

Green hydrogen economy: Evonik is building a plant for anion exchange membranes

- Membrane makes water electrolysis more cost-effective
- Pilot plant for production of anion exchange membranes in Marl to start operation at the end of 2025
- Plant will also produce reinforced membranes to meet growing customer demand

Marl. Evonik is building a pilot plant in Marl, Germany, for the production of its innovative and high-performance anion exchange membrane (AEM). Developed by Evonik the membrane is marketed under the name DURAION®.

A central element in AEM water electrolysis, DURAION® membranes enable the cost competitive production of green hydrogen. Evonik is investing a low double-digit million euro amount in the AEM plant, which is scheduled to go online at the end of 2025.

“This strategic investment ties in with our business goals of further growing our pioneering membranes into a true enabler of the burgeoning green hydrogen economy,” says Goetz Baumgarten, head of the Membranes & Fibres product line at Evonik’s High Performance Polymers business line.

The DURAION® membranes produced at the AEM plant in Marl will be at a quality suitable for use in commercial electrolyzer systems. Once fully online, the plant will be able to produce enough membranes each year to provide 2.5 GW of electrolysis capacity for hydrogen production. In addition, the plant will be able to produce reinforced membranes, directly addressing growing customer interest in this new technology.

Compared to conventional electrolysis processes, AEM technology promises lower investment costs due to the use of less expensive materials for the cells. In addition, the technology enables high current densities and very good efficiency.

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“The successful development of our DURAION® membrane was possible thanks to the joint efforts of Evonik’s wide-ranging expertise and technology,” says Christian Däschlein, head of the New Growth Area Hydrogen Economy at Creavis, Evonik’s strategic innovation unit and business incubator.

The membrane is a polymer and a high-tech product: on the one hand, it has to allow anions to pass through, but on the other hand, it has to be impermeable to the gases produced in the electrolysis, such as hydrogen. It also has to be able to withstand high pressure and high temperatures.

“Across our many disciplines, we were able to combine polymer design and synthesis, engineering, membrane manufacturing as well as customer and market feedback,” says Christian Däschlein.

In the last twelve months, Evonik has steadily increased the production capacity of the intermediate products used in DURAION® membranes. The construction of the plant in Marl capitalizes on this higher capacity, and is the next step for the company in the planned expansion of its membrane business.

For more information on Evonik’s DURAION® anion exchange membranes, visit <https://www.membrane-separation.com/en/hydrogen>

Company Information

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world and generated sales of €15.3 billion and an operating profit (adjusted EBITDA) of €1.66 billion in 2023. Evonik goes far beyond chemistry to create innovative, profitable, and sustainable solutions for customers. About 32,000 employees work together for a common purpose: We want to improve life today and tomorrow.

About Smart Materials

The Smart Materials division includes businesses with innovative materials that enable resource-saving solutions and replace conventional materials. They are the smart answer to the major challenges of our time: environment, energy efficiency, urbanization, mobility and health. The Smart Materials division generated sales of €4.46 billion in 2023 with more than 8,100 employees.

About Evonik Creavis

Creavis is the strategic innovation unit and business incubator of Evonik. For more than 25 years, it has been paving the way for new technologies and innovative business models that make a livable future possible. Its approximately 200 employees worldwide develop sustainable solutions for key challenges arising from climate change and population growth. In doing so, they drive new economic ecosystems and value chains.

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