



DURAION®

Advanced membrane technology
for green hydrogen production

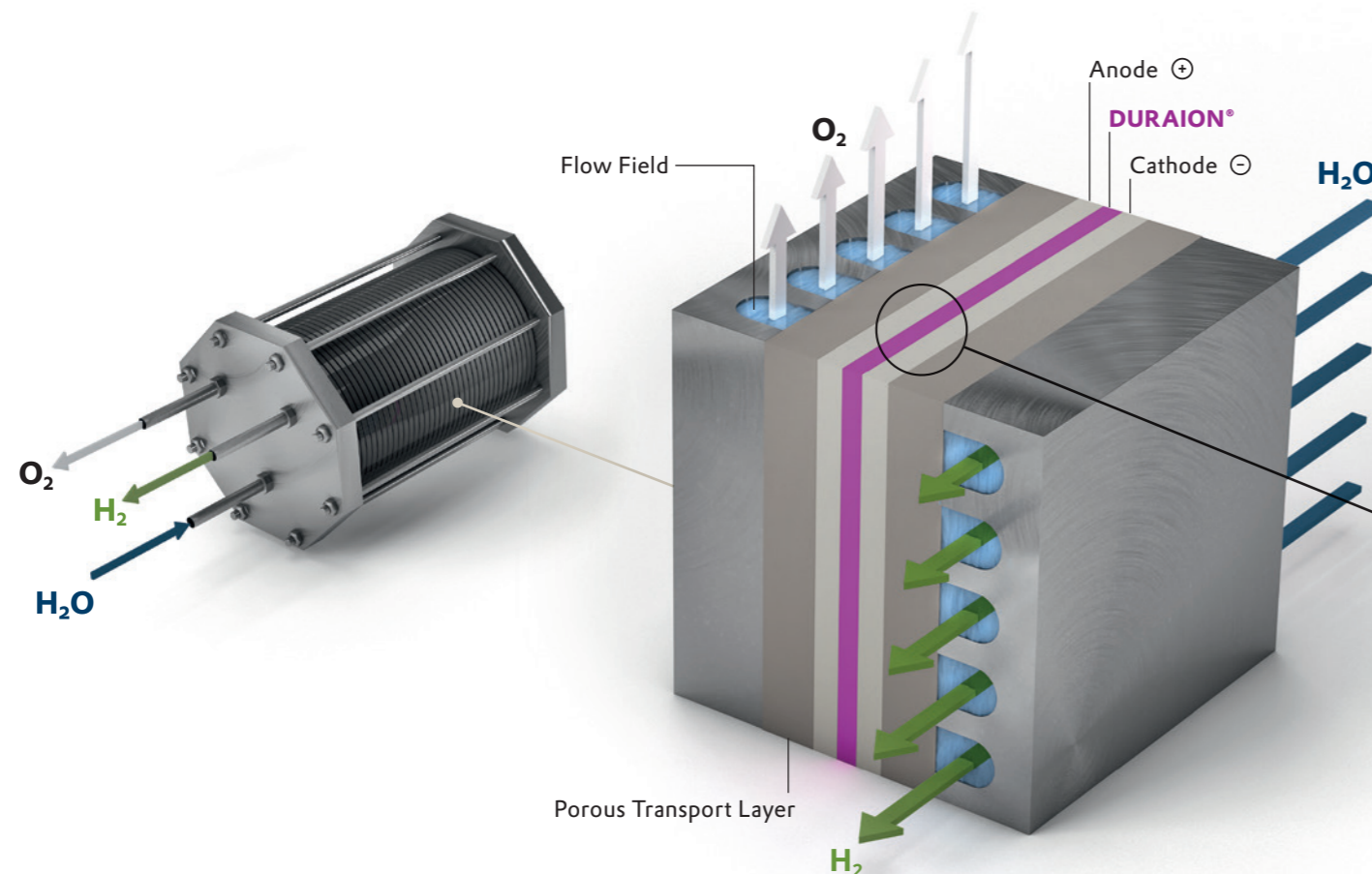
DURAION® – AEM ELECTROLYSIS FOR GREEN HYDROGEN PRODUCTION

We are meeting the global challenge of the energy transition with our commitment and our solutions in the field of the green hydrogen economy.

The current high price of green hydrogen prevents its widespread production and use. At Creavis, researchers have developed the novel anion exchange membrane DURAION®

which is the key component for the anion exchange membrane water electrolysis technology (AEM electrolysis).

