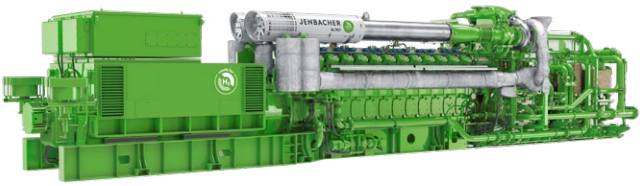
JENBACHER

JENBACHER TYPE 6

Advanced technology for high efficiency and reliability

Continuously refined based on extensive experience, Jenbacher Type 6 engines are reliable, advanced products serving the 2 to 4.5 MW power range. The 1,500 rpm engine speed delivers high power density while helping reduce installation costs. The Type 6 precombustion chamber enables high efficiency with low emissions. Proven design and enhanced components support a service life of 60,000 operating hours before the first major overhaul. The J624 model features advanced two-stage turbocharging technology, offering high electrical and total efficiencies along with improved flexibility across a wide range of ambient conditions.



Reference installations

J616 and J620 – BMW Group, Germany



The cogeneration plants installed at BMW Group's[1] factories in Regensburg and Leipzig can generate on-site power and capture engine waste heat for the factories' production processes. Winter heating is obtained through a combination of the engines' waste heat and heat from existing boilers.

Engines	5 x J616, 2 x J620
Electrical output	20.1 MW
Thermal output	18.23 MW
Energy source	Natural gas
Commissioning	2009, 2011, 2012, 2016

J620 – Shandong Minhe Biological Technology Co., Ltd, China



The Shandong Minhe biogas power generation system in Penglai City is powered by three J320 engines, installed in 2009, and one J620 engine, installed in 2018. The plant achieves 6.2 MW of electrical output using biogas produced from the fermentation of chicken manure and sewage.

Engines	3 x J320, 1 x J620
Electrical output	6.2 MW
Thermal output	6.4 MW
Energy source	Biogas
Commissioning	2009, 2018

J612 — Biomont Énergie SEC, Canada



Since 2017, the Biomont Énergie SEC plant has converted the biogas generated from landfill into valuable renewable electricity and thermal energy. The cogeneration plant is centered on three Jenbacher J612 engines, each with a capacity of 5,459 MBTU/hr of electrical output. A major Canadian utility company buys the green electricity produced by the plant, which generates enough electricity to power the equivalent of about 2,000 homes[2].

Engines	3 x J612
Electrical output	4.8 MW
Thermal output	5.2 MW
Energy source	Landfill gas
Commissioning	2017

J612 and J624 – Den Berk Délice, Belgium



At the Berinckx Greenhouse in Belgium, high-efficiency Jenbacher engines running on natural gas provide heat and power to the greenhouse complex, while the generated CO_2 fertilizes the tomatoes grown on site. The 1,500-rpm Jenbacher Type 6 engine technology delivers high power density with low installation costs, and its pre-combustion chamber achieves high efficiency with low emissions. The Berinckx Greenhouse is part of Den Berk Délice's greenhouses, which cultivates 82 hectares of tomatoes.

Engines	1 x J612, 2 x J624
Electrical output	11 MW
Thermal output	12.8 MW
Energy source	Natural gas
Commissioning	2013, 2018, 2022

[1] © Copyright BMW AG

[2] The Daily—Households and the Environment Survey: Energy use, 2019, 150.statcan.gc.ca/n 1/daily-quotidien/220502/dq220502b-eng.htm

Technical features

Feature	Description	Advantages
Four-valve cylinder head	Centrally located purged pre-combustion chamber, developed using advanced computational and simulation methods (CFD)	Reduced charge-exchange losses, highly efficient and stable combustion, supporting excellent ignition conditions
Heat recovery	Flexible arrangement of heat exchanger, including an optional two-stage oil plate heat exchanger on demand	High thermal efficiency, even at high and fluctuating return temperatures
Air/fuel mixture charging	Low-pressure mixing of fuel gas and combustion air prior to entering the turbocharger	Main gas supply with low gas pressure, mixture homogenized in the turbocharger
Pre-combustion chamber	Amplified spark plug ignition energy in the pre-combustion chamber	High efficiency, low NO_x emission values, stable and reliable combustion
Gas dosing valve	Electronically controlled gas dosing valve with a high degree of control accuracy (for natural gas)	Fast response time, rapid adjustment of air/gas ratio, wide adjustable calorific value range
Two-stage turbocharging	Next-generation turbocharging technology concept (for J624 only)	Improved performance in terms of output and efficiency, increased flexibility regarding ambient conditions

