

Joint Press Release

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Methanation plant in Falkenhagen starts operation and supplies synthetic methane – another step towards a successful energy transition

- Essential building block for an integrated energy transition: Power-to-gas technology makes it possible to meet the energy needs of the heating, transport and industry sectors with low CO₂ emissions
- European research project, STORE&GO demonstrates the technical feasibility of the power-to-gas process including methanation
- Further development of technology opens up climate and economic opportunities

After the power-to-gas plant in Falkenhagen, Brandenburg, was expanded by a methanation stage in May 2018, synthetic natural gas - methane - has recently been fed into the natural gas grid. This allowed the partners of the international research project STORE&GO to demonstrate the technical feasibility of the power-to-gas process through methanation, using electrolysis, for feeding the "green" gas into the natural gas grid. So far, pure hydrogen has been fed into the natural gas grid of the power-to-gas plant in Falkenhagen. Today, the plant produces up to 1,400 cubic meters of synthetic methane (SNG) per day, which corresponds to approximately 14,500 kWh of energy. With this amount of energy, 200 golf class CNG cars could drive about 150 km per day. The methanation is designed for continuous operation and constantly achieves a very high quality of feed. To produce the green methane, the regeneratively produced hydrogen is converted to methane, i.e., synthetic natural gas, with CO₂ in a bioethanol plant. The heat generated during the process is also used by the neighboring veneer plant.

Green methane can make an important contribution to the success of the energy transition in the future. Wind and solar energy are subject to strong natural fluctuations in their availability, which can lead to the shutdown of such generating plants at peak times. Therefore, great potential for supplying the country with natural and cheap electricity can be lost. Green methane closes this gap. It can be used in many ways, for example as a fuel, to generate heat and electricity in power plants or at home and as a raw material for the chemical industry. At the same time, the unrestricted use of existing natural gas infrastructure opens up new opportunities for the transport and storage of energy generated from renewable sources. The stored energy is always available as needed, even when the sun and wind are not available to the required extent.

In the STORE&GO project, 27 partners from six countries are working together to investigate the possibilities of integrating power-to-gas applications into the European energy network and, above all, to promote the methanation of hydrogen as an important component of an integrated energy transition.

The plant was realized by the operator, Uniper, in collaboration with the location partners, Thyssenkrupp Industrial Solutions, DVGW Research Center at the Engler-Bunte Institute of KIT and the Institute of Chemical Energy - Fuel Technology of the Engler-Bunte-Institute at KIT, as the process developers. In the coming months, further work will be carried out to test and optimize the technology and operational experience will be gained.

Eckhardt Rümmler, Chief Operating Officer of Uniper, says: "The gas network and gas storage are the only available technology in the long run to store large volumes of renewable energy seasonally. At the same

time, power-to-gas contributes to reducing CO₂ emissions by using carbon dioxide as a raw material for methane extraction. In order for the technologies to be able to reach their full potential in the future, a gradual conversion of the natural gas network to green gas is required. Crucial prerequisites for this are that the electricity used is exempted from consumer charges and that the CO₂ savings in the transport and heat sectors are taken into account.“

Helmut Knauthe, Chief Technology Officer, Thyssenkrupp Industrial Solutions, says: "With the successful start-up of our methanation plant, science and industry have shown that the storage of renewable energy is possible on a large scale through power-to-gas. Now it is a question of creating the appropriate framework conditions for comprehensive system solutions together with politicians and answering infrastructural questions. Further development of the technology creates industrial policy opportunities and can secure long-term competitive advantages in Germany and Europe.“

Professor Thomas Kolb, Karlsruhe Institute of Technology (KIT) says: "From electrolysis to wind energy, through methanation to distribution and storage, the PtG pilot plant in Falkenhagen now maps all the steps in the power-to-gas process path. With the successful direct feed into the natural gas network, we have shown that the climate-friendly power-to-gas technology is ready for technical use. We were able to make a significant contribution to this with our innovative honeycomb reactor."

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About Uniper

Uniper is a leading international energy company with 12,000 employees and operations in more than 40 countries. It focuses on the safe delivery of energy and related services. Its activities include electricity generation in Europe and Russia as well as global energy trading. Uniper operates gas storage facilities in Germany, Austria and the UK, and plays an important role in the safe and flexible delivery of natural gas. Uniper is one of the first companies to be involved in the field of power-to-gas and is operator of demonstration facilities in Hamburg-Reitbrook and Falkenhagen. Uniper is headquartered in Düsseldorf.
www.uniper.energy

About thyssenkrupp Industrial Solutions

The Industrial Solutions business area at thyssenkrupp is a leading partner for the engineering, construction and service of industrial plants and systems. Based on more than 200 years of engineering experience, we supply tailored, turnkey large-scale plants and components for customers in the chemical, fertilizer, cement, mining and steel industries. As a system partner to the automotive, aerospace and naval sectors we develop highly specialized solutions to meet the individual requirements of our customers. More than 21,000 employees at over 100 locations form a global network with a technology portfolio that guarantees maximum productivity and cost-efficiency.

www.thyssenkrupp-industrial-solutions.com

About Deutscher Verein des Gas- und Wasserfaches e.V. (DVGW)

The DVGW (German Gas and Water Industry Association) promotes the gas and water industry with a focus on safety, hygiene, and environmental protection. Together with its more than 13,600 members, the DVGW develops the generally accepted technical regulations for gas and water services. The association initiates and supports research projects and provides training across an entire range of topics relating to the gas and water sector. In addition, it operates a testing and certification program for products, personnel as well as businesses. The DVGW's technical regulations serve as the basis of technical self-management and accountability for the gas and water industry in Germany. They guarantee the safe supply of gas and water at the highest international standards. The non-profit association was founded in 1859 in Frankfurt am Main. The DVGW is self-funding and non-partisan. Research is decentralized in the DVGW. The DVGW's research facilities, which include the DVGW Research Center at the Engler-Bunte Institute (DVGW-EBI) of the Karlsruhe Institute of Technology, combine scientific expertise and university partnerships in line with the practice of the gas and water industries. The DVGW-EBI is the location partner in Falkenhagen and is the overall coordinator of the European project.

About KIT, Karlsruhe Institute of Technology

Being „The Research University in the Helmholtz Association“, KIT creates and imparts knowledge for the society and the environment. It is the objective to make significant contributions to the global challenges in the fields of energy, mobility and information. For this, about 9,300 employees cooperate in a broad range of disciplines in natural sciences, engineering sciences, economics, and the humanities and social sciences. KIT prepares its 25,100 students for responsible tasks in society, industry, and science by offering research-based study programs. Innovation efforts at KIT build a bridge between important scientific findings and their application for the benefit of society, economic prosperity, and the preservation of our natural basis of life.
www.kit.edu

About STORE&GO

The international project STORE&GO was launched in 2016 as part of Horizon 2020, the European Union's research and innovation program. The focus of research is on the production of renewable gases via methanation, then storing them on an industrial scale for the purpose of enabling cost-effective operations. In addition to the technological issues involved, economic and legal concerns are also addressed. Research is carried out using three different power-to-gas concepts at three sites in Germany (Falkenhagen, Brandenburg), Italy (Troia, Apulia) and Switzerland (Solothurn). The DVGW, represented by the DVGW Research Center at the Engler-Bunte-Institut of the Karlsruhe Institute of Technology (KIT), is the coordinator of STORE&GO. The project is scheduled to run for a period of four years (2016-2020) with a total budget of approx. 28 million euros, of which approx. 18 million euros will be funded by the EU.

http://cordis.europa.eu/project/rcn/200559_en.html

<https://www.storeandgo.info/>



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