

Establishing a new electrochemical production route for hydrogen peroxide



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www.power2hype.eu
Contact us
info@power2hype.eu



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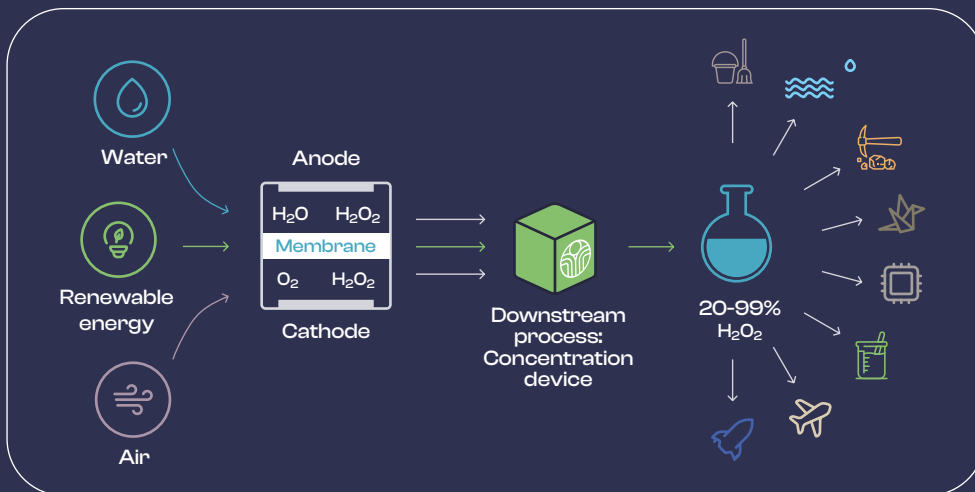
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Power2Hype is a four-year EU funded research project that will establish a new electrochemical production route for hydrogen peroxide.

The Power2Hype approach will revolutionise the traditional and energy-intensive chemical process of hydrogen peroxide production, through the use of air and water as sole feedstock, and renewable energy as the sole energy source.



How?

The project develops a sustainable route for hydrogen peroxide (H_2O_2) production through a pioneering electrochemical process: cathodic oxygen reduction is paired with anodic water oxidation, enabling efficient H_2O_2 production in both half-cells. A downstream processing unit to refine the primary product mixture is developed and integrated with the electrolyser, yielding highly concentrated H_2O_2 solutions. In Power2Hype, the entire process chain is demonstrated at technically relevant scale.

Why?

Like all other industrial sectors, the chemical industry must become CO_2 -neutral. Hydrogen peroxide (H_2O_2) is listed among the 100 most essential chemicals globally. A novel production route for H_2O_2 is needed that uses sustainable and abundant materials, generates no toxic wastes, includes energy-efficient downstream processing (DSP), facilitates dynamic operation according to the inherent intermittency of renewable energies and allows a decentralised and small-scale production in an economically viable way. Power2Hype aims to develop such a process.