



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project NEMESIS2+

New Method for Superior Integrated Hydrogen Generation System 2+

Decentralized hydrogen production at refuelling stations has great potential to accelerate market introduction of hydrogen-powered vehicles. Based on the outcome of the previous NEMESIS project under FP6 the overall objective of the proposed NEMESIS 2+ project is the development of a small-scale hydrogen generation prototype capable of producing 50 standard cubic metres of hydrogen per hour from diesel and biodiesel at refuelling stations. Reduction of hydrogen production costs and an increase of reliability and efficiency of the hydrogen generation system will be the major objectives. Special emphasis will be placed on liquid desulphurisation prior to the catalytic conversion step. Based on the promising results from the NEMESIS project, a desulphurisation module based on liquid adsorption for continuous operation will be built and tested with fossil diesel, biodiesel and biodiesel blends. Thereby severe problems relating to catalyst deactivation can be avoided or at least minimized. This will be supplemented by the development of sulphur-tolerant reforming and water gas shift catalysts and the development of catalyst regeneration strategies. The liquid desulphurisation module will be connected to a reformer module based on a modified steam reforming technology owned by HyGear. By a subsequent water gas shift stage and a pressure swing adsorption unit a hydrogen purity of 5.0 (99,999 %) is achieved. In order to be able to run on liquid fuels as well as on off-gas from the hydrogen purification unit, a dedicated dual fuel burner will be developed within NEMESIS2+. Once the prototype modules (desulphurisation module, multi-fuel catalyst, reformer module) are integrated into the prototype unit the system will be tested for at least 1000 hours. Work will be completed by a techno-economic evaluation of the prototype hydrogen generation system (Cost analysis, Study on integration into refuelling stations).

Project Information

Type of project : Research

Timing : 01/01/2012 > 30/06/2015

Project website: <http://www.nemesis-project.eu/home.html>

Project Budget : 3.393.341 €

Funding

European Union through FCH JU: Grant agreement 278138 - [CORDIS link](#)

Project partners

Coordinator :

[DLR - German Aerospace Center](#)

Partners :

[HyGear B.V.](#)

[JOHNSON MATTHEY PLC](#)

[Abengoa Innovación](#)

[ABENGOA BIOENERGIA SAN ROQUE S.A.](#)

[CERTH \(National Centre for Research and Technology Hellas\) with CPERI](#)

[INSTITUTO SUPERIOR TECNICO](#)

Sub project(s)

Sub project 1

Country: Germany

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Sub project categories

Research

Project Id: 1052

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