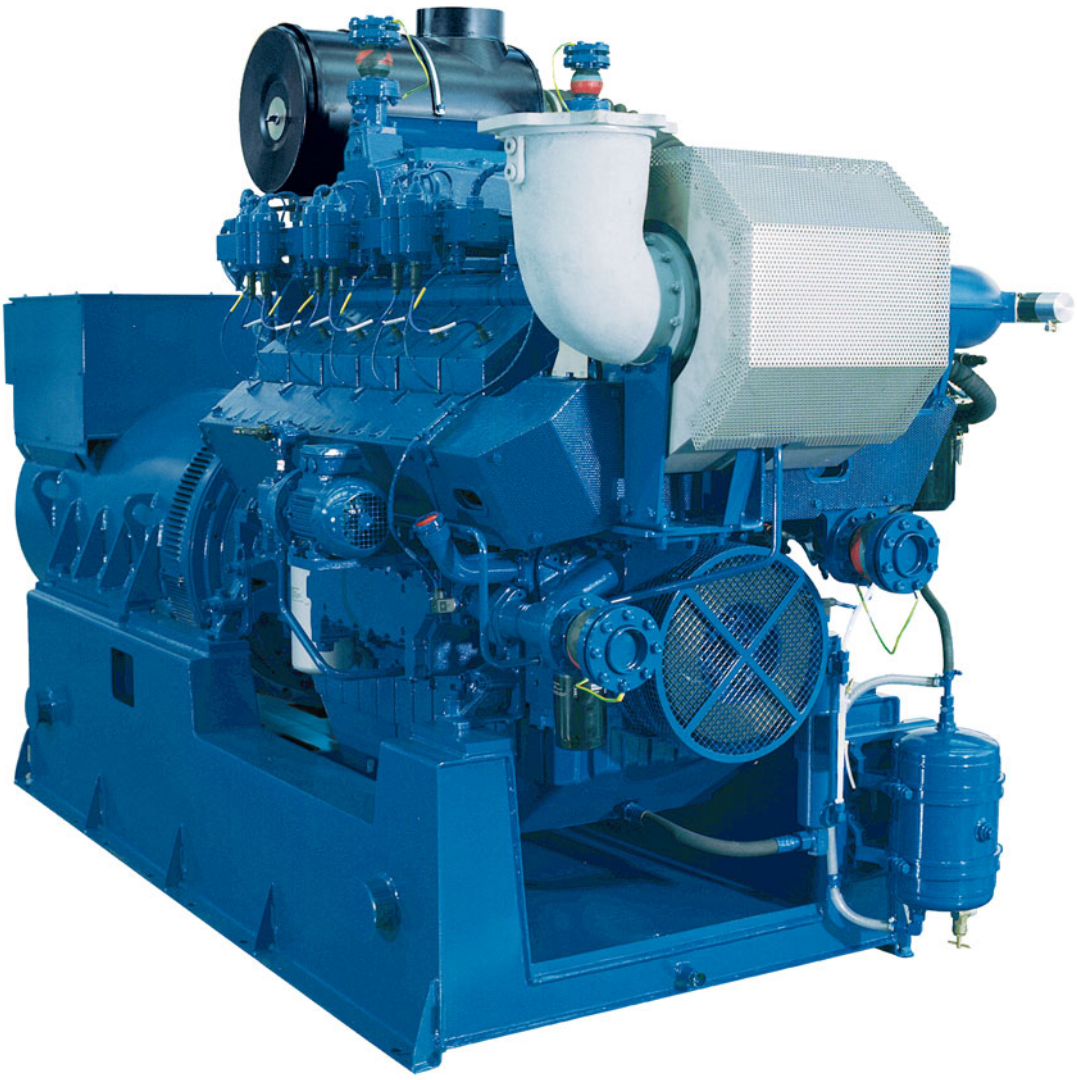
DEUTZ POWER SYSTEMS



TCG 2016

555–800 kW at 1500 min^{-1} (50 Hz)

Technical Data 50 Hz – Natural gas applications

NO_X <= 500 mg /m_n^3 [1)]

