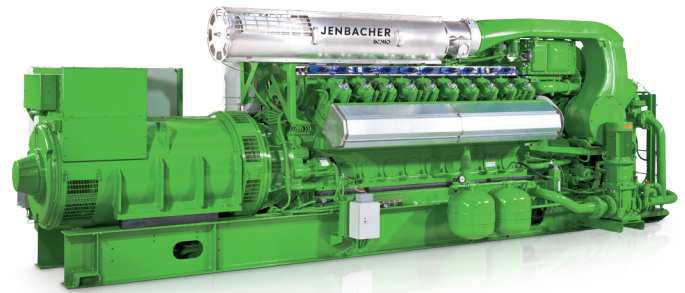


## Jenbacher type 4

### 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.

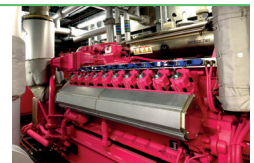


### Reference installations

#### 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 Nakornrachasima, 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<br>- Rapid adjustment of air / gas ratio<br>- 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<br>- 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<br>- Reduced connecting rod bearing wear<br>- Easy to maintain                 |

## Technical data

| Configuration                        |  | 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   |                      |                                  |                      |         |          |
|------------------------------------|------|-----------------------|----------------------|----------------------------------|----------------------|---------|----------|
| NOx <                              | Type | Pe1 (kW) <sup>1</sup> | ηel (%) <sup>2</sup> | Heat rate (kJ/kWhe) <sup>2</sup> | Pt (kW) <sup>3</sup> | ηth (%) | ηtot (%) |
| 500 mg/m <sup>3</sup> <sub>N</sub> | J412 | 901                   | 42.0                 | 8,566                            | 1,003                | 46.8    | 88.8     |
|                                    | J416 | 1,202                 | 42.2                 | 8,530                            | 1,332                | 46.8    | 89.0     |
|                                    | J420 | 1,415                 | 41.8                 | 8,620                            | 1,593                | 47.0    | 88.8     |
|                                    | J420 | 1,501                 | 42.0                 | 8,572                            | 1,674                | 46.8    | 88.8     |
|                                    | J420 | 1,501                 | 42.9                 | 8,390                            | 1,587                | 45.4    | 88.3     |

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.



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