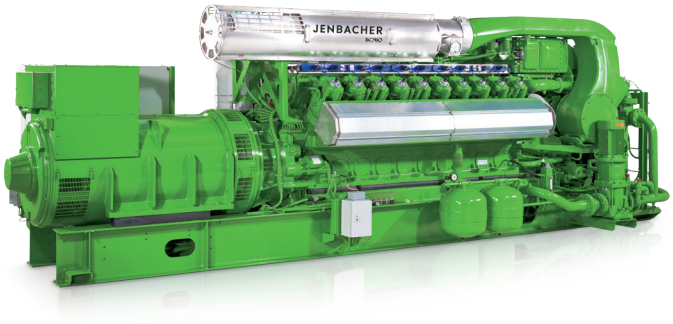
JENBACHER

Jenbacher type 4 Hot & Humid countries

An efficiency milestone

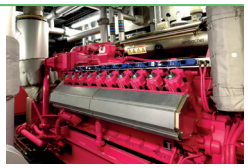
Based on the proven design concepts of types 3 and 6, the modern Jenbacher* type 4 engines in the 800 to 1,500 kW power range are characterized by a high-power density and outstanding efficiency. The enhanced control and monitoring provide easy preventive maintenance, high reliability and availability.



Reference installations

J420 St Bart's Hospital in London, United Kingdom

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Natural gas	1 x J420	1,480 kW	1,624 kW	2015



Since 2015, one of the oldest hospitals in the UK has obtained cooling, heat and power from a single J420 unit. The 1.4 MW cogeneration unit includes a 250 kW absorption chiller that delivers cooling water to the hospital. The J420 engine is the cornerstone of a new energy center that has provided the facility with financial savings by boosting its energy efficiency, reliability and durability.

J420 Ashford Power Peaking Plant in Kent, United Kingdom

Fuel	Engine type	Electrical output	Commissioning
Natural gas	14 x J420	21 MW	2018

The electricity generating peaking plant at Ashford Power, Kings North Industrial Estate in Kent is operating 14 containerized Jenbacher J420 engines. When not in operation, the engines of this fully-automated plant wait on standby, prepared to be called upon and ramped up in less than 2 minutes.

J420 SV.CO Strijbisverbeek Greenhouse in Maasdijuk, the Netherlands

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Natural gas	1 x J420	1,501 kW	1,996 kW	2018

The Strijbisverbeek Greenhouse in Maasdijuk, Netherlands, is relying on a total greenhouse CHP solution consisting of a Jenbacher J420, a complete exhaust gas system incl. catalytic reactor for CO_2 and acoustical enclosure. The energy generated in this greenhouse is used to operate its grow lights. Additionally, they are using the heat of the CHP to heat up their greenhouse in colder periods and at night.

J420 Biogas Plant in Nakornrachasrima, Thailand

Fuel	Engine type	Electrical output	Commissioning
Biogas	5 x J420	7,105 kW	2012

The Chok Yuen Yong facility profits from its five J420 engines that provide reliable on-site power while also reducing electrical and energy costs. The excess electricity produced is supplied to the public grid.

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Technical features

Feature	Description	Advantages
Heat recovery	Flexible arrangement of heat exchanger, two stage oil plate heat exchanger on demand	- High thermal efficiency, even at high and fluctuating return temperatures
Gas dosing valve	Electronically controlled gas dosing valve with high degree of control accuracy	- Very quick response time - Rapid adjustment of air / gas ratio - Large adjustable calorific value range
Four-valve cylinder head	Enhanced swirl and channel geometry using advanced calculation and simulation methods (CFD)	- Reduced charge-exchange losses - Central spark-plug position resulting in optimal cooling and combustion conditions
Crack connecting rod	Applying a technology – tried and tested in the automotive industry – in our powerful stationary engines	- High dimensional stability and accuracy - Reduced connecting rod bearing wear - Easy to maintain

Technical data

Configuration			V 70°
Bore (mm)			145
Stroke (mm)			185
Displacement / cylinder (lit)			3.06
Speed (rpm)	1,800 / 1,200 (60 Hz)		1,500 (50 Hz)
Mean piston speed (m/s)			7.4 (1,200 1/min) 9.3 (1,500 1/min) 11.2 (1,800 1/min)
Scope of supply	Generator set, cogeneration system, generator set / cogeneration in container		
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	J412	J416	J420
No. of cylinders	12	16	20
Total displacement (lit)	36.7	48.9	61.1

Dimensions l x w x h (mm)		
Generator set	J412	5,400 x 1,800 x 2,200
	J416	6,200 x 1,800 x 2,200
	J420	7,100 x 1,900 x 2,200
Cogeneration system	J412	6,000 x 1,800 x 2,200
	J416	6,700 x 1,800 x 2,200
	J420	7,100 x 1,800 x 2,200
Container	J412	12,200 x 3,000 x 2,700
	J416	12,200 x 3,000 x 2,700
	J420	12,200 x 3,000 x 2,700

Weights empty (kg)	J412	J416	J420
Generator set	11,200	13,500	17,200
Cogeneration system	11,800	14,100	17,800

Outputs and efficiencies

Natural gas — **1.500 1/min | 50 Hz**

NOx <	Type	Pel (kW)[1]	Pt (kW)[3]	Heat rate (kJ/kWhe)[2]	ηel (%)[2]	ηth (%)	ηtot (%)
500 mg/m³N	J412	901	994	8,566	42.0	46.3	88.3
	J416	1,202	1,320	8,530	42.2	46.4	88.6
	J420	1,415	1,593	8,620	41.8	47.0	88.8
	J420	1,501	1,657	8,572	42.1	46.5	88.5
	J420	1,501	1,671	8,390	42.9	47.3	89.8

1) Electrical output @≤ 50m above sea level and ≤ 35°C combustion air temperature
2) Technical data and fuel consumption according ISO 3046
3) Total heat output @ hot water 70°C/90°C

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

SILVER 2021 ecovadis Sustainability Rating

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