Natural Gas Generator set data sheet *(01-09-2018)*

Continuous 1560 kWe, *Natural Gas, MN=80*

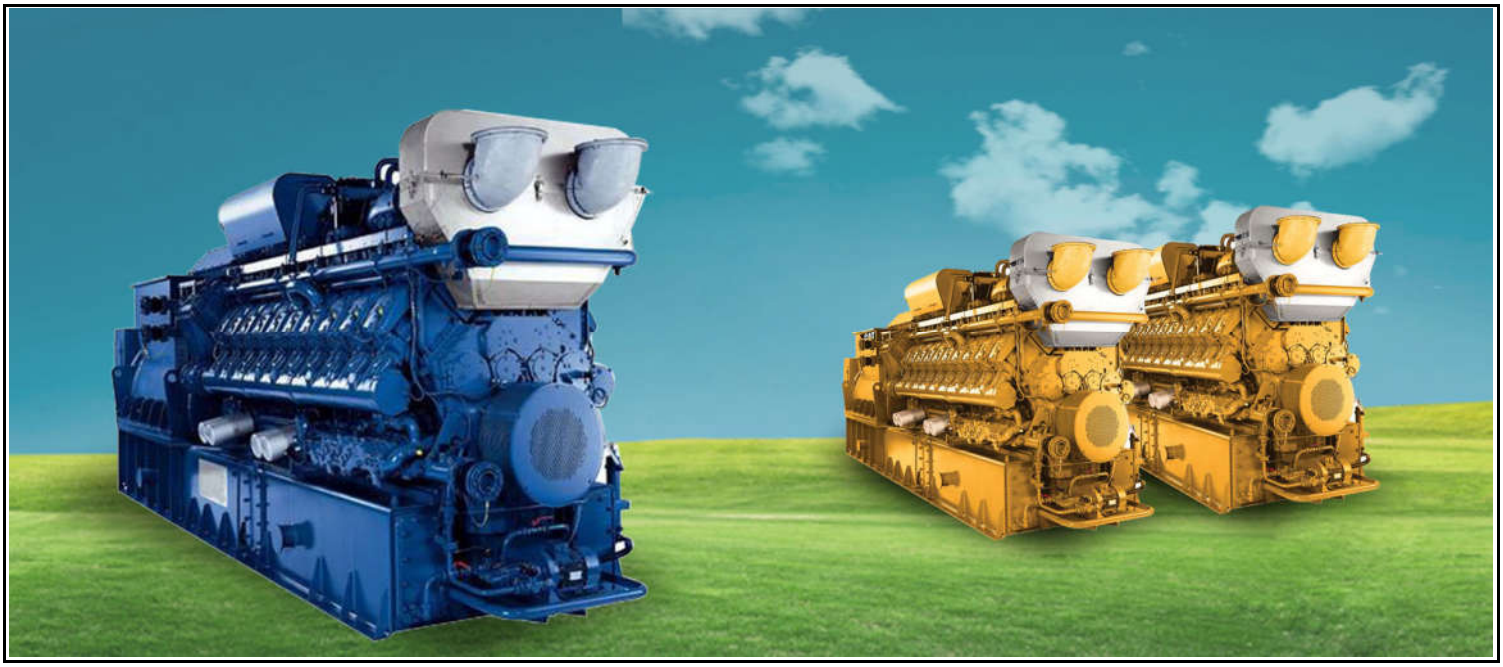

Photo For Reference Only

Generator Set Model:	TM1560G	***Engine Model:***	*CAT MWM TCG2020V16*	***Alternator Model:***	*Marelli MJB 500 MC4*

50Hz *1500 r.p.m*	***3 Phase*** *4 Wires*	***Power Factor: Cos ¢ = 1.0***	***NO_x Emissions [1)] (tolerance -8%)***	*500mg/Nm^3*

RATINGS [2)]	***Prime Power*** *(PRP)*		***Continuous Power*** *(COP)*		***Rated Current***	***Thermal Output***	***Efficiency***	
							Eletrical	**Thermal[3)]**
Voltage (V)	kW	kVA	kW	kVA	Amps	kW	η(%)	
400/230	**N/A**	**N/A**	**1560**	**1560**	**2251.7**	**1578**	**43.3%**	**43.8%**