Minimum methane number MN 80
dry exhaust manifolds

Engine type			TCG 2016 V12	TCG 2016 V16
Engine power [2)]		kW	600	800
Speed		min^{-1}	1500	1500
Mean effective pressure		bar	18.3	18.3
Exhaust temperature	approx.	°C	467	470
Exhaust mass flow wet	approx.	kg/h	3239	4294
Combustion air mass flow [2)]	approx.	kg/h	3134	4155
Combustion air temperature minimum/design		°C	20/25	20/25
Ventilation air flow [3)]	approx.	kg/h	15681	20938
Engine parameters				
Bore/stroke		mm	132/160	132/160
Displacement		dm^3	26.3	35.0
Compression ratio			12.0 : 1	12.0 : 1
Mean piston speed		m/s	8.0	8.0
Lube oil content [4)]		dm^3	100	135
Typical mean lube oil consumption [5)]		g/kWh	0.2	0.2
Generator				
Efficiency [6)]		%	96.7	96.8
Energy balance				
Electrical power [6)]		kW	580	774
Jacket water heat	±8%	kW	208	286
Intercooler LT heat [7)]	±8%	kW	118	141
Exhaust cooled to 120 °C	±8%	kW	348	466
Engine radiation heat		kW	22	30
Generator radiation heat		kW	20	26
Fuel consumption [8)]	+5%	kW	1422	1882
Electrical efficiency		%	40.8	41.1
Thermal efficiency		%	39.1	40.0
Total efficiency		%	79.9	81.1
System parameters				
Engine jacket water flow rate min./max.		m^3/h	28/44	38/58
Engine K_{VS}-value [9)]		m^3/h	40.0	42.0
Intercooler coolant flow rate		m^3/h	20	20
Intercooler K_{VS}-value [9)]		m^3/h	60.0	60.0
Engine jacket water volume		dm^3	40	53
Intercooler coolant volume		dm^3	10	10
Engine jacket water temperature max. [10)]		°C	84/90	84/90
– with glycol [10)]		°C	(84/90)	(84/90)
Intercooler coolant temperature [10)]		°C	40/45.2	40/46.2
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%) [11)]		mbar	20…200	20…200
Starter battery 24 V, capacity required		Ah	143	286

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

NO_X <= 500 mg/m_n^3
Sewage gas (65 % CH_4 / 35 % CO_2)
Biogas (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_n^3
dry exhaust manifolds

Engine type			**TCG 2016 V12**	**TCG 2016 V16**
Engine power [2]		kW	555	740
Speed		min^{-1}	1500	1500
Mean effective pressure		bar	16.9	16.9
Exhaust temperature	approx.	°C	497	500
Exhaust mass flow wet	approx.	kg/h	2958	3912
Combustion air mass flow [2]	approx.	kg/h	2719	3595
Combustion air temperature minimum/design		°C	20/25	20/25
Ventilation air flow [3]	approx.	kg/h	14436	19473
Generator				
Efficiency [6]		%	96.7	96.8
Energy balance				
Electrical power [6]		kW	537	716
Jacket water heat	±8 %	kW	210	278
Intercooler LT heat [7]	±8 %	kW	93	119
Exhaust cooled to 150 °C	±8 %	kW	321	428
Engine radiation heat		kW	21	29
Generator radiation heat		kW	18	24
Fuel consumption [8]	+5 %	kW	1341	1777
Electrical efficiency		%	40.0	40.3
Thermal efficiency (exhaust cooled to 150 °C)		%	39.6	39.7
Total efficiency		%	79.6	80.0
System parameters				
Engine jacket water flow rate min./max.		m^3/h	28/44	38/58
Engine K_{VS}-value [9]		m^3/h	40.0	42.0
Intercooler coolant flow rate		m^3/h	20	20
Intercooler K_{VS}-value [9]		m^3/h	60.0	60.0
Engine jacket water volume		dm^3	40	53
Intercooler coolant volume		dm^3	10	10
Engine jacket water temperature max. [10]		°C	84/90	84/90
– with glycol [10]		°C	(84/90)	(84/90)
Intercooler coolant temperature [10]		°C	50/54.1	50/55.3
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 %) [11]		mbar	20…200	20…200
Starter battery 24 V, capacity required		Ah	143	286

1) Exhaust emissions with oxidizing catalyst:
NO_X < 0.50 g NO_2/m_n^3 dry exhaust gas at 5 % O_2
CO < 0.3 g CO/m_n^3 dry exhaust gas at 5 % O_2
Formaldehyde < 0.06 g/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) This values are the mean lube oil consumption between maintenance steps which include an E 60 service. Also the procedures defined in the TPI 1111-E-06-02 and the Technical Circular TR 0199-99-2105 are to be carefully followed.
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
11) Consider TR 0199-99-3017

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 2016 V12	TCG 2016 V16
Length	mm	3700	4000
Width	mm	1450	1450
Height	mm	2200	2200
Dry weight genset	kg	5700	6570

Noise emissions* 50 Hz

Noise frequency band	Hz	63	125	250	500	1000	2000	4000	8000
Engine type TCG 2016 V12									
Exhaust noise 121.4 dB(A)	dB(lin)	105.5	116.5	121.5	116.2	115.5	115.5	110.0	104.0
Air-borne noise 98.7 dB(A)	dB(lin)	86.0	88.5	90.0	92.5	92.0	91.5	88.0	94.5
Engine type TCG 2016 V16									
Exhaust noise 122.4 dB(A)	dB(lin)	107.0	116.5	123.0	117.5	116.0	116.5	111.0	104.0
Air-borne noise 101.4 dB(A)	dB(lin)	91.0	100.0	97.0	97.5	96.5	94.5	91.0	88.0

Exhaust noise in 1 m, ∢45°, ± 2.5 dB(A)
Air-borne noise in 1 m 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 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

Version 01/08/E

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.