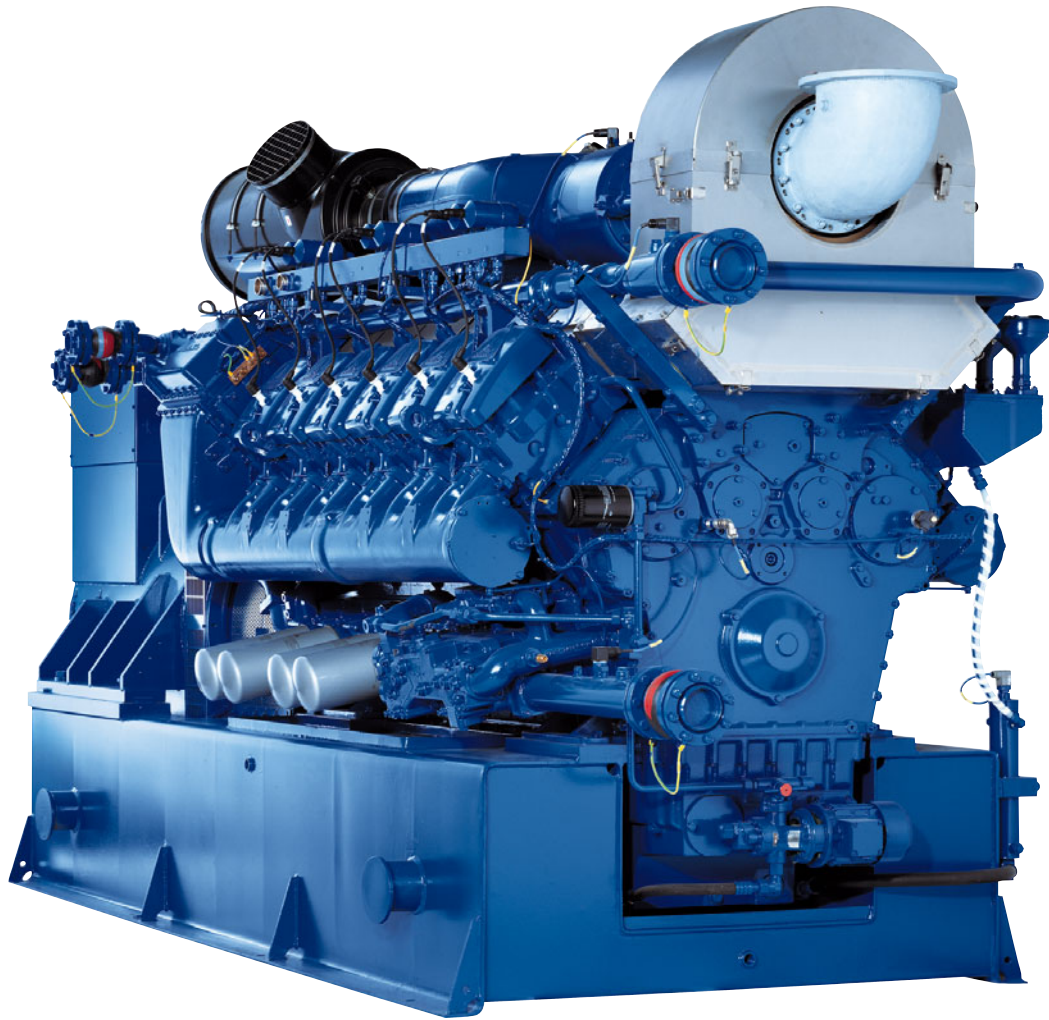


DEUTZ POWER SYSTEMS



TCG 2020 K

970–1400 kW at 1500 min⁻¹ (50 Hz)

Technical data 50 Hz – Natural gas applications

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

Minimum methane number MN 70
dry exhaust manifolds

Engine type		TCG 2020 V12 K	TCG 2020 V16 K
Engine power ²⁾	kW	1050	1400
Speed	min ⁻¹	1500	1500
Mean effective pressure	bar	15.8	15.8
Exhaust temperature	approx. °C	517	526
Exhaust mass flow wet	approx. kg/h	5499	7332
Combustion air mass flow ²⁾	approx. kg/h	5312	7082
Combustion air temperature minimum/design	°C	20/25	20/25
Ventilation air flow ³⁾	approx. kg/h	26565	32873
Engine parameters			
Bore/stroke	mm	170/195	170/195
Displacement	dm ³	53.1	70.8
Compression ratio		12.0 : 1	12.0 : 1
Mean piston speed	m/s	9.8	9.8
Lube oil content ⁴⁾	dm ³	205	265
Lube oil consumption mineral oil ⁵⁾	+ 20 % g/kWh	0.3	0.3
Generator			
Efficiency ⁶⁾	%	97.2	97.4
Energy balance			
Electrical power ⁶⁾	kW	1021	1364
Jacket water heat	± 8 % kW	475	624
Intercooler LT heat ⁷⁾	± 8 % kW	87	112
Exhaust cooled to 120 °C	± 8 % kW	682	928
Engine radiation heat	kW	60	72
Generator radiation heat	kW	29	36
Fuel consumption ⁸⁾	+ 5 % kW	2545	3394
Electrical efficiency	%	40.1	40.2
Thermal efficiency	%	45.5	45.7
Total efficiency	%	85.6	85.9
System parameters			
Engine jacket water flow rate min./max.	m ³ /h	36/56	50/65
Engine K_{VS} -value ⁹⁾	m ³ /h	44	50
Intercooler coolant flow rate	m ³ /h	35	35
Intercooler K_{VS} -value ⁹⁾	m ³ /h	42.9	42.9
Engine jacket water volume	dm ³	111	151
Intercooler coolant volume	dm ³	28	28
Engine jacket water temperature max. ¹⁰⁾	°C	82/92	82/92
– with glycol ¹⁰⁾	°C	(79/89)	(79/89)
Intercooler coolant temperature ¹⁰⁾	°C	40/–	40/–
Exhaust backpressure min./max.	mbar	30/50	30/50
Maximum pressure loss in front of air cleaner	mbar	5	5
Gas flow pressure, fixed between (pressure variation +/- 10 %)	mbar	20...100	20...100
Starter battery 24 V, capacity required	Ah	420	420

