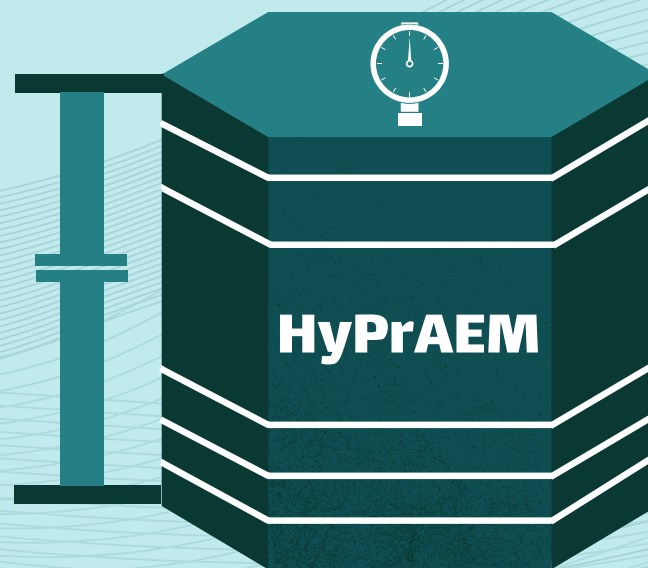


“Elevating Hydrogen Production to Industrial Standards”

Stay Connected



High-Pressure Anion Exchange Membrane electrolyzers for large-scale applications



Co-funded by
the European Union

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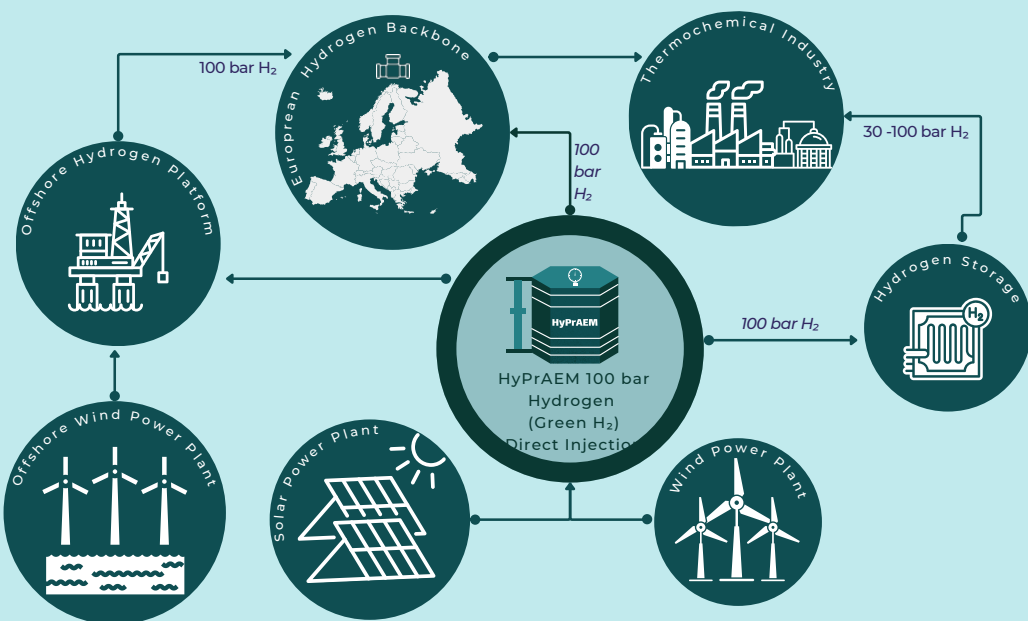
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Project

The HyPrAEM project aims to develop a disruptive Anion Exchange Membrane ELectrolysis (AEMEL) stack and balance of plant (BoP) layout capable of producing hydrogen directly at 100 bar, enabling direct integration into the chemical industry. The 100 kW/100 bar AEMEL stack, with an active area of 500 cm² will be demonstrated for >3000 h under industrially relevant conditions at the site of an end user.



Outcomes

To strengthen European leadership in AEMEL, substantial advancements are being pursued in the development, manufacturing, and deployment of AEMEL for pressurized hydrogen production. By 2027, novel high-power short-stack layouts are anticipated for these pressurized AEMELs, alongside the establishment of scalable manufacturing processes to meet growing market demands.

1. Novel AEMEL stack layout for pressurized hydrogen production.
2. Next generation components (catalysts, ionomers, membranes, porous transport layers, Membrane Electrode Assembly) for AEMEL.
3. Increase in stack size, operational flexibility, and stack lifetime.
4. Strengthen European leadership in AEMEL.

Impact

By 2050, hydrogen is expected to constitute around 13-14% of Europe's energy mix, according to the European Commission's Strategic Vision for Climate Neutrality. Recent assessments suggest a significant rise in electrolyser capacity by 2035, ranging from 37-66 GW, yet the technology falls short of the required key performance indicators. HyPrAEM targets align with Clean Hydrogen Strategic Research and Innovation Agenda goals for AEMEL by 2030, enhancing the EU's leadership and setting a new industry standard.

1. Increase uptake within thermochemical industry aided by the direct buffering of intermittently produced hydrogen, ensuring steady, reliable supply of green hydrogen.
2. Decrease Levelized Cost of Hydrogen and increase adoption of AEMEL.
3. Increase in Technology Readiness Level of AEMEL and increase addressable market size for AEMEL.
4. Economic benefits for key supply chain players of AEMEL within EU.