

Jenbacher type 6



50
over
years of power
Jenbacher gas engines

cutting-edge technology

Continuously refined based on our extensive experience, the Jenbacher type 6 engines are reliable, advanced products serving the 1.5 to 4 MW power range. Its 1,500 rpm engine speed results in a high power density and low installation costs. The type 6 pre-combustion chamber achieves maximum efficiency with low emissions. Proven design and optimized components enable a service life of 60,000 operating hours before the first major overhaul.

reference installations

model, plant

key technical data

description

J612 GS
Beretta, industry;
Gardone, Italy

Fuel..... Natural gas
Engine type..... 1 x JMS 612 GS-N.L
Electrical output..... 1,457 kW
Thermal output..... 1,536 kW
Commissioning..... December 1998

The generated electricity covers the entire electricity requirement of the Beretta factory, while the heat is used for the production process. By using our cogeneration system, Beretta was able to reduce the energy supply costs for the factory by 30%.



J616 GS
Mussafah Industrial
City, residential area;
Abu Dhabi, UAE

Fuel..... Natural gas
Engine type..... 3 x JGS 616 GS-N.L
Electrical output..... 6,018 kW
Commissioning..... June 2003

Three Jenbacher generator sets supply power generation for continuous operation of compressor chillers to provide chilled water for cooling to a residential area that incorporates apartments, shopping centres, mosques, a police station, and a cinema complex.



J620 GS
Wijnen Paprika;
Egchel,
The Netherlands

Fuel..... Natural gas
Engine type..... 3 x JMS 620 GS-N.LC
Electrical output..... 9,123 kW
Thermal output..... 10,773 kW
Commissioning..... June 2006 (1st, 2nd engine),
March 2007 (3rd engine)

The Jenbacher cogeneration systems provide power, heat and CO₂ to increase the Wijnen greenhouse paprika production. The CO₂ produced from the exhaust gas of the engines is cleaned and used for fertilization in the greenhouse.



J620 GS
Biomass power plant;
Güssing, Austria

Fuel..... Wood gas
Engine type..... 1 x JMS 620 GS-S.L
Electrical output..... 1,964 kW
Thermal output..... 2,490 kW
(district heating 70°C/90°C)
Commissioning..... April 2002

The wood gas produced and cleaned in a fluidized bed/steam reactor is converted into heat and power in the Jenbacher cogeneration plant and forms an important component in an innovative project aimed at meeting 100% of the region's energy needs from renewable sources.



technical features

feature	description	advantages
Four-valve cylinder head	Centrally located purged pre-combustion chamber, developed using advanced calculation and simulation methods (CFD)	<ul style="list-style-type: none"> - Minimized charge-exchange losses - Highly efficient and stable combustion - Optimal ignition conditions
Heat recovery	Flexible arrangement of heat exchanger, two stage oil plate heat exchanger on demand	<ul style="list-style-type: none"> - Maximum thermal efficiency, even at high and fluctuating return temperatures
Air/fuel mixture charging	Fuel gas and combustion air are mixed at low pressure before entering the turbocharger	<ul style="list-style-type: none"> - Main gas supply with low gas pressure - Mixture homogenized in the turbocharger
Pre-combustion chamber	The ignition energy of the spark plug is amplified in the pre-combustion chamber	<ul style="list-style-type: none"> - Highest efficiency - Lowest NOx emission values - Stable and reliable combustion
TecJet™ gas dosing valve	Electronically controlled gas dosing valve with high degree of control accuracy (for natural gas)	<ul style="list-style-type: none"> - Very quick response time - Rapid adjustment of air/gas ratio - Large adjustable calorific value range
Miller valve timing	Camshaft with special inlet cam profile (for natural gas)	<ul style="list-style-type: none"> - Reduced maximum compression temperature and increased safety margin to knocking limits - High efficiency through optimized ignition timing

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 rpm)
Scope of supply	Generator set, cogeneration system, containerised 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 GS J616 GS J620 GS J624 GS
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)¹

Containerised package	J612 - J620	15,000 x 6,000 x 7,300
Generator set	J612 GS	7,600 x 2,200 x 2,800
	J616 GS	8,300 x 2,200 x 2,800
	J620 GS	8,900 x 2,200 x 2,800
	J624 GS	12,100 x 2,200 x 2,900
Cogeneration system	J612 GS	7,600 x 2,200 x 2,800
	J616 GS	8,300 x 2,200 x 2,800
	J620 GS	8,900 x 2,100 x 2,800
	J624 GS	12,100 x 2,200 x 2,900

Weights empty (kg)¹

	J612 GS	J616 GS	J620 GS	J624 GS
Generator set	20,600	26,000	30,700	41,400
Cogeneration system	21,100	26,500	31,300	42,000

1) Dimensions and weights are valid for 50 Hz applications.

outputs and efficiencies

Natural gas

1,500 rpm | 50 Hz

1,500 rpm | 60 Hz

NOx <	Type	Pel (kW) ²	η _{el} (%)	Pth (kW) ³	η _{th} (%)	η _{tot} (%)	Pel (kW) ²	η _{el} (%)	Pth (kW) ³	η _{th} (%)	η _{tot} (%)
500 mg/m ³ _N	612	2,002	45.1	1,850	41.6	86.7	1,990	44.8	1,861	41.9	86.6
	616	2,679	45.5	2,439	41.4	87.0	2,664	45.3	2,453	41.7	87.0
	620	3,352	45.6	3,048	41.4	87.0	3,344	45.4	3,048	41.4	86.9
	624	4,029	45.6	3,635	41.2	86.8	4,008	45.4	3,652	41.4	86.8
250 mg/m ³ _N	612	2,002	43.5	1,932	42.0	85.5	1,990	43.2	1,943	42.2	85.4
	616	2,679	43.6	2,575	41.9	85.6	2,664	43.4	2,589	42.2	85.6
	620	3,352	43.7	3,219	42.0	85.6	3,332	43.4	3,233	42.1	85.5
	624	4,029	44.0	3,853	42.1	86.1	4,008	43.8	3,870	42.3	86.0

Biogas

1,500 rpm | 50 Hz

1,500 rpm | 60 Hz

NOx <	Type	Pel (kW) ²	η _{el} (%)	Pth (kW) ³	η _{th} (%)	η _{tot} (%)	Pel (kW) ²	η _{el} (%)	Pth (kW) ³	η _{th} (%)	η _{tot} (%)
500 mg/m ³ _N	612	1,637	42.3	1,645	42.5	84.8	1,621	41.9	1,653	42.7	84.6
	616	2,188	42.4	2,194	42.5	84.9	2,175	42.2	2,205	42.7	84.9
	620	2,739	42.5	2,741	42.5	85.0	2,728	42.3	2,755	42.7	85.0
250 mg/m ³ _N	612	1,637	41.8	1,682	43.0	84.8	1,621	41.4	1,690	43.2	84.6
	616	2,188	41.9	2,243	43.0	84.8	2,175	41.6	2,254	43.2	84.8
	620	2,739	42.0	2,803	42.9	84.9	2,728	41.8	2,817	43.2	84.9

2) Electrical output based on ISO standard output and standard reference conditions according to ISO 3046/I-1991 and p.f. = 1.0 according to VDE 0530 REM with respective tolerance; minimum methane number 80 for natural gas

3) Total heat output with a tolerance of +/- 8%, exhaust gas outlet temperature 120°C, for biogas exhaust gas outlet temperature 180°C

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