Technical data 50 Hz – Sewage, bio and landfill gas applications

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

Sewage gas (65% CH_4 / 35% CO_2)

Bio gas (60% CH_4 / 32% CO_2 , rest N_2)

Landfill gas (50% CH_4 / 27% CO_2 , rest N_2)

Minimum heating value (LHV) = 5.0 kWh/m_n³
wet exhaust manifolds

Engine type		TCG 2020 V12 K	TCG 2020 V16 K
Engine power ²⁾	kW	970	1294
Speed	min ⁻¹	1500	1500
Mean effective pressure	bar	14.6	14.6
Exhaust temperature	approx. °C	455	456
Exhaust mass flow wet	approx. kg /h	5114	6798
Combustion air mass flow ²⁾	approx. kg /h	4533	6022
Combustion air temperature minimum/design	°C	20/25	20/25
Ventilation air flow ³⁾	approx. kg /h	21011	27515
Generator			
Efficiency ⁶⁾	%	97.2	97.4
Energy balance			
Electrical power ⁶⁾	kW	943	1260
Jacket water heat	± 8 % kW	652	869
Intercooler LT heat ⁷⁾	± 8 % kW	80	108
Exhaust cooled to 150 °C	± 8 % kW	485	646
Engine radiation heat	kW	42	56
Generator radiation heat	kW	27	34
Fuel consumption ⁸⁾	+ 5 % kW	2454	3273
Specific fuel consumption ⁸⁾	+ 5 % kWh/kWh	2.53	2.53
Electrical efficiency	%	38.4	38.5
Thermal efficiency	%	46.3	46.3
Total efficiency	%	84.8	84.8
System parameters			
Engine jacket water flow rate min./max.	m ³ /h	36/56	50/65
Engine K_{VS} -value ⁹⁾	m ³ / h	43.0	49.0
Intercooler coolant flow rate	m ³ / h	35	35
Intercooler K_{VS} -value ⁹⁾	m ³ / h	42.9	42.9
Engine jacket water volume	dm ³	138	187
Intercooler coolant volume	dm ³	28	28
Engine jacket water temperature max. ¹⁰⁾	°C	78/92	78/92
– with glycol ¹⁰⁾	°C	(78/92)	(78/92)
Intercooler coolant temperature ¹⁰⁾	°C	50/–	50/–
Exhaust backpressure min./max.	mbar	30/50	30/50
Maximum pressure loss in front of air cleaner	mbar	5	5
Gas flow pressure, fixed between (pressure variation +/- 10%)	mbar	20... 100	20... 100
Starter battery 24 V, capacity required	Ah	420	420

1) Exhaust emissions with oxidizing catalyst:
 $\text{NO}_x < 0.50 \text{ g NO}_2/\text{m}_n^3$ dry exhaust gas at 5% O_2
 $\text{CO} < 0.30 \text{ g CO}/\text{m}_n^3$ dry exhaust gas at 5% O_2

2) Engine power ratings and combustion air volume flows acc. to ISO 3046/1

3) Intake air flow at delta T = 15 K including combustion air

4) Including pipes and heat exchangers

5) At full load

6) At 50 Hz, U=0.4 kV, power factor=1

7) At 40 °C water inlet (50 °C for biogas)

8) With a tolerance of +5%

9) The K_{VS} -value is the parameter for the pressure loss in the cooling system (= flowrate for 1 bar pressure loss)

10) Inlet /outlet

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 50 Hz

Genset		TCG 2020 V12 K			TCG 2020 V16 K		
Length	mm	4700			5500		
Width	mm	1800			1800		
Height	mm	2500			2650		
Dry weight genset	kg	9000			12500		

Noise emissions* 50 Hz

Noise frequency band	Hz	63	125	250	500	1000	2000	4000	8000
Engine type TCG 2020 V12 K									
Exhaust noise 119.6 dB(A)	dB(lin)	116.0	121.0	120.0	118.0	112.0	111.0	108.0	107.0
Air-borne noise 102.0 dB(A)	dB(lin)	101.7	93.5	94.2	95.0	95.9	94.4	94.7	95.2

Engine type TCG 2020 V16 K

Exhaust noise 122.0 dB(A)	dB(lin)	119.0	128.0	120.0	117.0	116.0	115.0	112.0	107.0
Air-borne noise 104.4 dB(A)	dB(lin)	92.0	96.0	98.0	97.0	99.0	97.0	96.0	98.0

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

Air-borne noise at 1m from the side, ± 1 dB(A)

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

Characteristics:

State-of-the-art 12 and 16 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 favorable 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 performance.
- 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.

