



The projects in the AEM-HUB aim at developing solutions for efficient and sustainable storage of renewable energy by converting electricity into hydrogen via advanced anion exchange membrane (AEM) water electrolysis (WE).

The AEM-HUB cluster



The **CHANNEL** project aims to build a cost-efficient 2 kW AEM water electrolyser able to operate at differential pressure, as well as under dynamic operation, optimal for producing high quality, low-cost green hydrogen from renewable energy sources.

CHANNEL will conduct a techno-economic analysis and in detail determine future size and cost targets for AEM electrolysers. It will identify markets and their requirements, establishing production quantities essential to address markets and expected cost decrease.



The aim of the **ANIONE** project is to validate a 2 kW AEM electrolyser with a hydrogen production rate of approximately 0.4 Nm³/h. To achieve this, innovative reinforced anion exchange membranes will be developed in conjunction with non-critical raw material electrocatalysts with high surface areas and membrane-electrode assemblies.

The ANIONE technology will allow for a scalable, efficient, and low-cost production of “green” hydrogen from a variety of renewable energy sources. The wide-scale production of hydrogen will enable large-scale applications in grid balancing markets, in power-to-gas storage systems, and in the sustainable transport and mobility sector.



The **NEWELY** project aims to build and test a 2 kW 5-cell AEMWE stack prototype based on hydraulic compression with novel components characterised by superior performance and stability.

The NEWELY prototype will be designed considering technical requirement for a stack system based on market specifications and different end-use applications. A capital expenditure analysis will be performed both on the 2 kW stack prototype and on 100 kW and 1 MW estimated scaled systems. The data from the analysis will be used for the LCA and LCC in comparison with existing technologies, such as PEM and Alkaline membranes.

Objectives

- To develop standardised test protocols and terminology for AEM electrolysis research
- To develop innovative AEMs with high performances
- To optimise non-PGM electrocatalysts for AEM WE systems
- To demonstrate 2 kW AEM WE stack prototypes operating at high pressure

Impacts

The AEM-HUB projects will push the development of AEM water electrolysis systems towards lower costs, higher efficiency, and increased sustainability. This will pave the way for larger-scale implementation of the technology and make Europe a global leader in green hydrogen production.

Timeline

2020	Q1	Projects start
	Q2	
	Q3	Harmonisation test protocols and terminology
	Q4	
2021	Q1	Innovative AEMs
	Q2	Optimised non-PGM electrocatalysts
	Q3	AEM WE stack design
	Q4	
2022	Q1	
	Q2	Validate 2 kW AEM WE stack prototypes
	Q3	
	Q4	Projects end
2023	Q1	Start of results exploitation

Learn more on how we are pursuing our mission of a green and sustainable world!



NEWELY

-  www.newely.eu
-  [NewelyProject/](#)
-  [company/newely-project/](#)

CHANNEL

-  www.channel-fch.eu
-  [CHANNEL_FCH](#)
-  [company/channel-fch/](#)

ANIONE

-  www.anione.eu

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