

Press Release

Power-to-gas technology: World's largest biological power-to-gas plant injects biomethane into Danish natural gas grid

- *First commercial use of a grid-scale biomethanation reactor in Denmark*
- *Injection of the produced biomethane into the Danish gas grid*
- *Gas quality exceeds grid injection requirements in Germany and California*
- *Important contribution to grid stability, carbon dioxide (CO₂) reduction and renewable energy storage*

Munich/Copenhagen, 10. October 2019 – Renewable methane, produced by the world's largest biological power-to-gas plant, was injected for the first time into the Danish natural gas grid on September 24, 2019 near Copenhagen, Denmark. Using Electrochaea's patented power-to-gas technology, the energy in green electricity can be stored in the natural gas grid for later use. Microorganisms, called archaea, are the key to the technology; the archaea exclusively synthesize methane, the key component of natural gas, from carbon dioxide (CO₂) and hydrogen. At the Danish plant, the archaea make methane by combining CO₂ from a nearby wastewater treatment plant with hydrogen produced by an on-site electrolyzer, which uses electricity to split water into hydrogen and oxygen. With a power consumption of one megawatt, the plant has the capacity to inject up to 31 SCFM of biomethane (1200 m³ per day) into the natural gas grid at the same time preventing the release of 800 tons of CO₂ per year. The gas produced contains more than 98% methane and less than 1% hydrogen and CO₂, exceeding the requirements for gas grid injection in Denmark. This high gas quality also exceeds the injection criteria in other relevant markets, such as Germany and California.

The plant was built and operated with the support of the joint BioCat project (www.biocat-project.com), funded by the Energy Technology Development and Demonstration Program (EUDP) of the Danish Energy Agency. The main goals of project are to develop an efficient and marketable solution for the storage of wind energy, which is needed to balance energy supply and demand in situations where variable renewable energy sources, such as wind power, are dominant. The interest in storage solutions for renewable energy is particularly high in Denmark. The country's goal is to be independent of fossil fuels and to have 100% renewable energy for all uses including transportation by 2050. By 2030, Denmark wants to produce 70% less CO₂ compared to 1990 emissions.

"I am proud that the Electrochaea team, together with our partners, has reached a significant milestone in the application of biological methanation on a commercial scale. Our power-to-gas technology has proven to be extremely robust and flexible, and we are now focusing on the commercial use of this technology. The next generation of our power-to-gas system will be in the two- to three-digit megawatt range," says Mich Hein, CEO of Electrochaea.

In August, Electrochaea announced the opening of the first biomethanation facility in the USA. The plant, located at the National Renewable Energy Laboratory (NREL) in Golden, Colorado, is a joint project of Southern California Gas Co. (SoCalGas), NREL and Electrochaea. A third plant with Electrochaea technology is located in Solothurn, Switzerland, and has been injecting renewable methane into the Swiss gas grid since June 2019.

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About Electrochaea GmbH: Based on biomethanation, Electrochaea offers a power-to-gas key technology with multiple national and international patents, which cost-effectively recycles CO₂ and at the same time produces biomethane, from excess electrical energy, that can be stored and used at will. The first industrial-scale plants are operating successfully in the USA, Switzerland and Denmark. Electrochaea has 23 employees located in Denmark and at the headquarters in Munich-Planegg. Electrochaea's CEO is Mich Hein.

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