

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

Continuous 1200 kWe, Natural Gas, MN=80



Photo For Reference Only

<b>Generator Set Model:</b>	TM1200G	<b>Engine Model:</b>	CAT MWM CG170-12/ TCG2020V12	<b>Alternator Model:</b>	Marelli MJB 450 LB4
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<b>50Hz</b> 1500 r.p.m	<b>3 Phase</b> 4 Wires	<b>Power Factor:</b> Cos $\phi$ = 1.0	<b>NO<sub>x</sub> Emissions<sup>1)</sup></b> ( tolerance -8%)	500mg/Nm <sup>3</sup>
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RATINGS <sup>2)</sup>	Prime Power (PRP)		Continuous Power (COP)		Rated Current Amps	Thermal Output kW	Efficiency	
	kW	kVA	kW	kVA			Electrical	Thermal <sup>3)</sup>
<b>Voltage (V)</b>							$\eta$ (%)	
<b>400/230</b>	<b>N/A</b>	<b>N/A</b>	<b>1200</b>	<b>1200</b>	<b>1732.1</b>	<b>1189</b>	<b>43.7%</b>	<b>43.3%</b>

### Conditions and Defintions:

- 1) NO<sub>x</sub> Emissions: NO<sub>x</sub> ≤ 0.5g NO<sub>2</sub>/m<sub>n</sub><sup>3</sup> dry exhasut gas at 5% exhaust O<sub>2</sub>; 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 °C, 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	TM1200G	Electrical efficiency	43.7%
Engine model	TCG2020V12	Thermal efficiency	43.3%
Electrical output (kW/kVA)	1200/1200	Total efficiency	87.0%
Fuel	Natural gas	Speed regulating rate	0-5% Adjustable
Frequency (HZ)	50	Dimension (length×width×height) (mm)	4640×1810×2210
Speed (rpm)	1500	Net Weight (kg)	10600

## Engine Specifications

Manufacturer	MWM
Model	TCG2020V12
Mechanical power	1232 kWm
Speed	1500 rpm
Configuration / number of cylinders	V / 12
Bore / Stroke	170/195 mm
Displacement	53 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	106 dB(A)

### Cooling system

Water volume engine jacket / intercooler	111/20 L
Jacket water coolant temperature in / out	80/93 °C
Intercooler coolant temperature in / out	40/43 °C
Engine jacket water flow rate from / to	36/56 m <sup>3</sup> /h
Water flow rate engine jacket water / intercooler	41/35 m <sup>3</sup> /h

### Lubrication system

Total lubricating oil capacity	205 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

## Alternator Specifications

Manufacture / Brand	Marelli
Model	MJB 450 LB4
AVR model	MEC 20 analog/digital
Number of leads	6
Phase	3 Phase
Power factor	Cos $\phi$ = 1.0
Winding pitch	2/3
Degree of protection	IP 23

### 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	6476 kg/h
Exhaust temperature	414 °C
Exhaust Manifolds	Dry

### Combustion air system

Combustion type	Spark plug ignition
Combustion mass air flow	6262 kg/h
Combustion air temperature minimum/design	20/25 °C

### Fuel system

Gas Methane No.	$\geq 70$
Lower Heat Value ( LHV )	34.56 MJ/Nm <sup>3</sup>
Gas consumption at 100% load	286.3 m <sup>3</sup> /h
Gas consumption at 75% load	220.7 m <sup>3</sup> /h
Gas consumption at 50% load	154.9 m <sup>3</sup> /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	581 kW
Heat rejection to coolant	608 kW
Radiated heat to ambient	32-41 kW

**50HZ/1500R.P.M**

Temperature rise	F
Insulation class	H
Voltage regulation accuracy	$\pm 0,5 \%$
Efficiency	96.3%
Altitude	$\leq 1000$ m
Overspeed	2250 rpm
Cooling air required	1.5 m <sup>3</sup> /s
Ambient temperature	40°C

## ***Control Pannel***

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**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
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## ***Standard Features***

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- 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

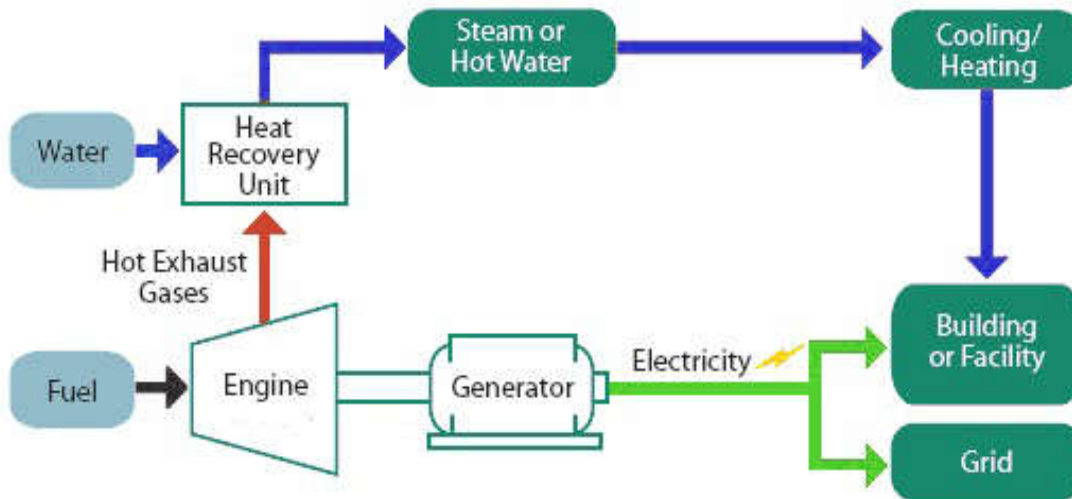
## ***Optional***

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- 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

## Combined Heat and Power Systems

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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

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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.