

Hydrogen is now.

H-TEC SYSTEMS

PRESS RELEASE

Energy Storage Europe 2019

H-TEC SYSTEMS launches megawatt PEM Electrolyser ME 450/1400

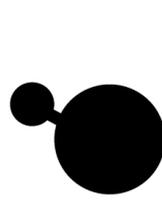
- **„Energie des Nordens“ (Energy of the North) is among the first customers**

11 March 2019, Lübeck/Düsseldorf –H-TEC SYSTEMS presents its new ME 450/1400 PEM Electrolyser, currently the most powerful electrolyser in the product range in the megawatt class by H-TEC SYSTEMS, at this year’s Energy Storage Europe, the internationally leading trade fair for energy storage technologies and concepts. Based on the tried-and-tested stack design, up to 450 kg of hydrogen can be generated per day with the ME 450/1400, i.e. approximately 90 fuel cell powered passenger cars or an average of a dozen buses can be fuelled in this way. The demand is already there: In 2020, H-TEC will deliver this electrolyser in the form of a 40 foot container installation to the renewable energy company “Energie des Nordens”–with Greenpeace Energy as the main shareholder –, who is planning to feed up to three million kilowatt hours of hydrogen from excess wind electricity into the gas network per year using the ME 450/1400 PEM electrolyser.

“Our in-depth market understanding for decentralised applications in the area of renewable energy has contributed greatly to the product design of the ME 450/1400”, explains Frank Zimmermann, managing director of H-TEC SYSTEMS responsible for sales. “This is why the new ME 450/1400 is not only characterised by a high efficiency at partial loads, but works extremely efficiently in the partial load range. Moreover, it also offers the opportunity of utilising the residual heat and of integrating this into local heat grids thereby increasing the overall efficiency to 95 percent. It also enables the integration into the services of the standard energy market thanks to its dynamic system design and its communication interfaces. The high product quality makes it suitable for all applications, both for the area of mobility as well as for injection into the gas network.”

PEM electrolyzers and stacks by H-TEC SYSTEMS are already available for the market: In only a few months, the company will begin delivering its smaller ME 100/350 225 kW PEM electrolyser for the North German Ellhöft wind farm. The operator will convert the wind electricity into green hydrogen and sell it as car fuel to a nearby hydrogen refuelling station. Later this year five of the ME 100/350 electrolyzers will be delivered to Germany’s biggest hydrogen mobility project “eFarm” on the North Sea coast in Schleswig-Holstein. Here too, hydrogen will be produced from wind electricity for further hydrogen fuel stations where not only hydrogen cars, but also hydrogen buses will be able to refuel.

Whereas the PEM electrolyzers ME 450/1400 and ME 100/350 work with stack S450 as the core component, the H-TEC SYSTEMS SERIES-S30 PEM electrolysis stacks in the output range of approx. 1 to 5 kilowatts of electric power are of particular interest for applications such as hydrogen generators for industry and research, fully integrated

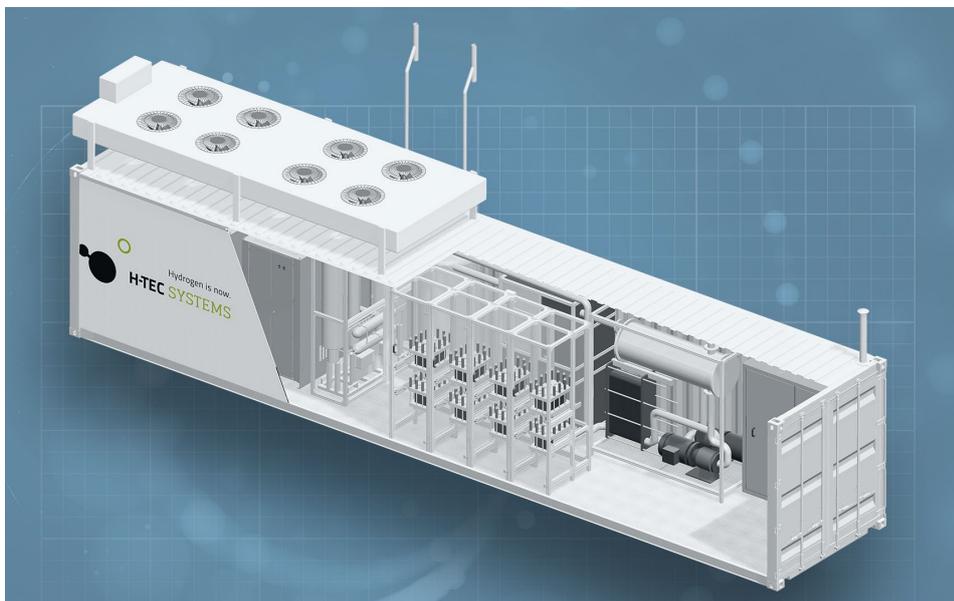


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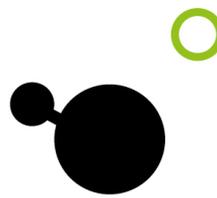
hydrogen storage solutions for buildings and industrial island systems as well as mobile applications, e.g. to reduce nitrogen oxides in the combustion of fossil fuels. These stacks impress with their high level of quality, the compact design and with their seamless integration in the design-process into overall applications. They produce hydrogen safely and efficiently at a hydrogen pressure of up to 20 bar. The hydrogen leaves the stack with a very high level of purity, so except the separation of water there is no general need to clean the hydrogen in the system itself.

The PEM electrolyzers by H-TEC SYSTEMS produce hydrogen as non-electric storage medium and thereby offer a very wide range of applications with outstanding benefits. Electrolysis technology enables the long-term intermediate storage of very large quantities of electricity from renewable sources, making curtailment unnecessary, while performing economically attractive system and network services. In addition, it even creates a new product in the form of 'wind and solar hydrogen', which has potential applications, for instance, as a fuel in transport systems, as a raw material in industry, and as a substitute for the natural gas network, opening up new markets beyond conventional storage requirements. This gives rise to new business models for renewable energy generators, which is important particularly in Germany, bearing in mind the statutory market conditions in the context of the expiry of the feed-in remuneration under the Renewable Energies Law (EEG).



Picture caption: The ME 450/1400 PEM electrolyzer is available with a nominal electric output of 1 MW in a 40-foot container solution (approx. 12m x 3m x 3.5m); it belongs to the H-TEC ME series and is currently the most powerful electrolyzer in the megawatt class product range.

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About H-TEC SYSTEMS

H-TEC was founded in 1997 and has acquired more than 20 years of experience in hydrogen technology product research and development. At production sites in Schleswig-Holstein and Bavaria, stacks and electrolyzers of the megawatt class are being manufactured. The focus is on the polymer electrolyte membrane process for industrial hydrogen applications and for use by electricity refiners and converters. Since 2010, H-TEC SYSTEMS has also been part of the GP JOULE company group, which integrates hydrogen-based energy storage technology into concepts for intelligent renewable energy operation and use. H-TEC electrolyzers already make effective sector coupling and integrated energy solutions possible today. www.h-tec-systems.com