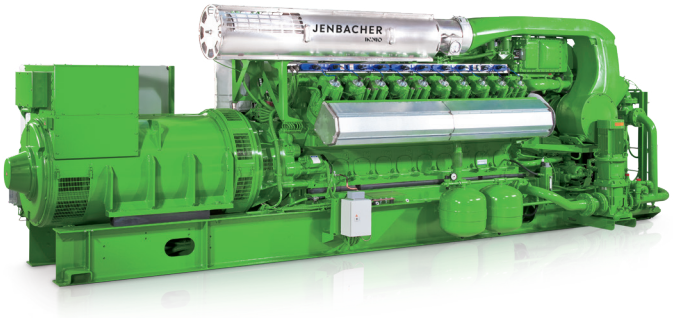
JENBACHER

Jenbacher type 4



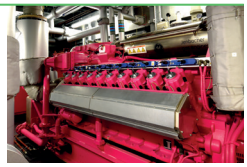
An efficiency milestone

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	5,546 MBTU/hr	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	6,817 MBTU/hr	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 (inch)	5.71		
Stroke (inch)	7.28		
Displacement / cylinder (cu.in)	186,7		
Speed (rpm)	1,800 (60 Hz)		
Mean piston speed (in/s)	437		
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 (cu.in)	2,239	2,984	3,728

Dimensions l x w x h (inch)		
Generator set	J412	220 x 75 x 90
	J416	250 x 75 x 90
	J420	280 x 75 x 90
Cogeneration system	J412	240 x 75 x 90
	J416	270 x 75 x 90
	J420	280 x 75 x 90
Container	J412	480 x 120 x 110
	J416	480 x 120 x 110
	J420	480 x 120 x 110

Weights empty (lbs)	J412	J416	J420
Generator set	24,480	27,780	34,620
Cogeneration system	25,800	29,100	35,490
Container 40-foot (cogeneration)	62,850	68,270	81,550

Outputs and efficiencies

Natural gas		1,800 rpm | 60 Hz					1,200 rpm | 60 Hz				
NOx <	**Type**	**Pel (kW)[1]**	**ηel (%)[1]**	**Pth (MBTU/hr)[2]**	**ηth (%)[2]**	**ηtot (%)**	**Pel (kW)[1]**	**ηel (%)[1]**	**Pth (MBTU/hr)[2]**	**ηth (%)[2]**	**ηtot (%)**
1.0 g/bhp.hr	J412	851	41.2	3,344	47.4	88.6	634	43.0	2,187	41.9	84.9
	J416	1,141	41.4	4,459	47.4	88.9	845	43.0	2,812	41.9	84.9
	J420	1,429	41.5	5,570	47.4	88.9	1,056	43.0	3,509	41.9	84.9
0.6 g/bhpr	J412	851	40.1	3,483	48.1	88.2	634	42.1	2,109	42.5	84.6
	J416	1,141	40.3	4,647	48.1	88.5	845	42.0	2,921	42.6	84.6
	J420	1,429	40.4	5,808	48.1	88.5	1,056	41.7	3,701	42.8	84.5

Biogas		1,800 rpm | 60 Hz				
NOx <	**Type**	**Pel (kW)[1]**	**ηel (%)[1]**	**Pth (MBTU/hr)[2]**	**ηth (%)[2]**	**ηtot (%)**
1.0 g/bhp.hr	J412	851	40.2	3,262	45.2	85.4
	J416	1,141	40.4	4,347	45.1	85.6
	J420	1,429	40.5	5,439	45.2	85.7
0.6 g/bhpr	J412	851	39.3	3,375	45.7	84.9
	J416	1,141	39.5	4,501	45.7	85.2
	J420	1,429	39.6	5,623	45.7	85.2

1) Technical data according to ISO 3046
2) 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.
Further engines versions available on request.

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