



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project SOFCOM

### SOFC CCHP WITH POLY-FUEL: OPERATION AND MAINTENANCE

If we consider a new energy framework, based on the concepts of sustainability, energy security using local resources, maximization of the exergy efficiency of the whole system, a possible solution could be based on the following criteria: • Combined cooling, heat and power (CCHP) plants; • Small-medium size plants locally distributed; • Plants with maximization of the energy recovery from the primary sources: maximum exergy efficiency of the whole system; • Flexibility in the use of local primary sources (biogas, bio-syngas, bio-fuels); • Easy and efficient CO<sub>2</sub> separation from the plant exhaust Among the technologies which could satisfy these criteria, a new technology is gaining more and more interest: energy systems based on Solid Oxide Fuel Cells (SOFC) which, in the medium term, could become one of the most interesting technologies able to address the above criteria. The proposal is an applied research project devoted to demonstrate the technical feasibility and the energy and environmental advantages of CCHP plants based on SOFC fed by different typologies of biogenous primary fuels (locally produced), also integrated by a process for the CO<sub>2</sub> separation from the anode exhaust gases. The research activity will address the scientific, technical, economical management of two proof-of-concepts of complete energy systems based on SOFCs, through real in-field demonstration units. Several issues will be pointed out, like high efficiency integration designs, impact of pollutants on SOFC and fuel processing units, gas cleaning, operation in CCHP configuration, carbon sequestration module. The activities developed by each Partner, in the different areas of the proposed research, have the ultimate goal of assembling, testing and validate the two proof-of-concept systems. In order to guarantee the success of the Demonstration activity, it is also integrated with: Lab-scale Activities (preliminary to the real demonstration activities); Conceptual and Analysis Activities

## Project Information

**Type of project :** Research

**Timing :** 01/11/2011 > 30/04/2015

**Project Budget :** 6.250.227 €

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## Funding

European Union through FCH JU: [Grant agreement 278798 - CORDIS link](#)

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## Project partners

**Coordinator :**[Politecnico di Torino](#)**Partners :**[Teknologian tutkimuskeskus VTT Oy](#)[CNR - Consiglio Nazionale delle Ricerche](#)[IEN - Instytut Energetyki](#)[University of Turin](#)

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**Sub project(s)****Sub project 1****Country:** Italy**Address:**

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**Sub project categories**

Research

Project Id: 1090

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