, wiring, lead-in's and sealing. Based on state-of-the-art SOFC stacks this project will develop scalable, cost-efficient Balance of Stack solutions suitable for ~ 250 kW SOFC systems.

## Project Information

**Type of project :** Research

**Timing :** 01/01/2011 > 30/06/2014

**Project website:** <http://cation.vtt.fi/>

**Project Budget :** 7.108.505 €

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## Funding

European Union through FCH JU: **Grant agreement 256627 - CORDIS link**

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## Project partners

**Coordinator :**

[Teknologian tutkimuskeskus VTT Oy](#)

**Partners :**

[AVL](#)

[University of Birmingham](#)

WARTSILA FINLAND OY

TOPSOE FUEL CELL A/S

BOSAL EMISSION CONTROL SYSTEMS NV

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**Sub project(s)**

**Sub project 1**

**Country:** Finland

**Address:**

VUORIMIEHENTIE 3 02150 Espoo

**Sub project categories**

Research

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Project Id: 926

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