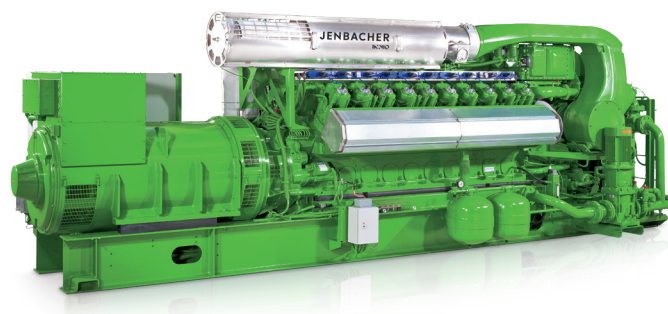


## Jenbacher type 4

### 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.

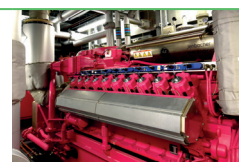


### Reference installations

#### 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	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 Maasdijk, 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 Maasdijk, Netherlands, is relying on a total greenhouse CHP solution consisting of a Jenbacher J420, a complete exhaust gas system incl. catalytic reactor for CO<sub>2</sub> 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 Nakornrachasrma, 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.



## Technical features

Feature	Description	Advantages
<b>Heat recovery</b>	Flexible arrangement of heat exchanger, two stage oil plate heat exchanger on demand	- High thermal efficiency, even at high and fluctuating return temperatures
<b>Gas dosing valve</b>	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
<b>Four-valve cylinder head</b>	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
<b>Crack connecting rod</b>	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

<b>Configuration</b>	V 70°		
<b>Bore (mm)</b>	145		
<b>Stroke (mm)</b>	185		
<b>Displacement / cylinder (lit)</b>	3.06		
<b>Speed (rpm)</b>	1,800 / 1,200 (60 Hz)	1,500 (50 Hz)	
<b>Mean piston speed (m/s)</b>	7.4 (1,200 1/min) 9.3 (1,500 1/min) 11.2 (1,800 1/min)		
<b>Scope of supply</b>	Generator set, cogeneration system, generator set / cogeneration in container		
<b>Applicable gas types</b>	Natural gas, flare gas, biogas, landfill gas, sewage gas. Special gases (e.g., coal mine gas, coke gas, wood gas, pyrolysis gas)		
<b>Engine type</b>	J412	J416	J420
<b>No. of cylinders</b>	12	16	20
<b>Total displacement (lit)</b>	36.7	48.9	61.1
<b>Dimensions l x w x h (mm)</b>			
<b>Generator set</b>	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	
<b>Cogeneration system</b>	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	
<b>Container</b>	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	
<b>Weights empty (kg)</b>			
<b>Generator set</b>	J412	J416	J420
	11,200	13,500	17,200
<b>Cogeneration system</b>	11,800	14,100	17,800

## Outputs and efficiencies

Natural gas		1.500 1/min   50 Hz					1.800 1/min   60 Hz					1.200 1/min   60 Hz				
NOx <	Type	Pel (kW) <sup>1</sup>	Pt (kW) <sup>2</sup>	ηel (%) <sup>1</sup>	ηth (%) <sup>2</sup>	ηtot (%)	Pel (kW) <sup>1</sup>	Pt (kW) <sup>2</sup>	ηel (%) <sup>1</sup>	ηth (%) <sup>2</sup>	ηtot (%)	Pel (kW) <sup>1</sup>	Pt (kW) <sup>2</sup>	ηel (%) <sup>1</sup>	ηth (%) <sup>2</sup>	ηtot (%)
500 mg/m <sup>3</sup> <sub>N</sub>	J412	901	951	42.9	45.3	88.3	851	980	41.2	47.4	88.6	630	618	42.8	41.9	84.8
	J416	1202	1269	43.0	45.4	88.4	1141	1307	41.4	47.4	88.9	846	824	43.0	41.9	85.0
	J416	1202	1451	41.5	50.1	91.6										
	J420	1500	1583	43.0	45.4	88.3	1429	1633	41.5	47.4	88.9	1057	1029	43.0	41.9	84.9
	J420	1500	1812	41.5	50.1	91.6										
250 mg/m <sup>3</sup> <sub>N</sub>	J412	901	997	41.5	45.9	87.4	851	1021	40.1	48.1	88.2	630	641	41.8	42.5	84.3
	J416	1202	1324	41.7	45.9	87.7	1141	1362	40.3	48.1	88.5	846	856	42.1	42.6	84.7
	J416	1202	1509	40.5	50.8	91.3										
	J420	1500	1652	41.7	45.9	87.5	1429	1702	40.4	48.1	88.5	1057	1085	41.7	42.8	84.5
	J420	1500	1884	40.5	50.8	91.3										

Biogas		1.500 1/min   50 Hz					1.800 1/min   60 Hz				
NOx <	Type	Pel (kW) <sup>1</sup>	Pt (kW) <sup>2</sup>	ηel (%) <sup>1</sup>	ηth (%) <sup>2</sup>	ηtot (%)	Pel (kW) <sup>1</sup>	Pt (kW) <sup>2</sup>	ηel (%) <sup>1</sup>	ηth (%) <sup>2</sup>	ηtot (%)
500 mg/m <sup>3</sup> <sub>N</sub>	J412	749	763	41.8	42.6	84.4					
	J412	901	930	42.3	43.6	85.9	851	977	39.7	45.6	85.3
	J416	999	1009	42.0	42.4	84.4					
	J416	1202	1235	42.4	43.6	86.0	1141	1302	39.9	45.5	85.5
	J420	1500	1532	42.4	43.3	85.7	1429	1627	40.0	45.5	85.5
250 mg/m <sup>3</sup> <sub>N</sub>	J412	889	932	41.6	43.6	85.2	851	1010	38.8	46.1	84.9
	J416	1190	1244	41.8	43.6	85.4	1141	1347	39.0	46.1	85.1
	J420	1487	1556	41.8	43.7	85.4	1429	1682	39.1	46.0	85.1

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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