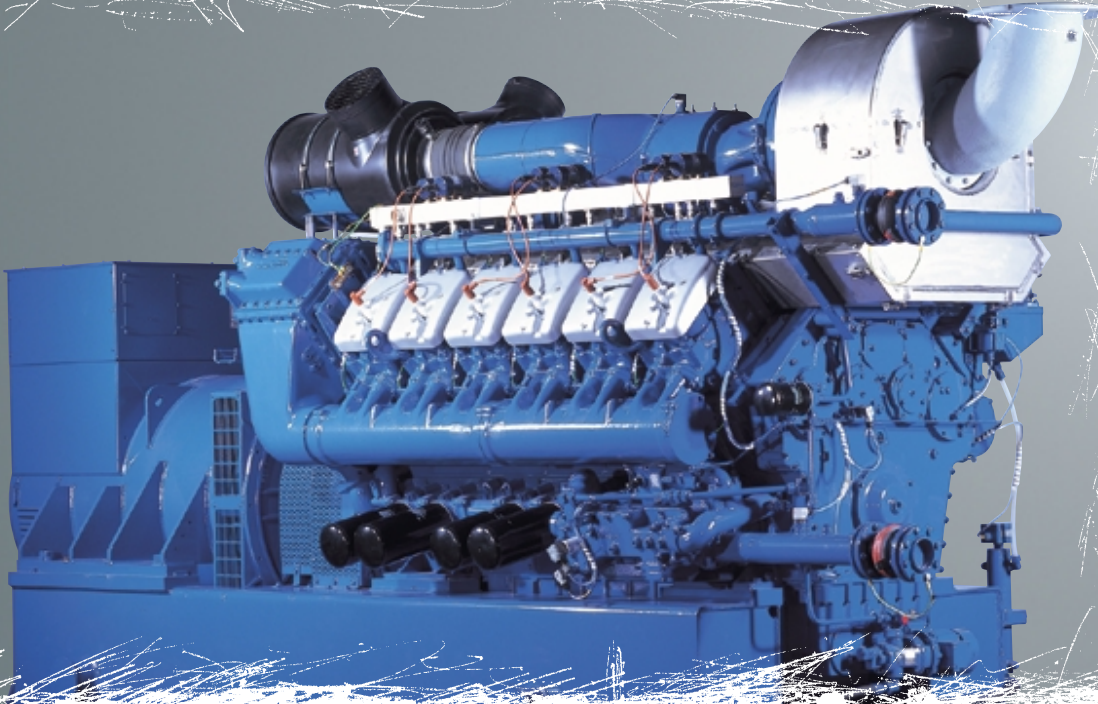


# TBG 620. The gas engine.



970-1875 kW at 1500 min<sup>-1</sup> (50 Hz)



## These are the characteristics of the TBG 620:

- State-of-the art 12-, 16- and 20-cylinder V-engines.
- Turbocharging and two-stage intercooling.
- Single cylinder heads with four-valve technology.
- Centrally arranged industrial spark plug with intensive plug seat cooling.
- Microprocessor-controlled high-voltage ignition system.
- One ignition coil per cylinder.
- Electronic control and monitoring of genset operation through TEM.
- Exhaust emissions controlled according to combustion chamber temperature.

## Your benefits:

- ▶ Package of favourable investment and low operating costs.
- ▶ Low energy consumption thanks to maximum primary energy utilization.
- ▶ Long service intervals and ease of service guarantee additional cost savings.
- ▶ Efficient energy conversion with outstanding efficiencies.
- ▶ Intercooling permits maximum power even when using gases with low methane numbers.
- ▶ Reliable control and monitoring with high safety standards ensure optimum combustion and maximum engine protection.
- ▶ All governing, service, control and monitoring functions are easy and comfortable to operate.

## ► Technical data

$\text{NO}_x \leq 500 \text{ mg/m}_n^{3 \cdot 1)}$

### Naturalgas applications

Minimum methane number MN: 70  
dry exhaust manifold

Engine type		TBG 620 V12 K	TBG 620 V16 K	TBG 620 V20 K
Engine power <sup>2)</sup>	kW	1050	1400	1875
Mean effective pressure	bar	15.8	15.8	16.9
Exhaust temperature	approx. °C	515	523	420
Exhaust mass flow wet	approx. kg/h	5499	7332	10260
Combustion air mass flow <sup>2)</sup>	approx. kg/h	5313	7084	9936
Ventilation air flow <sup>3)</sup>	approx. m <sup>3</sup> /h	22912	28313	42413

