In-situ Diagnostics in Water Electrolyzers

Fact Sheet

Project Information

<table>
<thead>
<tr>
<th>INSIDE</th>
<th>Funded under</th>
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<tr>
<td>Grant agreement ID: 621237</td>
<td>FP7-JTI</td>
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<tr>
<td>Status</td>
<td>Overall budget</td>
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<tr>
<td>Closed project</td>
<td>€ 3 656 756,20</td>
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<td></td>
<td>EU contribution</td>
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<td>€ 2 176 624,80</td>
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<td>Start date 1 November 2014</td>
<td>Coordinated by</td>
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<td>DEUTSCHES ZENTRUM FUR</td>
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<td>LUFT - UND RAUMFAHRT EV</td>
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<td>Germany</td>
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Objective

In this project an electrochemical in-situ diagnostic tools for locally resolved measurements of current densities, which has been originally developed for application in polymer electrolyte membrane based fuel cells, will be adapted and integrated into water electrolyzers. The tool will be applied to three different electrolysis technologies in a parallel effort: proton exchange membrane electrolysers, alkaline electrolysers and anion exchange membrane electrolysers. With this tool, which will include relevant sensors, the operating conditions will be monitored on-line. Test protocols for normal operation and accelerated ageing operation modes will be applied to the systems with the aim to identify critical operating conditions by means of the new integrated diagnostic tool.

Parallel to these in-situ diagnostics, ex-situ investigations of electrolyser components, such as electrodes and membranes, will support the approach. Fresh and aged samples will be studied, in steady interaction with the in-situ diagnostics, to identify the mechanisms leading to performance losses and failure of components.
These two approaches will be combined to find strategies and operation parameters to anticipate and to avoid hazardous operation modes. The possible use of electrolysers as decentralised storage systems for excess electric energy and thus providing a sustainable energy carrier in form of hydrogen will require a reliable operation under varying loads.

Field of science

/field of science/energy and fuels/electric energy/natural sciences/chemical sciences/electrochemistry/electrolysis/energy and fuels/renewable energy/energy and fuels/fuel cell

Programme(s)

Topic(s)

Call for proposal

FCH-JU-2013-1

Funding Scheme

JTI-CP-FCH - Joint Technology Initiatives - Collaborative Project (FCH)

Coordinator

DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV

Address

Linder Hohe
51147 Koln
Germany

Activity type

Research Organisations

EU contribution

€ 1 139 664,60

Website

Contact the organisation

Administrative Contact

Carolin Dolde (Mrs.)

Participants (5)

NEW NEL HYDROGEN AS
Norway

EU contribution
€ 273 000

Address
Heddalsvegen 11
3674 Notodden

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Website
Contact the organisation

Administrative Contact
Lars Markus Solheim (Mr.)

ACTA SPA

Italy

Address
Via Lavoria 56G
56040 Crespina

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Contact the organisation

Administrative Contact
Chiara Emiliani (Dr.)

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS

France

EU contribution
€ 215 781

Address
Rue Michel Ange 3
75794 Paris

Activity type
Research Organisations

Website
Contact the organisation

Administrative Contact
Gaëlle Bujan (Mrs.)

HOCHSCHULE ESSLINGEN

Germany

EU contribution
€ 203 579,20

Address
Kanalstrasse 33

Activity type
Higher or Secondary
ENAPTER SRL

Italy
EU contribution
€ 344 600

Address
Via Lavoria 56/G
56040 Crespina Lorenzana

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Contact the organisation

Administrative Contact
Chiara Emiliani (Dr.)

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