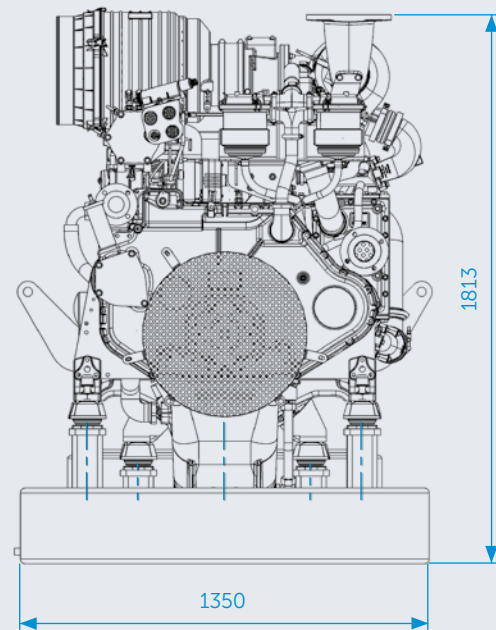
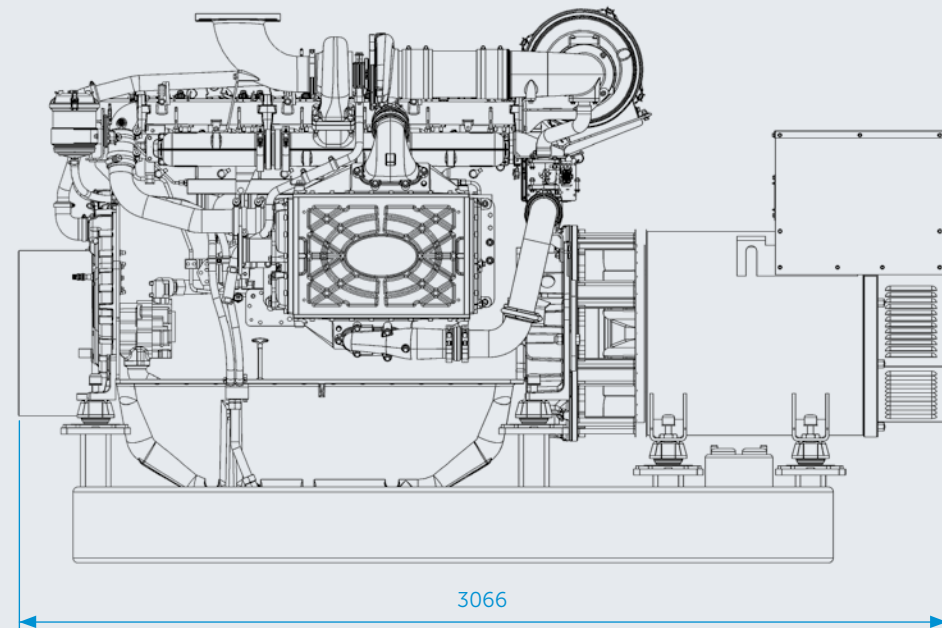
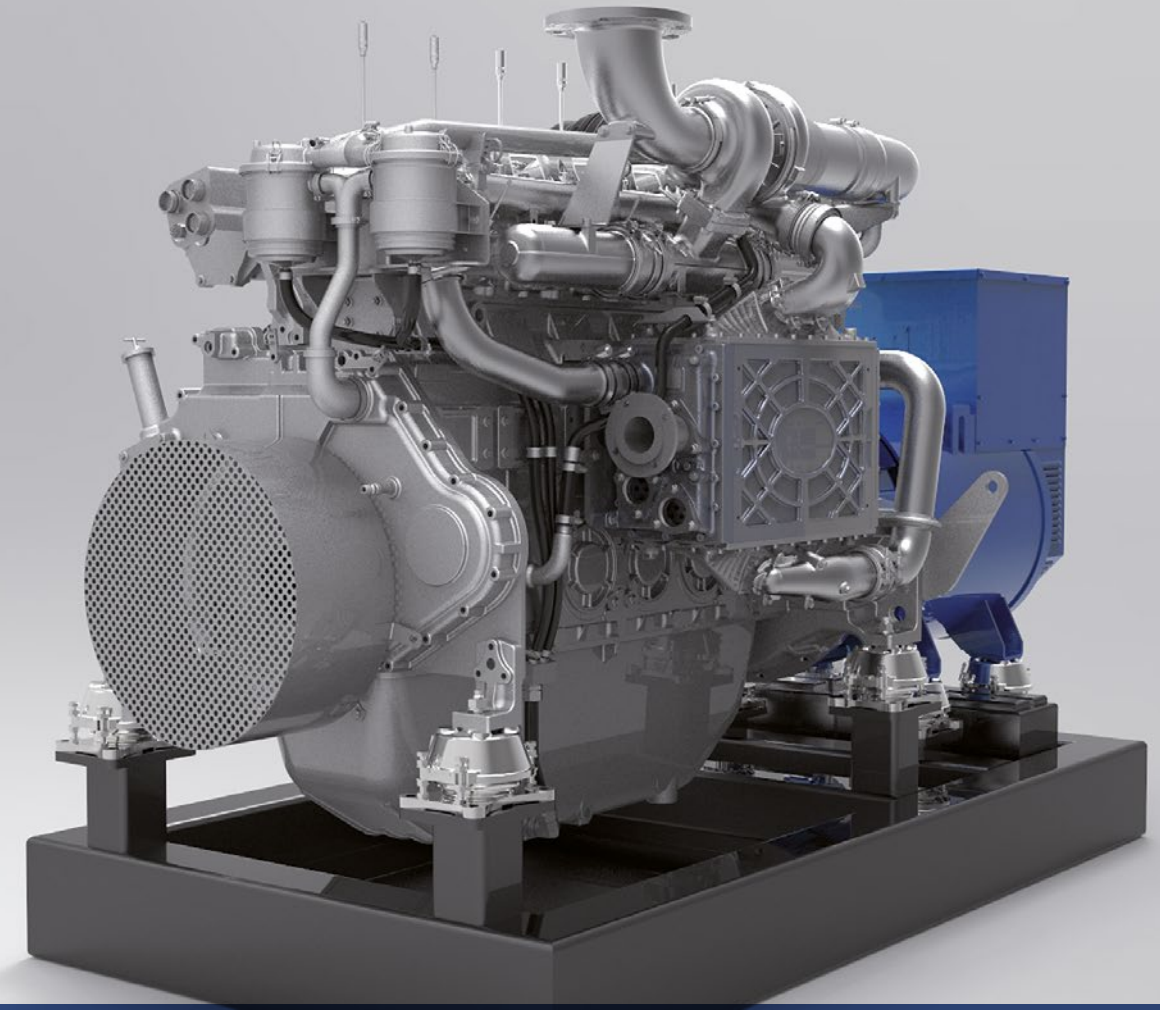


