



2<sup>nd</sup> FCH Joint Undertaking Brokerage Event

Breakout session

# Hydrogen Production & Distribution

# Rational

The selection and properties of materials used in fuel cell systems influence the cell and stack performance, lifetime and cost. **Novel, and improved materials can hence increase performance, reduce statistically based failures, increase lifetime and reduce cost.**

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# Budget Call 2010

Application Area	Budget (Million euro)
Transportation & Refuelling Infrastructure	31.6
<b>Hydrogen Production &amp; Distribution</b>	<b>11.0</b>
Stationary Power Generation & CHP	33.0
Early Markets	11.5
Cross-cutting Issues	2.0

6 Topics:

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# Topic 1

No	Topic	Description
6	Efficient alkaline electrolyzers	Development activities on low cost, low temperature, high efficiency electrolyzers based on alkaline technology, including prototyping and testing; demonstration of the application and production readiness.

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# Topic 2

No	Topic	Description
7	Development of fuel processing catalyst, modules and systems	Development of reforming technologies for hydrogen production based on conventional and alternative fuels (such as bio-fuels, methanol and ethanol); focus is on materials and processes for chemical conversion and desulphurisation. The objective is to further develop refuelling technologies for the introduction of hydrogen-fuelled vehicles in the market.

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# Topic 3

No	Topic	Description
8	Development of gas purification technologies	Development of gas purification technologies and quality monitoring for hydrogen production processes based on conventional and alternative fuels, such as bio-fuels. Scope of work is on optimisation of materials, including membranes and sorbents, and processes for pressure swing adsorption (PSA) and temperature swing adsorption (TSA). The objective is to further develop refuelling technologies for the introduction of hydrogen-fuelled vehicles in the market.

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# Topic 4

No	Topic	Description
9	Low temperature H <sub>2</sub> production processes	Development of efficient chemical or biological systems converting renewable energy sources (solar energy and biomass) into hydrogen (via chemical energy for water splitting and anaerobic fermentation). Efficient, easy to handle chemical or biological systems shall be developed and the low temperature hydrogen production shall be demonstrated in small scale reactors.

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# Topic 5

No	Topic	Description
10	Feasibility of >400bar CGH2 distribution	Assessment of the benefits of higher truck delivery pressure for distribution and retail as well as preparing the case for permitting higher hydrogen truck delivery pressure, including a report on safety aspects, and recommendation on maximum pressure and recommendations for a change in legislation.

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# Topic 6

No	Topic	Description
11	Preparation of demonstration of efficient large-scale hydrogen liquefaction	Development of a process for hydrogen liquefaction with significantly reduced energy consumption and a commercial design for a large-scale liquefaction plant as preparation for future implementation.

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