Technical data

Configuration				V 60°
Bore (mm)				190
Stroke (mm)				220
Displacement/cylinder (lit)				6.24
Speed (rpm)				1,500 (50 Hz) 1,500 with gearbox (60 Hz)
Mean piston speed (m/s)				11 (1,500 1/min)
Scope of supply				Generator set, cogeneration system, containerized package
Applicable gas types				Natural gas, flare gas, biogas, landfill gas, sewage gas, special gases (e.g., coal mine gas, coke gas, wood gas, pyrolysis gas)
Engine type	J612	J616	J620	J624
No. of cylinders	12	16	20	24
Total displacement (lit)	74.9	99.8	124.8	149.7

		Dimensions l x w x h (mm)
Generator set	J612	7,600 x 2,200 x 3,000
	J616	8,300 x 2,200 x 3,000
	J620	9,500 x 2,200 x 3,000
	J624	12,800 x 2,500 x 3,100
Cogeneration system	J612	7,600 x 2,200 x 3,000
	J616	8,300 x 2,200 x 3,000
	J620	9,300 x 2,200 x 3,000
	J624	12,800 x 2,500 x 3,100
Containerized package[2]	J612–J624	12,000 – 20,500 x 3,000 – 6,000 x 3,800 – 15,000
		Weights empty (kg)
Generator set	J612	24,000
	J616	29,200
	J620	36,900
	J624	52,100
Cogeneration system	J612	24,500
	J616	29,700
	J620	37,500
	J624	52,100

Dimensions and weights are valid for 50 Hz applications

Outputs and efficiencies

Natural gas		1,500 1/min | 50 Hz					1,800 1/min | 60 Hz				
NO_x<	Type	Pel (kW)[3]	Pth (kW)[4]	ηel (%)[3]	ηth (%)[4]	ηtot (%)	Pel (kW)[3]	Pth (kW)[4]	ηel (%)[3]	ηth (%)[4]	ηtot (%)
500 mg/m³$_N$	J612	2092	1978	45.4	43.0	88.4	2078	1978	45.1	43.0	88.1
	J616	2797	2637	45.6	43.0	88.5	2779	2637	45.3	43.0	88.2
	J620	3508	3296	45.7	43.0	88.7	3485	3485	45.4	43.0	88.4
	J624	4499	3957	46.8	41.1	87.9	4477	3957	46.6	41.1	87.7
250 mg/m³$_N$	J612	2092	2003	44.6	42.7	87.4	2078	2003	44.3	42.7	87.1
	J616	2797	2670	44.8	42.7	87.5	2778	2670	44.5	42.7	87.2
	J620	3508	3337	44.9	42.7	87.6	3485	3337	44.6	43.0	87.6
	J624	4499	4023	45.9	41.0	86.9	4477	4023	45.6	41.0	86.7
Biogas		**1,500 1/min | 50 Hz**					**1,800 1/min | 60 Hz**				
NO_x<	Type	Pel (kW)[3]	Pth (kW)[4]	ηel (%)[3]	ηth (%)[4]	ηtot (%)	Pel (kW)[3]	Pth (kW)[4]	ηel (%)[3]	ηth (%)[4]	ηtot (%)
500 mg/m³$_N$	J612	1818	1657	44.1	40.2	84.3	1803	1657	43.7	40.2	83.9
	J616	2432	2210	44.2	40.2	84.4	2420	2210	44.0	40.2	84.2
	J620	3043	2762	44.3	40.2	84.5	3036	2762	44.2	40.2	84.4
250 mg/m³$_N$	J612	1818	1702	43.2	40.4	83.6	1803	1702	42.8	40.4	83.3
	J616	2432	2269	43.3	40.4	83.7	2420	2269	43.1	40.4	83.5
	J620	3043	2837	43.4	40.4	83.8	3036	2837	43.3	40.4	83.7

[3] The dimensions refer to the standard base models with horizontal exhaust silencer.
[4] Technical data according to ISO 3046
[5] Total heat output with a tolerance of +/- 8%, exhaust gas outlet temperature 120°C, for biogas gas outlet temperature 180°C

All data according to full load and subject to technical development and modification. Additional engine versions available on request.

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.

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