



## Electrolysis Technology & Services by Bosch

Accelerating green hydrogen production

Green hydrogen generated by electrolysis – this is one of the key elements for a sustainable and climate-neutral energy economy. Our Bosch electrolysis stack represents the heart of hydrogen production and thus supports a future-proof energy system that is independent of fossil fuels. The stack is manufactured according to our climate-neutral standards of automated and industrialized series production – globally scalable at any time and, of course, in the usual high Bosch quality.

### The PEM technology in detail

In PEM electrolysis, a proton exchange membrane (PEM) serves as an ionically conductive medium between the anode and cathode. When voltage is applied, water is split at the anode. Oxygen is formed, the protons migrate through the membrane to the cathode and react there to form hydrogen. The benefits: high power density, high H<sub>2</sub> output pressure, maximum flexibility, and minimum space requirements, combined with a high level of operational reliability and safety.

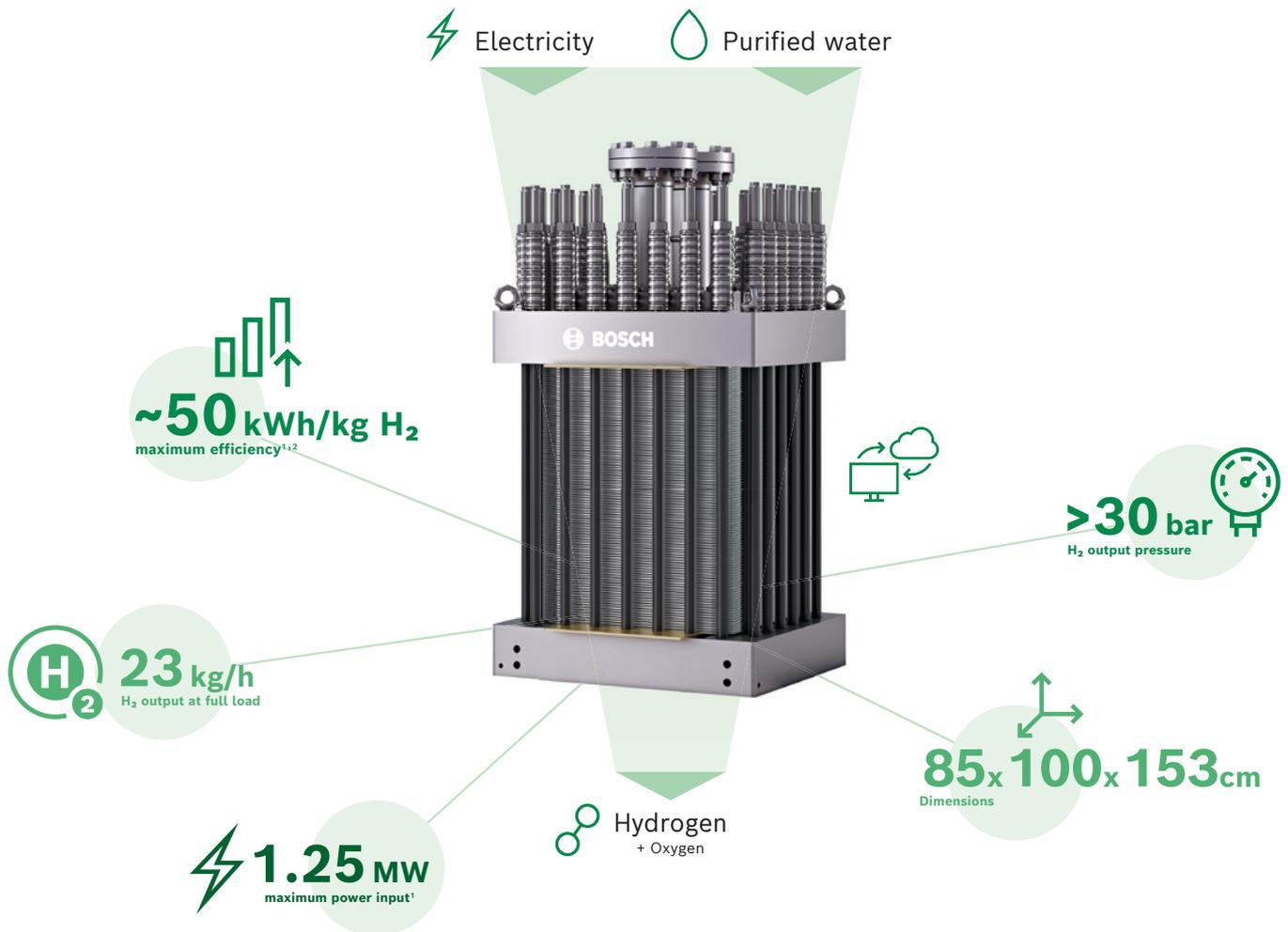
### Expansion of the electrolysis stack through additional Bosch expertise

 In addition to the electrolysis stack, Bosch is also working on the approach of a smart electrolysis module. The module combines several stacks with the essential periphery of power electronics, control unit and sensors. The modules are optimized to each other and improve system efficiency. In this combination, the system is particularly reliable, space-saving, and easy to integrate.

### Our service offering for electrolysis plants

 With our know-how in the areas of digitalization and connectivity, we perspective offer accompanying services. These include basic services such as installation, commissioning, and maintenance as well as the supply of exchange parts, staff training at premises and the recycling of components at the end of their life cycle.

Alongside our experts, a key element of these services is a digital twin. The virtual copy of the respective electrolysis unit enables an accurate analysis of the system status, helping to keep the electrolysis capacity at the best possible level and thereby optimize operating costs. Furthermore, we are working on attractive offers to technically and commercially de-risk electrolysis projects.



1) Beginning of life 2) At partial load

## Application areas of our electrolysis components

Using our core competence of scaling and industrialization, we make hydrogen production solutions available ranging from applications in decentralized plants up to large-scale industrial solutions.



In scalable decentralized plants with a capacity of one to ten megawatts, our PEM electrolysis stack can be perfectly integrated into containerized solutions. They are installed directly at the hydrogen consumption site. This saves transport costs, making it an ideal solution for production plants seeking to cover their demand for hydrogen to be used as a process gas or for energy supply.



Embedded in large plants, our Bosch electrolysis stack is used in the centralized, high-volume production of hydrogen with a capacity of several hundred megawatts. The electrolysis units can be integrated into buildings or set up as a stand-alone production plant.

## Join us in shaping the hydrogen economy of tomorrow!

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Invented for life

Bosch is preparing series production for the electrolysis stack and is currently in the pilot phase. All technical specifications given in this informational document are development objectives.