JENBACHER

GREEN ENERGY YEAR ROUND

Harnessing the summer sun for winter energy using a Jenbacher hydrogen solution

Background

RAG Austria AG is one of the largest energy storage companies in Austria and one of the leading energy storage operators in Europe. With the opening of the world's first natural hydrogen storage facility in 2023 at its Gampern site in Upper Austria, not far from Seewalchen on Lake Attersee, the company has set a milestone in the field of hydrogen storage. The porous underground reservoir, with a storage volume of approximately 1.2 million Nm^3, can store up to 4.2 GWh of solar power in the form of hydrogen. This power corresponds to the excess summer production of around 1,000 photovoltaic systems installed on single-family homes.

To convert the stored hydrogen into green electricity as needed during winter and use the waste heat for heating purposes, INNIO Group installed a flexible, highly efficient Jenbacher engine in the 1 MW class on site.



Pioneering solution

The Jenbacher J412 engine with an electrical output of 530 kW and a thermal output of 550 kW was put into operation at RAG Austria's main headquarters in Gampern in June 2024. The engine is particularly suitable for using the hydrogen from the porous underground reservoir, as it can also use green energy sources that are not highly pure. In addition, the engine is dual-gas capable, which means that it can efficiently use both hydrogen and natural gas as well as a mixture of both gases. This flagship project demonstrates how excess solar power from the sun-rich summer months can be used throughout the entire year. The surplus summer electricity is converted into green hydrogen using electrolysis and then can be stored for times when there is not enough renewable energy available to cover the energy demand.

The innovative energy solution in Gampern is the first hydrogen-powered combined heat and power (CHP) plant in the 1 MW class in Europe that can supply an industrial location with energy in full operation: The generated electricity powers the gas compressor station and company buildings, while the heat is used for heating them. INNIO Group and RAG Austria work hand in hand to cover the entire energy value chain—from generation, conversion, and storage to the supply of green energy.

»With the help of Jenbacher technology, we are able to decouple the generation of renewable energy from its consumption, thus enabling reliability of the supply year round.«

Markus Mitteregger,
CEO of RAG Austria AG

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Outcome

With this flagship project, INNIO Group and RAG Austria are taking an important step toward net zero. Together, they demonstrate how decarbonization can be advanced while simultaneously enhancing the reliability of supply through the use of green energy. Additionally, the Jenbacher plant in Gampern serves as a key reference project for future scalability and the gradual replacement of natural gas with hydrogen, paving the way for fully renewable power generation year round.

INNIO Group is one of the first companies to be able to convert the majority of its installed fleet to run on green hydrogen. In addition, all new Jenbacher units are "Ready for H_2," meaning they can be converted to hydrogen operation—an important foundation for the decarbonization and reliability of supply for companies and municipalities.

Customer benefits

- CO_2-free combined heat and power
- High energy efficiency
- Waste heat used for heating purposes
- Operation also possible with non-high-purity hydrogen
- Year-round green energy supply





Key technical data

Installed engines	1x J412
Electrical output	530 kW
Thermal output	550 kW
Total efficiency	80.4%
Energy source	Green hydrogen, alternatively natural gas
Commissioning	June 2024

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In general, "Ready for H_2" Jenbacher units can be converted to operate on up to 100% hydrogen in the future. Details on the cost and timeline for a future conversion may vary and need to be clarified individually.