

## BASIC INFORMATION

### The innovative hydrogen fuel cell key player from Bavaria: Proton Motor Fuel Cell GmbH leading with PEM fuel cell solution

*Puchheim near Munich, 2023* – Proton Motor Fuel Cell GmbH ([www.proton-motor.de](http://www.proton-motor.de)) holds the European market key player role in hydrogen fuel cell technology with its 25 years of experience. The aim of the company from Puchheim near Munich, which is registered in Germany, under the CEO management of Francois Faiz Nahab Ph.D. is to design sustainable and emission-free energy solutions for the world of tomorrow in the automotive, maritime, stationary and rail sectors. The 100 percent subsidiary of the England-located parent company “Proton Motor Power Systems plc” ([www.protonmotor-powersystems.com](http://www.protonmotor-powersystems.com)) has brought a new innovative standardised hydrogen fuel cell module based on the so-called “PEM technology” to market maturity. This is developed and produced at the company site near the state capital of the Free State of Bavaria. Proton Motor is positioned on the market as a developer and manufacturer of fuel cell stacks and complete systems. The Company offers the world’s most powerful hydrogen fuel cell made of graphite bipolar plates – as the heart of the stacks – for up to 73kW. The company’s models also have the unique international feature that means they can be installed in two ways – horizontally and vertically. Some of the components and overall solutions are designed in cooperation with suppliers, with the software programming and -controlling being carried out by Proton Motor.

In addition to the production of special fuel cell stacks (“stacks”) and project planning of hybrid systems, other focal points are set on manufacturing, assembly and continuous product optimisation. **“As a CleanTech Competence company, our customers benefit from many years of expert knowledge in integrating the fuel cell module into overall electrical systems, with our product spectrum ranging from the in-house developed and produced stack to turnkey applications.** We differ from pure system integrators because we act as a partner for solutions from a single source, who, by bundling know-how, realises components for fuel cell systems or hybrid complete solutions that are tailored to their area of application”, explains Manfred Limbrunner, since March 2017 a Board member and Director “Governmental Affairs and Communication, the brand positioning of Proton Motor. In 1998, the spin-off of “Magnet-Motor GmbH” – manufacturer of electric vehicle drive technology, which started with hydrogen technology in 1994 – saw the spin off from the fuel cell business under the current company name.

A fuel cell is considered the ideal building block for emission-free and sustainable energy supply. It is a device that – in the molecular structures of water and oxygen – converts bound chemical energy into electrical energy. **In a quarter of a century, Proton Motor has developed the ability to combine batteries and other energy storage devices with polymer electrolyte membrane fuel cell systems.** In this method, entitled **“PEM technology”**, gaseous hydrogen is used as an energy source and converted into pure water with oxygen from the air. Electricity and heat are generated in the cell as additional reaction products. **If the hydrogen comes from renewable sources, for example from the electrolysis of electricity from wind or solar energy, this technology is completely emission-free and CO2-neutral.**

As part of its market soundings, the Puchheim-based company with its currently more than 100 employees was able to identify applications in which fuel cell hybrid systems offer considerable advantages compared to conventional technologies for combustion engines. **Above all, there are much more favourable forecasts in the areas of lower fuel consumption, longer periods between refuelling, shorter refuelling times and consistently high-power output.**

**In contrast to conventional energy supply, such as in coal and nuclear power plants, the innovative fuel cell system from Proton Motor, in which the fuel cell stack is embedded as the core and key element in a module, does not produce any toxic, radioactive or climate-damaging by-products.** This new attractive alternative to the previous generation of electricity is to be successively established in the market in order to support the energy transition towards climate-neutral sustainability through the **“PEM solution”** without harmful emissions.

Climate change is currently the biggest global challenge. When fossil fuels are burned, the earth heats up increasingly. This makes the energy change indispensable. The engineers at Proton Motor Fuel Cell GmbH recognised the urgency of alternative and, above all, emission-free power sources. Since 1994, they have been filling their technological pioneering role in the development and implementation of innovative strength with repeatedly tested and award-winning quality products “Made in Germany”. **The Proton Motor service portfolio goes far beyond previous system interfaces. Specialists at Proton Motor support their customers as a professional service partner in the planning as well as in the implementation phase with design, testing and commissioning as well as with training, certification and acceptance by third parties.** This ensures optimal system integration, which also projects hydrogen tanks, cooling and power electronics if required.

**The CleanTech Company is currently in the transition phase to industrialisation and serialisation.** From the beginning, the development activities were focused on multiple applications and series production. When it comes to large-scale production, those responsible at Proton Motor are open to options for strategic partnerships. **On September 27, 2019, the official commissioning of the new “stack robot” by the Bavarian Minister of Economic Affairs marked a milestone in the company's history. The hydrogen fuel cell manufacturing machine was realised with funding from the European industrialisation project “Fit-4-Amanda” (Fit for Automatic Manufacturing and Assembly) and financed by the European agency “FCH JU” (Fuel Cells and Hydrogen Joint Undertaking).** With the automated manufacturing system, the production capacity can be increased by up to 5,000 to 10,000 fuel cell units per year with 37 kilowatts (kW) of electrical power for power generation. Due to a slightly changed machine layout, the production expansion up to 30,000 stack units per year is possible. **To expand production capacities, there will be a new additional company location in 2023, 12 kilometres from the headquarters in Puchheim.**

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