Conditions and Defintions:

1）NO_x Emissions: $NO_x \leqslant 0.5g\ NO_2/m_n^3$ dry exhasut gas at 5% exhaust O_2 ; at steady state conditions;

2）Engine Ratings obtained and presented in accordance with ISO 3046-1, No overload permitted.;

3）Cooling of the exhaust gases to 120 ℃, includes heat rejection from jacket water circuit, the value tolerance is ±8%;

TIDE Power reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Genset General Specifications

Genset model	TM1560G	Electrical efficiency	43.3%
Engine model	TCG2020V16	Thermal efficiency	43.8%
Electrical output (kW/kVA)	1560/1560	Total efficiency	87.1%
Fuel	Natural gas	Speed regulating rate	0-5% Adjustable
Frequency (HZ）	50	Dimension (length×width×height) (mm)	5360×1810×2210
Speed（rpm）	1500	Net Weight (kg)	12600

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Engine Specifications

Manufacturer	MWM
Model	TCG2020V16
Mechanical power	1605 kWm
Speed	1500 rpm
Configuration / number of cylinders	V / 16
Bore / Stroke	170/195 mm
Displacement	71 L
Compression ratio	13.5:1
Mean piston speed	9.8 m/s
Engine-management-system:	TEM EVO
Ignition system	MWM
Speed governor system	MWM
Induction system	Mixture exhaust turbo charging
Cooling mode	Radiator
Exhaust noise @ 1 meter	120 dB(A)
Air-borne noise @ 1 meter	111 dB(A)

Cooling system

Water volume engine jacket / intercooler	151/20 L
Jacket water coolant temperature in / out	80/93 °C
Intercooler coolant temperature in / out	40/44 °C
Engine jacket water flow rate from / to	50/65 m^3/h
Water flow rate engine jacket water / intercooler	53/35 m^3/h

Lubrication system

Total lubricating oil capacity	265 Litres
Oil consumption	0.2 g/kW.h
Oil grade	CD or higher, sae 15W-40

Induction system

Maximum pressure loss in front of air cleaner	5 mbar
Air filter type	Dry

Gas Inlet System

Air-Gas mixer	MMW
Inlet gas pressure	2-20 kPa
Aftercooler temperature	40

Exhaust system

Exhaust back pressure from / to	30/50 mbar
Exhaust mass flow, wet	8503 kg/h
Exhaust temperature	430 °C
Exhaust Manifolds	Dry

Combustion air system

Combustion type	Spark plug ignition
Combustion mass air flow	8223 kg/h
Combustion air temperature minimum/design	20/25 °C

Fuel system

Gas Methane No.	⩾70
Lower Heat Value (LHV）	34.56 MJ/Nm^3
Gas consumption at 100% load	375 m^3/h
Gas consumption at 75% load	288.8 $m^{3/}$h
Gas consumption at 50% load	202.7 $m^{3/}$h

Electrical system

Starter motor voltage	24 V
Starter motor power	15 kW
Starter Battery 24V,capacity required	430 Ah

Thermal Data

Heat rejection to exhaust	804 kW
Heat rejection to coolant	772 kW
Radiated heat to ambient	42-54 kW

Alternator Specifications

50HZ/1500R.P.M

Manufacture / Brand	Marelli
Model	MJB 500 MC4
AVR model	M40FA610A analog
Number of leads	6
Phase	3 Phase
Power factor	Cos ¢ = 1.0
Winding pitch	2/3
Degree of protection	IP 23

Temperature rise	F
Insulation class	H
Voltage regulation accuracy	± 0,5 %
Efficiency	96.4%
Altitude	⩽ 1000 m
Overspeed	2250 rpm
Cooling air required	2.6 m^3/s
Ambient temperature	40°C

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Control Pannel

Programmable logic control (PLC) type , the PLC is programmed with the following basic functions:

- Selection of the gas gensets via contacts of the customer control system.
- Heat-controlled operation
- Data coupling from TEM
- Data coupling from generator multifunctional relay
- Visualization of the operation and fault messages of all gas gensets.
- Operation hours equalization

