

Grid Integrated Multi Megawatt High Pressure Alkaline Electrolysers for Energy Applications: ELYntegration

Esther Albertín, FHA
Foundation for the Development of New
Hydrogen Technologies in Aragon (Spain)
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The Project

- Started: September 2015
- Duration 36 months (September 2018)
- The strategic goal of ELYNTEGRATION is the design and engineering of a
 - robust, flexible and cost competitive
 - Multi Megawatt alkaline water electrolyser
 - capable of producing - with a single stack - up to 4.5 ton H₂/day for energy applications.

The Consortium

- FHA (Fundación Hidrógeno Aragón, Coordinator, ES)
- IHT (CH)
- VITO (BE)
- Fraunhofer-IFAM (DE)
- Inycom (ES)
- IAEW-RWTH Aachen (DE)



Overview



FUNDACIÓN PARA EL DESARROLLO DE LAS NUEVAS TECNOLOGÍAS DEL HIDRÓGENO EN ARAGÓN



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Alkaline Water Electrolysis

- Cell design and improvements at stack level → high performance in a broad range of the electrolyser load.
 - Material development (electrodes , membranes)
 - Topology and assembly of the final stack solutions
- Definition and design of an optimized balance of plant (BoP) for the dynamic operation.
 - Analysis of the BoP components and streams which could derive in lower costs of the system
 - Participation of industrial and technological partners
- Advanced communication and control system
 - Requirements of end-users
 - Enhance the flexibility of the electrolyser providing grid services

Testing

- Tested step by step and continuously during the project:
 - from ex-situ characterization at laboratory level
 - to in-situ testing at different scales (micro pilot to industrial size)
- The most promising results obtained in the project will be included in a final validation electrolyser working in an operational environment.
- Once validated and demonstrated at prototype level, the advanced constructive features will be integrated in the design of a multi-MW single stack alkaline electrolyser.



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Market and business preparation

- Feasibility study and market potential assessment
 - determine the best possible markets, sectors and countries for the final product
- The market study will focus on the national policies towards **renewable energy and energy storage**, with special attention to electricity prices in the power market and the provision of grid services to minimize the price of the hydrogen production.
- Exploitation strategy and **business plan**: After the results of the demonstration activities, the conclusions of the market study and the analysis of different business cases
- The exploitation strategy and business model for the ELYntegration final product will be presented to the hydrogen community of the EU and different stakeholders like TSOs, DSOs, utilities, grid operators, etc. in workshops and events during the project progress.



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Communication and Awareness

- Activities complementary to the exploitation strategy and business plan.
- Targets: policy makers, local authorities, technology providers, general public.
- The final goal is to develop awareness of the services and technology to be demonstrated in the project at each level, including energy transition problematic, grid flexibility and environmental aspects.
- Channels: website, leaflets, participation in specialized conferences and fairs.
- Public deliverables will be also published and available in the project's webpage.

Status

- Month 10 (~25% progress)
- Additional services and business models: identified
 - Country specific
 - Matching / Cross referencing with H2 market
- Communication and control systems to provide services
- First sets of materials developed, tested @ lab, being tested in situ first electrolyser scale
- New test bench (intermediate scale) is being commissioned
- Communication activities ongoing (web, conferences,...)

Thank you for your attention



Esther Albertín



R&D Manager at FHA
Fundación Hidrógeno Aragón
www.hidrogenoaragon.org





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