
Press Release

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MAN Energy Solutions to Build Reactor for Renewable Fuels

Cleantech start-up, CAPHENIA, to establish production plant for synthesis gas as feedstock for industrial production of Sustainable Aviation Fuel for aviation decarbonisation

Cleantech start-up, CAPHENIA, has commissioned MAN Energy Solutions to build a Plasma Boudouard Reactor (PBR). This will form the core of CAPHENIA's first production plant, 'GERMANY I', located at Industriepark Höchst in Frankfurt am Main, Germany where the company will produce its first renewable fuels in 2024.

The CAPHENIA technology utilises biomethane, CO₂, water and sustainably-generated electricity to produce synthesis gas as a feedstock for renewable fuel production and many other chemical products. The synthesis gas will be used, for example, as a step in the production of Sustainable Aviation Fuel (SAF), thus contributing to aviation decarbonisation.

Dr Mark Misselhorn, CEO of CAPHENIA, commented on the significance of the cooperation: "The construction of this first industrial-scale plant is a milestone for CAPHENIA. The partnership with MAN Energy Solutions will enable us to establish this scalable technology, which has the potential to significantly shape the renewable-energy landscape. It is a significant step that shows that our vision of sustainable fuel production is realisable at a large scale."

Norbert Anger, site manager at MAN Energy Solutions, Deggendorf, said: "We are proud to supply the reactor technology for this innovative project and to be able to contribute our extensive expertise in the production of renewable fuels. We are convinced that synthetic fuels will play a major role in the decarbonisation of all those sectors where direct electrification, such as via batteries, is not an option."

Efficient process

The PBR developed by MAN will first split the supplied biomethane into hydrogen and carbon. In the next step, CO₂ and water will be added to produce the synthesis gas; the reactor can produce 150 kg of synthesis gas per hour. This can subsequently be converted into Sustainable Aviation Fuel using the Fischer-Tropsch process.

CAPHENIA's power-and-biogas-to-liquid (PBtL) process requires just one-sixth of the electricity of conventional processes for the production of synthesis gas, enabling an end-product CO₂ reduction of up to 92%. Thanks to this efficiency, the fuels produced can be offered at competitive prices – GERMANY I commissioning is planned for 2024.

In this context, Dr Christian Schuhbauer, Head of New Technologies at MAN Energy Solutions, Deggendorf, emphasised the importance of the CAPHENIA

technology for aviation and added: “Synthetic fuels are of crucial importance to the global economy and aviation decarbonisation can only succeed with their help. CAPHENIA has developed an efficient process for the production of Sustainable Aviation Fuel for this purpose and we are very happy to work with them on this exciting project.”

About CAPHENIA

“Turning CO₂ into fuel” – cleantech start-up, CAPHENIA, has set itself the goal of shaping the CO₂-neutral future of mobility through sustainable fuels at competitive prices. The precisely controllable CAPHENIA 3-in-1 zone reactor and its unique plasma process are used to break down biomethane into its constituent components, carbon and hydrogen. This highly efficient technology produces a synthesis gas that can be processed into renewable fuels and other chemical products without any by-products or energy losses. The reactors are designed for scalability and enable large quantities to be produced quickly. In addition to the production of renewable fuels, including renewable diesel for heavy goods and rail transport, CAPHENIA is also focussing on Sustainable Aviation Fuel (SAF).

The company is based in Frankfurt's House of Logistics & Mobility and in Bernau am Chiemsee, Germany. The CAPHENIA vision is supported by cooperation partners such as MAN Energy Solutions SE, the Max Planck Institute for Chemistry, the German Aerospace Centre, and other renowned investment and development partners. It is also supported by leading industry and business representatives, including renowned stakeholders such as Kay Kratky, Simone Menne and Christoph Franz, as well as other international partners.

Find out more about CAPHENIA at www.caphenia.com

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Visualisation of the CAPHENIA 3-in-1 zone reactor (Image source: CAPHENIA)



Dr Mark Misselhorn (left), CEO of CAPHENIA, and Norbert Anger (right), site manager at MAN Energy Solutions Deggendorf are closing a collaboration agreement between both companies to build a Plasma Boudouard Reactor (Image source: CAPHENIA)

MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level. Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 14,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.