Additional displaying and recording of collective fault messages of all modules (digital inputs)，includes :

- Fuse trip of central control system
- Failure over / under voltage
- Failure over / under-frequency
- Failure power supply / phase vector shift
- Mains couple switch open / tripped
- Failure room ventilator
- Failure fresh oil pump
- Fresh oil tank empty
- Fresh oil tank overfilled
- Waste oil tank full

Standard Features

- High efficient water cooled gas engine
- Brushless alternators (Class H, with AVR.)
- Heavy duty rubber anti-vibration mountings
- 24V starter batteries and connecting cables
- Separate engine-drive battery charging alternator
- Industrial silencer for open type generator sets
- Circuit Breaker - 3 pole (MCCB)/ACB
- Maintenance free battery
- Low coolant level sensor
- Oil filter - Air filter
- Fully welded steel baseframe
- MWM ignition system
- Gas train: ball valve, gas filter, gas pressure regulator, pressure gauge,electromagnetic valve;
- Automatic oil supply system
- Wiring with IEC standard
- Factory test certificate
- Operation & Maintenance manual & Diagrams
- Worldwide product / Technical support

Optional

○ Automatic Transfer Switch (ATS)
○ Canopy/Enclosure
○ Water heater for severe cold weather
○ Lub-oil heater for severe cold weather
○ Silent containerised
○ Residential silencer for open type generator se
○ Extra air filters for time-maintenance
○ Extra oil filters for time-maintenance
○ Parallel cabinet
○ Full range of attachments and options available for alternator
○ Flame arrestor in gas train
○ Desulfurization system
○ Gas pretreatment system
○ Dehydration system

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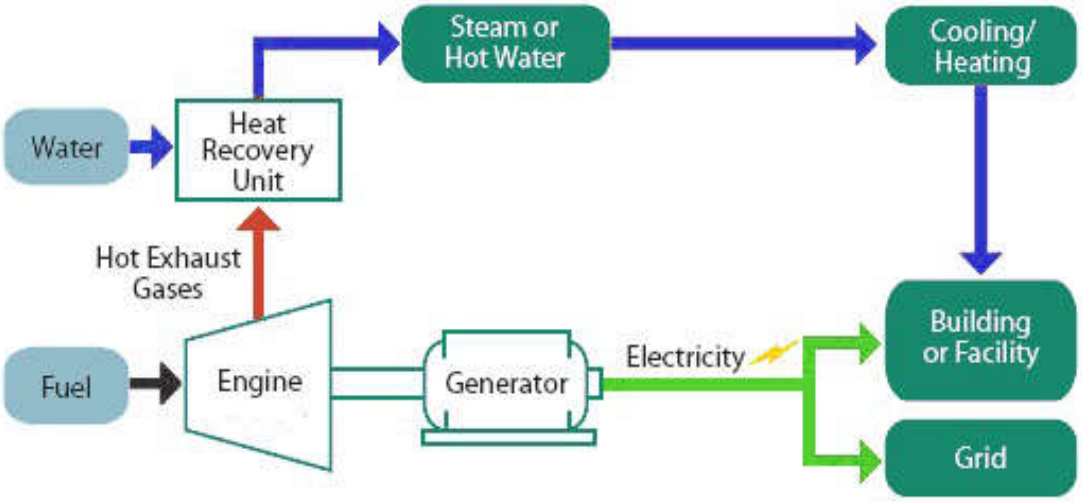
Combined Heat and Power Systems



We offer Combined Cooling Heating and Power (CHP and CCHP) packages for our gas generator sets. It can recover 75%-90% combined electrical and thermal efficiency, resulting in major reductions in your overall energy costs. In the past years we have supplied CHP systems to Germany, Russia,Indonesia etc. We have the experience and capabilities to meet your total energy requirements.

Warranty

The natural gas genset of Tide Power Technology are under warranty against defects in materials and workmanship for period of 18 months from the date of delivery to the end user (except the damageable spare parts of genset caused by incorrect man-made operation), and that the aforementioned warranty for the same token is back up by the engine & alternator manufactures and their global distributors.

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