- SPARK IGNITED GAS ENGINE
- TOP EFFICIENCY ENGINE



All sketches are only intended as general sales information and must not be used for any installation purposes.

The values for centre of gravity applies for engines with standard equipment including coolant. All dimensions are indicated in mm.

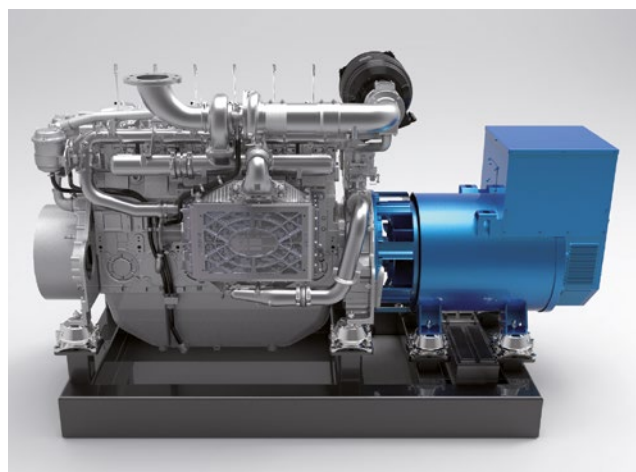
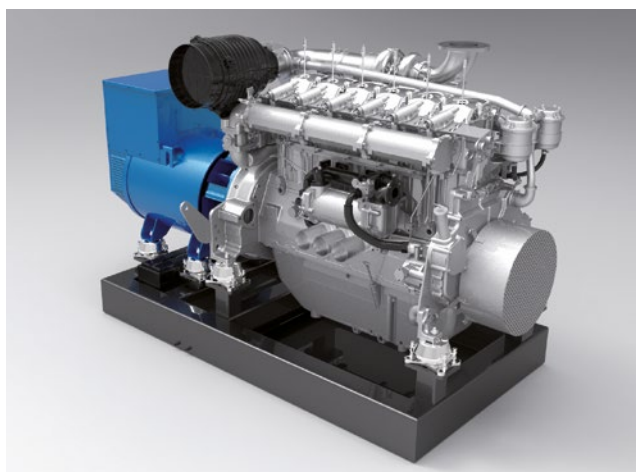