DURAION® aims to make the competitive production of green hydrogen possible and allows the partners of Evonik to lead the way into a sustainable hydrogen economy.



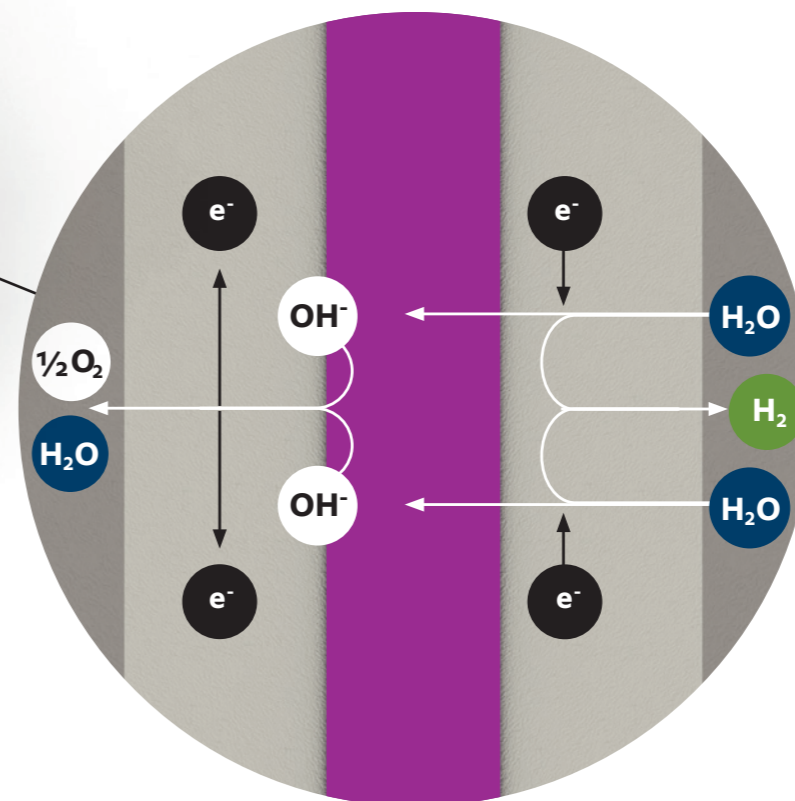
AEM electrolysis – The best of two worlds

By integrating DURAION® into an AEM electrolyzer, the investment and operating costs can be significantly reduced compared to today's benchmark technologies (alkaline electrolysis and PEM electrolysis).

ties and can be dynamically started up providing a high degree of flexibility. It thus combines the advantages of the benchmark technologies without their drawbacks.

Since the operation of AEM electrolysis takes place under alkaline conditions like in alkaline electrolysis, noble metal free catalysts for the electrodes and inexpensive materials for the cell design can be used. Similar to PEM electrolysis (proton exchange membrane), AEM electrolysis can be operated at higher current densi-

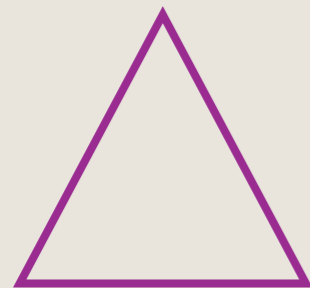
	Alkaline electrolysis	PEM electrolysis	AEM electrolysis
Flexibility	●	●	●
Investment cost	●	●	●
H ₂ pressure	●	●	●
Operating cost	●	●	●



The DURAION® membrane is the center piece in the electrolyzer with its ability to conduct anions. It separates the two reaction chambers and enables thereby the continuous production of hydrogen in the electrolysis cell. Multiple electrolysis cells are combined to a stack to increase the amount of hydrogen produced.

DURAION® – Our performance promise

MECHANICAL INTEGRITY



CHEMICAL STABILITY

IONIC CONDUCTIVITY

Figure: Membrane quality triangle

The DURAION® membrane of Evonik meets the quality triangle of membrane based water electrolysis by balancing the required properties without favoring one over another.

- Very high ionic conductivity
- Excellent chemical stability in aggressive media
- Distinguished mechanical integrity

The polymer expertise of Evonik has been the key in developing DURAION® for AEM electrolysis and makes us unique among the developers of anion exchange membranes.



Evonik supports its partners and customers by the integration of DURAION® into the electrolyzer. We guarantee scalable and customizable solutions based on our pronounced and backward integrated monomer and polymer expertise.



www.evonik.com/aem-technology/en

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