

GREATER FLEXIBILITY

for regional renewables

Background

Danpower GmbH is part of enercity, one of the largest municipal energy service providers in Germany. Based in Potsdam, the company develops and implements highly efficient and environmentally friendly solutions that supply heat, power and cooling. It achieves this with combined heat and power (CHP) plants running on renewable biogas, biomethane, or biomass. Danpower produces about 98% of the power and 52% of the heat in its plants based on renewable energy sources.

One of Danpower's more than 800 plants is the Klostermansfeld biogas plant in Saxony-Anhalt. A Jenbacher CHP plant run on biogas has been producing power and heat here since 2009. Another Jenbacher CHP unit was installed in 2020 to cover peak loads.

Sustainable solution

The Klostermansfeld biogas plant produces biogas through the dry fermentation of renewable raw materials from local farms. In contrast to many other biogas plants that only generate power, the raw materials are used here to generate energy more efficiently through Jenbacher CHP technology and a Jenbacher J316 engine.

For increased flexibility, Danpower opted for surplus capacity and installed a Jenbacher J612 in 2020 with an electrical output of 2 MW, a thermal output of 1.75 MW and an overall efficiency of more than 83%. The new CHP plant is only used at peak load times—when electricity demand is particularly high, such as at midday or when volatile renewable energy sources are not available. As a result, the system helps absorb grid fluctuations and stabilize the public grid while also enabling the operator to feed in to the grid at particularly profitable times on the electricity market. Flexibility also is increased with a 500 cubic meter heat storage facility, which decouples the generation of heat from the use of heat. The construction of the heat storage facility also increased the heat utilization rate by about 15%.

»We have created a win-win situation with the installation of a second Jenbacher CHP plant from INNIO. Because with the flexible operation of our Jenbacher plant, we are helping to stabilize the public grid and can increase economic efficiency at the same time.«

Karsten Krieg, Managing Director of the Danpower Group



Results

All of the green power generated at the Klostermansfeld biogas plant is fed into the public grid. The waste heat from the Jenbacher CHP plant, fed into the local heating supply network via a 1,400-meter-long district heating pipeline, covers the heating requirements of neighboring residential buildings and a school. About 80% of the heat that previously came from fossil fuels has been replaced with heat from renewable energy sources. According to the operator, this can reduce CO₂ by 4,000 metric tons per year.

The use of renewable raw materials reduces dependency on fossil fuels such as oil and gas and helps strengthen the local rural economy and small and medium enterprises. Additionally, the use of fermentation waste from biogas production as a high-quality agricultural fertilizer not only replaces considerable quantities of standard fertilizers but also contributes to the circular economy by reusing the waste. Power generation at the plant is also carbon-neutral, because when biogas is used to generate energy, it only releases as much CO₂ as the plants previously absorbed while growing.¹

¹ according to the operator

Customer benefits

- Highly efficient combined heat and power
- Economical flexible operation
- Climate-friendly local heating supply
- Use of regional biogas



Key technical data

Installed engines	1 x J316, 1 x J612
Electrical output	2.83 MW
Thermal output	2.67 MW
Total efficiency	up to 84.1%
Energy source	Biogas
Years of comissioning	2009, 2020



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About INNIO Group

INNIO Group is a leading energy solution and service provider that empowers industries and communities to make sustainable energy work today. With its product brands Jenbacher and Waukesha and its digital platform myPlant, INNIO offers innovative solutions for the power generation and compression segments that help industries and communities generate and manage energy sustainably while navigating the fast-changing landscape of traditional and green energy sources. INNIO is individual in scope, but global in scale. With its flexible, scalable, and resilient energy solutions and services, INNIO enables its customers to manage the energy transition along the energy value chain wherever they are in their transition journey.



INNIO is headquartered in Jenbach (Austria), with other primary operations in Waukesha (Wisconsin, U.S.) and Welland (Ontario, Canada). A team of more than 4,000 experts provides life-cycle support to INNIO's more than 55,000 delivered engines globally through a service network in more than 100 countries.

In March 2023, INNIO's ESG rating ranked first out of more than 500 companies worldwide in the machinery industry assessed by Sustainalytics.

For more information, visit the INNIO website at www.innio.com.

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