

# WOOD GAS SOLUTIONS

## Shaping the energy transition with highly efficient Jenbacher CHP technology

Putting renewable wood gas to work in Jenbacher combined heat and power (CHP) plants from INNIO Group can contribute to decarbonization and support your successful energy transition. Our Jenbacher CHP plants operate efficiently on wood gas, creating power and heat with consistently reduced CO<sub>2</sub> emissions. In fact, innovative plants can even produce CO<sub>2</sub>-negative energy.

Modern biomass gasification processes have proved their industrial market maturity at effectively turning wood biomass into wood gas, and the INNIO Group offers a broad portfolio of highly efficient Jenbacher energy solutions that operate on wood gas. Based on proven Jenbacher design concepts and characterized by high power density and outstanding efficiency, the Jenbacher Type 2, 3, 4, and 6 engines in the 250 kW to 2 MW power range are specially tailored for operation with wood gas. A control and monitoring concept adapted to this application enables preventive maintenance for even greater plant reliability and availability.



### Reference installations—extract

#### J320—Harboøre gasifier plant, Harboøre, Denmark



The innovative Harboøre gasification plant produces renewable energy from wood waste. The company's updraft wood chip gasifier was commissioned at the end of 1993. In 2000, the plant was expanded to include two Jenbacher combined heat and power (CHP) units from the INNIO Group to create an even more sustainable energy solution. The Jenbacher engines deliver 1 MW of electrical energy and 2.8 MW of thermal energy with an overall efficiency of approximately 95%. Each engine has achieved more than 100,000 operating hours.

<b>Engines</b>	2 x J320
<b>Electrical output</b>	1,000 kW
<b>Thermal output</b>	2,300 kW <sup>1</sup> , 500 kW <sup>2</sup>
<b>Energy source</b>	Wood gas
<b>Commissioning</b>	2000

#### J620—Biomass cogeneration plant, Skive, Denmark



The biomass cogeneration plant in Skive is based on a gasification process from Andritz/Carbona and operated with biomass in the form of pellets from residual forest wood. After undergoing catalytic gas purification, this renewable energy source is used in three Jenbacher J620 engines. After reaching 60,000 operating hours in 2021, the original engines were replaced by three of the latest-generation Jenbacher J620 units. Electricity production has been 33,350 MWh, corresponding to the electricity consumption in 7,400 houses. 66,700 MWh of thermal energy have been produced, which corresponds to 3,685 households in 2017. The plant covers 44% of the total heat production.<sup>3</sup>

<b>Engines</b>	3 x J620
<b>Electrical output</b>	6 MW
<b>Thermal output</b>	12 MW
<b>Energy source</b>	Biomass from wood pellets
<b>Commissioning</b>	2008, 2021

#### J420—Bioenergie, Frauenfeld, Switzerland



With the aim of making optimum use of green energy while consistently reducing CO<sub>2</sub> emissions, Bioenergie Frauenfeld in the canton of Thurgau has opted for a climate-positive wood-fired combined heat and power (CHP) plant. It reliably supplies around 8,000 households with electricity and the local sugar factory with heat. The centerpiece is an efficient Jenbacher latest generation CHP plant, which is operated with the renewable energy source wood gas. The wood gas is obtained from regional waste wood and is available in large quantities.

<b>Engines</b>	4 x J420
<b>Electrical output</b>	1,000 kW (per engine)
<b>Thermal output</b>	~5.6 MW (90°C), ~2 MW (50°C)
<b>Energy source</b>	Wood gas
<b>Commissioning</b>	2022

<sup>1</sup> from exhaust, jacket water, oil, and from burning process water with tar

<sup>2</sup> from burning heavy tar from the process

<sup>3</sup> according to the customer (2017)

## Output and efficiencies

Energy source: wood gas

1,500 l/min | 50 Hz

	Engine type	PeI (kW) <sup>4</sup>	Pth (kW) <sup>5</sup>	ηel (%) <sup>4</sup>	ηth (%) <sup>5</sup>	ηtot (%) <sup>4</sup>
	<b>J208</b>	260	254	40.0%	39.0%	79.0%
	<b>J312</b>	457	439	40.3%	39.0%	79.3%
	<b>J316</b>	612	588	40.4%	39.0%	79.4%
	<b>J320</b>	768	736	40.5%	39.0%	79.5%
	<b>J412</b>	576	593	40.2%	40.0%	80.2%
	<b>J416</b>	770	769	40.3%	40.0%	80.3%
	<b>J420</b>	964	939	40.4%	40.0%	80.4%
	<b>J612</b>	1,173	1,347	37.5%	43.0%	80.5%
	<b>J616</b>	1,572	1,796	37.7%	43.0%	80.7%
	<b>J620</b>	1,973	2,244	37.8%	43.0%	80.8%

<sup>4</sup> Technical data according to ISO 3046—Performance potential depending on the gas quality

<sup>5</sup> Total heat output with a tolerance of +/- 8%, exhaust gas outlet temperature 180°C

All data according to full load and subject to technical development and modification.

Further engine versions available on request.



Online version available



Contact us:  
jenbacher.com/  
en/contact

Follow INNIO Group and its brands on  (formerly known as Twitter) and  **in**

For more information, visit INNIO Group's website at [innio.com](https://innio.com) or the Jenbacher website at [jenbacher.com](https://jenbacher.com)

© Copyright 2024 INNIO. Information provided is subject to change without notice.

INNIO, **INNIO**, Jenbacher,  are trademarks in the European Union or elsewhere owned by INNIO Jenbacher GmbH & Co OG or one of its affiliates. All other trademarks and company names are property of their respective owners.

Jenbacher is part of the INNIO Group