



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project BIOROBUR

Biogas robust processing with combined catalytic reformer and trap

In the BioROBUR project a robust and efficient fuel processor for the direct reforming of biogas will be developed and tested at a scale equivalent to 50 Nm<sup>3</sup>/h production of PEM-grade hydrogen to demonstrate the achievement of all the call mandates. The system energy efficiency of biogas conversion into hydrogen will be 65%, for a reference biogas composition of 60%vol CH<sub>4</sub> and 40%vol CO<sub>2</sub>. Key innovations of the BioROBUR approach are: - The choice of an autothermal reforming route, based on easily-recoverable noble-metal catalysts supported on high-heat-conductivity cellular materials, which shows intrinsic advantages compared to steam reforming: catalysts less prone to coking, easier adaptability to biogas changing composition, more compact design, efficient handling of heat, lower materials costs, fast start-up/shut-down, easier process control, etc. - The adoption of a multifunctional catalytic wall-flow trap based on transition metal catalysts, close coupled to the ATR reformer, which could entail effective filtration and conversion of soot particles eventually generated in the inlet part of the reformer during steady or transient operation, the decomposition of traces of incomplete reforming products (i.e. aldehydes, ethylene,...), the promotion of the WGS reaction to a significant extent so as to lower the size of the WGS unit, etc. - The adoption of a coke growth control strategy based on periodic pulses of air/steam or on momentary depletion of the biogas feed so as to create adequate conditions in the ATR reactor for an on-stream regeneration of the catalysts, thereby prolonging the operating lifetime of the catalysts with no need of reactor shut-down. Under the experienced coordination of Prof. Debora Fino, the project will integrate, in an industrially oriented exploitation perspective, the contribution of 9 partners (3 universities, 2 research centres, 3 SMEs and 1 large company from 7 different European Countries) with complementary expertise.

## Project Information

**Type of project :** Research

**Timing :** 01/05/2013 > 31/08/2016

**Project website:** <http://www.biorobur.org/>

**Project Budget :** 3.843.868 €

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## Funding

European Union through FCH JU: Grant agreement 325383 - [CORDIS link](#)

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## Project partners

**Coordinator :**

Polito - Politecnico di Torino

**Partners :**

CNRS - Centre National de la Recherche Scientifique

CERTH (National Centre for Research and Technology Hellas) with CPERI

HYSYTECH S.r.l.

TECHNISCHE UNIVERSITAET BERGAKADEMIE FREIBERG

SCUOLA UNIVERSITARIA PROFESSIONALE DELLA SVIZZERA ITALIANA

Erbicol SA

UAB MODERNIOS E-TECNOLOGIJOS

PIRELLI & C. ECO TECHNOLOGY RO SRL

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## Main project contact

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## Sub project(s)

### Sub project 1

**Country:** Italy

**Address:**

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**Sub project categories**

Research

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Project Id: 920

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