### Generator

Efficiency <sup>4)</sup>	%	97.3	97.5	96.9
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### Energy balance

Electrical power <sup>4)</sup>	kW	1022	1365	1817
Jacket water heat	± 8% kW	478	624	967
Intercooler LT heat <sup>5)</sup>	± 8% kW	83	112	197
Exhaust cooled to 120°C	± 8% kW	678	924	946
Engine radiation heat	kW	60	72	105
Generator radiation heat	kW	28	35	58
Fuel consumption <sup>6)</sup>	± 5% kW	2545	3393	4443
Electrical efficiency	%	40.1	40.2	40.9
Thermal efficiency	%	45.4	45.6	43.1
Total efficiency	%	85.5	85.8	84.0

### System parameters

Engine jacket water flow rate min./max.	m <sup>3</sup> /h	36/56	50/65	70/85
Engine-K <sub>VS</sub> -value <sup>7)</sup>	m <sup>3</sup> /h	44	44	53
Intercooler coolant flow rate	m <sup>3</sup> /h	35	35	40
Intercooler-K <sub>VS</sub> -value <sup>7)</sup>	m <sup>3</sup> /h	42.9	42.9	72
Engine jacket water volume	dm <sup>3</sup>	111	151	210
Intercooler coolant volume	dm <sup>3</sup>	28	28	52
Engine jacket water temperature <sup>8)</sup>	°C	82/92	82/92	81/92
– with glycol <sup>8)</sup>	°C	(79/89)	(79/89)	(79/90)
Intercooler coolant temperature <sup>8)</sup>	°C	40/–	40/–	40/–
Exhaust backpressure min./max.	mbar	20/50	20/50	20/50
Maximum pressure loss in front of air cleaner	mbar	5	5	5
Gas flow pressure, fixed between (tolerance +/- 10%)	mbar	20...100	20...100	20...100
Starter battery 24 V, capacity required	Ah	286	420	–
Air bottle, volume/pressure	dm <sup>3</sup> /bar	–	–	2000/30
Dry weight engine	kg	4200	5800	7800
Dry weight genset	kg	8800	11260	18000

Engine type		TBG 620 V12 K	TBG 620 V16 K	TBG 620 V20 K
Bore/stroke	mm	170/195	170/195	170/195
Displacement	dm <sup>3</sup>	53.1	70.8	88.5
Compression ratio		12:1	12:1	12:1
Mean piston speed	m/s	9.8	9.8	9.8
Lube oil content <sup>9)</sup>	dm <sup>3</sup>	240	320	680
Lube oil consumption mineral oil <sup>10)</sup>	g/kWh	0.3	0.3	0.3