## **BIOBRENT 4006-23TRS**

*Cogeneration & Trigeneration (CHP & CCHP)*

- *Optimized to reduce power consumption and energy savings for industry*





## BioBrent 4006-23TRS

Gas/Biogas engine with control system full authority

### CHP & CCHP maximum efficiency for industry

Developed from a proven engine range that offers superior performance and reliability, the 4006-23TRS is designed to meet the future demands of the power generation industry for clean, efficient gas and biogas fuelled engines.

The 4006-23TRS 6-cylinder spark ignition gas engine offers high performance, dependability and reliability whilst meeting the market's increasingly stringent emission requirements.

The 4006-23TRS is a turbocharged, air to water charge cooled, 6 cylinder inline engine, designed for operation on a wide range of methane based gases. Its premium features and design provide economic and durable operation as well as exceptional mechanical efficiency whilst offering improved emissions. The overall performance and reliability characteristics make this the prime choice for today's power generation industry.

### Fuel consumption - Gross engine power

Designation	TRS3 kJ/kWbs	TRS4 kJ/kWbs
100% Continuous baseload power	2.39	2.33
75% baseload power	2.46	2.39
50% baseload power	2.61	2.48
25% baseload power	2.98	2.87

Note: Gas Naturale - PCI = 37.13 MJ/m<sup>3</sup>

### Economic power

- Utilises advanced combustion technology to deliver durable and reliable power
- High commonality of components with other engines in the 4000 Series family for reduced stocking levels
- Individual large valve cylinder heads with matched deep bowl pistons for greater swirl, achieve high mechanical efficiency

### Reliable power

- Developed and tested using the latest engineering techniques
- Piston temperatures controlled by an advanced gallery jet cooling system
- Extended durability and reduced servicing with extended component life add benefit of the reduced whole life cost
- Robust to varying gas quality

### Compact, clean and efficient power

- Compact size give optimum power density for ease of transportation and installation
- In excess of 43% mechanical efficiency
- Designed to provide excellent service access for ease of maintenance
- Engines to comply with major international standards
- All engines in the 4000 Series family are capable of meeting the NOx requirements of TA Luft

### Engine Model (4006-23TRS3 - 4006-23TRS4)

Basic Technical Data	Units	Value
Number of cylinders		6
Cylinder arrangement		Vertical, In Line
Cycle	stroke	4 stroke
Induction system	type	Turbocharged
Combustion system	type	Spark ignition
Compression ratio		14:1
Bore	mm	160
Stroke	mm	190
Cubic capacity	litri	22.921
Direction of rotation	Viewed on flywheel	Anti-clockwise
Firing order (number 1 cyl. Furthest from flywheel)		1, 5, 3, 6, 2, 4

### Energy balance (4006-23TRS3/4)

Designation	Units	@ 1500 rpm			
		Model TRS3		Model TRS4	
			% of continuous baseload rating		% of continuous baseload rating
Energy in fuel	kWt	747	100.0%	969	100.0%
Energy in power output (nett)	kWb	313	41.8%	417	43.0%
Energy to exhaust (25°C)	kWt	223	29.8%	269	27.8%
Energy to exhaust (120°C)	kWt	178	23.8%	211	21.8%
Energy to coolant and oil	kWt	167	22.3%	214	22.1%
Energy to charge cooler	kWt	13	1.7%	17	1.7%
Energy to losses and radiation (25°C exh temp)	kWt	33	4.4%	53	5.5%

### General installation (4006-23TRS3/4)

Designation	Units	Continuous Baseload rating @ 1500 rpm *	
		Model TRS3	Model TRS4
Gross engine power	kWb	313	417
Combustion air flow	m <sup>3</sup> /min	19.91	25.81
Exhaust gas mass flow (max)	kg/s	0.44	0.58
Exhaust gas flow (max)	m <sup>3</sup> /min	54.42	67.95
Exhaust gas outlet temperature (max)	°C	453	427
Boost pressure ratio	-	2.34	3.05
Overall electrical efficiency (net)	%	40.15	41.27
Typical GenSet electrical output (0.8pf)	kWe	300	400
Assumed alternator efficiency	%	96.0	96.0

\* Definizione rating: Baseload power. Unlimited hours usage with an average load factor of 100% of the published baseload power rating.