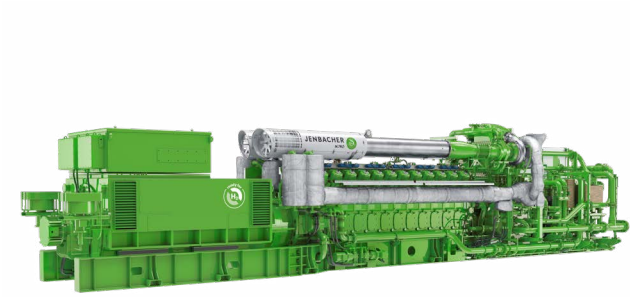
JENBACHER

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

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[1].

Engine	3 x J612
Electrical output	16,378 MBTU/hr
Thermal output	17,742 MBTU/hr
Energy source	Landfill gas
Commissioning	2017

J624 – IMG Energy Solutions, U.S.



IMG Energy Solutions' Wolf Run project consists of five Jenbacher containerized 14,330 MBTU/hr J624 engines for a total of 71,652 MBTU/hr. A leading producer in distributed generation, IMG leverages high-efficiency Jenbacher engine technology for its flexible, quick start, base load power generation capabilities. IMG's plants are designed for excellent intermittent renewable use while maintaining a reliable, low-carbon-intensity power grid.

Engine	5 x J624
Electrical output	71,652 MBTU/hr
Thermal output	-
Energy source	Natural gas
Commissioning	2019

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



The Shandong Minh farm's biogas power generation project uses chicken manure and sewage fermentation to produce biogas. Commissioned in 2009, the facility is powered by three Jenbacher J320 biogas-fueled engines, with a J620 biogas-fueled engine added in 2018.

Engines	3 x J320, 1 x J620
Electrical output	21,155 MBTU/hr
Thermal output	22,520 MBTU/hr
Energy source	Biogas
Commissioning	2009, 2018

J616 and J620 – BMW Group, Germany



The cogeneration plants installed at BMW Group's[2] 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	67,558 MBTU/hr
Thermal output	64,248 MBTU/hr
Energy source	Natural gas
Commissioning	2009, 2011, 2012, 2016

[1] The Daily—Households and the Environment Survey: Energy use, 2019, 150.statcan.gc.ca/n1/daily-quotidien/220502/dq220502b-eng.htm

[2] © Copyright BMW AG

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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 (inch)				7.48
Stroke (inch)				8.66
Displacement/cylinder (cu.in)				381
Speed (rpm)				1,500 with gearbox (60 Hz)
Mean piston speed (in/s)				433 (1,500 rpm)
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 (cu.in)	4,568	6,090	7,613	9,135

		Dimensions l x w x h (inch)
Generator set	J612	360 x 90 x 118
	J616	400 x 90 x 118
	J620	425 x 90 x 118
	J624	570 x 100 x 122
Cogeneration system	J612	360 x 90 x 118
	J616	400 x 90 x 118
	J620	435 x 90 x 118
	J624	570 x 100 x 122
Containerized package[3]	J612–J624	475 – 810 x 120 – 240 x 150 – 590
		Weights empty (lbs)
Generator set	J612	53,360
	J616	67,470
	J620	80,030
	J624	112,680
Cogeneration system	J612	54,460
	J616	68,570
	J620	81,360
	J624	112,680

Outputs and efficiencies

Natural gas — **1,500 rpm | 60 Hz**

NO_x<	Type	Pel (kW)[4]	Pth (MBTU/hr)[5]	ηel (%)[4]	ηth (%)[5]	ηtot (%)
1.0 g/bhp.hr	J612	2,078	6,748	45.1	43.0	88.1
	J616	2,778	8,997	45.3	43.0	88.2
	J620	3,485	11,247	45.4	43.0	88.4
	J624	4,477	13,501	46.6	41.1	87.7
0.5 g/bhpr	J612	2,078	6,835	44.3	42.7	87.1
	J616	2,778	9111	44.5	42.7	87.2
	J620	3,484	11,387	44.6	42.7	87.3
	J624	4,477	13,726	45.6	41.0	86.7

Biogas — **1,500 rpm | 60 Hz**

NO_x<	Type	Pel (kW)[4]	Pth (MBTU/hr)[5]	ηel (%)[4]	ηth (%)[5]	ηtot (%)
1.0 g/bhp.hr	J612	1,803	5,654	43.7	40.2	83.9
	J616	2,420	7,541	44.0	40.2	84.2
	J620	3,036	9,424	44.2	40.2	84.4
0.5 g/bhpr	J612	1,803	5,807	42.8	40.4	83.3
	J616	2,420	7,742	43.1	40.4	83.5
	J620	3,036	9,680	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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