## ► Technical data

$\text{NO}_x \leq 500 \text{ mg/m}_n^3$

**Sewage gas application (65 % CH<sub>4</sub>/35 % CO<sub>2</sub>)**

**Landfill gas application (50 % CH<sub>4</sub>/27 % CO<sub>2</sub>, rest N<sub>2</sub>)**

**Minimum heating value (LHV) = 5.0 kWh/m<sub>n</sub><sup>3</sup>  
wet exhaust manifold**

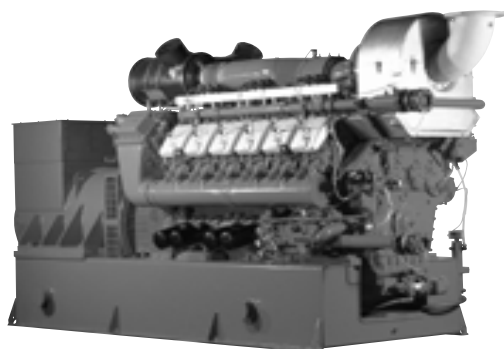
Engine type		TBG 620 V12 K	TBG 620 V16 K
Engine power <sup>2)</sup>	kW	970	1294
Mean effective pressure	bar	14.6	14.6
Exhaust temperature	approx. °C	467	482
Exhaust mass flow wet	approx. kg/h	5116	6775
Combustion air mass flow <sup>2)</sup>	approx. kg/h	4678	6171
Ventilation air flow <sup>3)</sup>	approx. m <sup>3</sup> /h	18186	23658
<b>Generator</b>			
Efficiency <sup>4)</sup>	%	97.3	97.5
<b>Energy balance</b>			
Electrical power <sup>4)</sup>	kW	944	1262
Jacket water heat	± 8 % kW	656	931
Intercooler LT heat <sup>5)</sup>	± 8 % kW	79	102
Exhaust cooled to 120°C	± 8 % kW	533	741
Engine radiation heat	kW	42	56
Generator radiation heat	kW	26	32
Fuel consumption <sup>6)</sup>	± 5 % kW	2454	3378
Electrical efficiency	%	38.5	37.3
Thermal efficiency	%	48.5	49.5
Total efficiency	%	87.0	86.8
<b>System parameters</b>			
Engine jacket water flow rate min./max.	m <sup>3</sup> /h	36/56	50/65
Engine-K <sub>VS</sub> -value <sup>7)</sup>	m <sup>3</sup> /h	43	43
Intercooler coolant flow rate	m <sup>3</sup> /h	35	35
Intercooler-K <sub>VS</sub> -value <sup>7)</sup>	m <sup>3</sup> /h	42.9	42.9
Engine jacket water volume	dm <sup>3</sup>	138	187
Intercooler coolant volume	dm <sup>3</sup>	28	28
Engine jacket water temperature <sup>8)</sup>	°C	78/92	78/92
– with glycol <sup>8)</sup>	°C	(78/92)	(78/92)
Intercooler coolant temperature <sup>8)</sup>	°C	40/–	40/–
Exhaust backpressure min./max.	mbar	20/50	20/50
Maximum pressure loss in front of air cleaner	mbar	5	5
Gas flow pressure, fixed between (tolerance +/- 10 %)	mbar	20...100	20...100
Starter battery 24 V, capacity required	Ah	286	420
Dry weight engine	kg	4200	5800
Dry weight genset	kg	8800	11260

- 1) Exhaust emissions with oxidizing catalyst:  
NO<sub>x</sub> < 0.50 g NO<sub>2</sub>/m<sub>n</sub><sup>3</sup> dry exhaust gas at 5 % O<sub>2</sub>  
CO < 0.65 g CO/m<sub>n</sub><sup>3</sup> dry exhaust gas at 5 % O<sub>2</sub>  
NMHC < 0.15 g NMHC/m<sub>n</sub><sup>3</sup> dry exhaust gas at real O<sub>2</sub>  
(NMHC = Non-Methan-Hydro Carbons).
- 2) Engine power ratings and combustion air volume flows acc. to ISO 3046/1.
- 3) Intake air volume flow at delta T = 15 K including combustion air.
- 4) At 50 Hz, U = 0.4 kV, power factor = 1.
- 5) At 40 °C water inlet.

- 6) With a tolerance of ± 5%.
- 7) The K<sub>VS</sub>-value is the parameter for the pressure loss in the cooling system (= flow rate for 1 bar pressure loss).
- 8) Inlet/outlet.
- 9) Including pipes and heat exchangers.
- 10) At full load (± 20 %).

Data for special gas and dual gas operation on request. The values given in this data sheet are for information purposes only and not binding. The information given in the offer is decisive.

## ► Dimensions



Genset		Length	Width	Height
TBG 620 V12 K	mm	4700	1800	2650
TBG 620 V16 K	mm	5500	1800	2650
TBG 620 V20 K	mm	6100	1900	2800

## ► Noise emissions\*

Noise frequency band	Hz	63	125	250	500	1000	2000	4000	8000	
<b>Engine type TBG 620 V12 K</b>										
Exhaust noise	120 dB (A)	dB (lin)	116	121	120	118	112	111	108	107
Air-borne noise	103 dB (A)	dB (lin)	87	91	98	98	99	95	94	93
<b>Engine type TBG 620 V16 K</b>										
Exhaust noise	122 dB (A)	dB (lin)	119	128	120	117	116	115	112	107
Air-borne noise	104 dB (A)	dB (lin)	92	96	98	97	99	97	96	98
<b>Engine type TBG 620 V20 K</b>										
Exhaust noise	124 dB (A)	dB (lin)	120	129	122	119	118	117	114	108
Air-borne noise	105 dB (A)	dB (lin)	92	97	99	97	100	97	97	99

Exhaust noise at 1 m,  $\leq 45^\circ$ ,  $\pm 2.5$  dB (A)

Air-borne noise at 1 m from the side,  $\pm 1$  dB (A)

\* Values apply to natural gas applications, measured as noise pressure level.

For further details please contact DEUTZ ENERGY GmbH in Mannheim.



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