

Natural Gas Generator Set Data Sheet (01-09-2018)

Continuous 400 kWe, Natural Gas, MN=70



Photo For Reference Only

Generator Set Model:	TM400G	Engine Model:	CAT CG132-08	Alternator Model:	Marelli MJB 355 MB4
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50Hz 1500 r.p.m	3 Phase 4 Wires	Power Factor: Cos ϕ = 1.0	NO_x Emissions¹⁾ (tolerance -8%)	500mg/Nm ³
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RATINGS ²⁾	Prime Power (PRP)		Continuous Power (COP)		Rated Current Amps	Thermal Output kW	Efficiency	
	kW	kVA	kW	kVA			Electrical	Thermal ³⁾
Voltage (V)							η (%)	
400/230	N/A	N/A	400	400	577.4	427	42.3%	45.2%

Conditions and Defintions:

- 1) NO_x Emissions: NO_x ≤ 0.5g NO₂/m_n³ dry exhasut gas at 5% exhaust O₂; 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	TM400G	Electrical efficiency	42.3%
Engine model	CG132-08	Thermal efficiency	45.2%
Electrical output (kW/kVA)	400/400	Total efficiency	87.5%
Fuel	Natural gas	Speed regulating rate	0-5% Adjustable
Frequency (HZ)	50	Dimension (lengthxwidthxheight) (mm)	3090x1490x2190
Speed (rpm)	1500	Net Weight (kg)	5340

Engine Specifications

Manufacturer	CAT
Model	CG132-08
Mechanical power	414 kWm
Speed	1500 rpm
Configuration / number of cylinders	V / 8
Bore / Stroke	132/160 mm
Displacement	17.5 L
Compression ratio	12.0:1
Mean piston speed	8 m/s
Engine-management-system:	TEM EVO
Ignition system	CAT
Speed governor system	CAT
Induction system	Mixture exhaust turbo charging
Cooling mode	Radiator
Exhaust noise @ 1 meter	120 dB(A)
Air-borne noise @ 1 meter	97 dB(A)

Cooling system

Water volume engine jacket / intercooler	28/5 L
Jacket water coolant temperature in / out	84/92 °C
Intercooler coolant temperature in / out	40/43 °C
Engine jacket water flow rate from / to	19/32 m ³ /h
Water flow rate engine jacket water / intercooler	23/8 m ³ /h

Lubrication system

Total lubricating oil capacity	70 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 355 MB4
AVR model	MEC 20 analog/digital
Number of leads	6
Phase	3 Phase
Power factor	Cos ϕ = 1.0
Winding pitch	2/3
Degree of protection	IP 23

Gas Inlet System

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

Exhaust system

Exhaust back pressure from / to	30/50 mbar
Exhaust mass flow, wet	2180 kg/h
Exhaust temperature	455 °C
Exhaust Manifolds	Dry

Combustion air system

Combustion type	Spark plug ignition
Combustion mass air flow	2108 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	98.5 m ³ /h
Gas consumption at 75% load	76.4 m ³ /h
Gas consumption at 50% load	54.3 m ³ /h

Electrical system

Starter motor voltage	24 V
Starter motor power	5.4 kW
Starter Battery 24V, capacity required	143 Ah

Thermal Data

Heat rejection to exhaust	224 kW
Heat rejection to coolant	204 kW
Radiated heat to ambient	14-19 kW

50HZ/1500R.P.M

Temperature rise	F
Insulation class	H
Voltage regulation accuracy	$\pm 0.5 \%$
Efficiency	95.5%
Altitude	≤ 1000 m
Overspeed	2250 rpm
Cooling air required	0.93 m ³ /s
Ambient temperature	40°C

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
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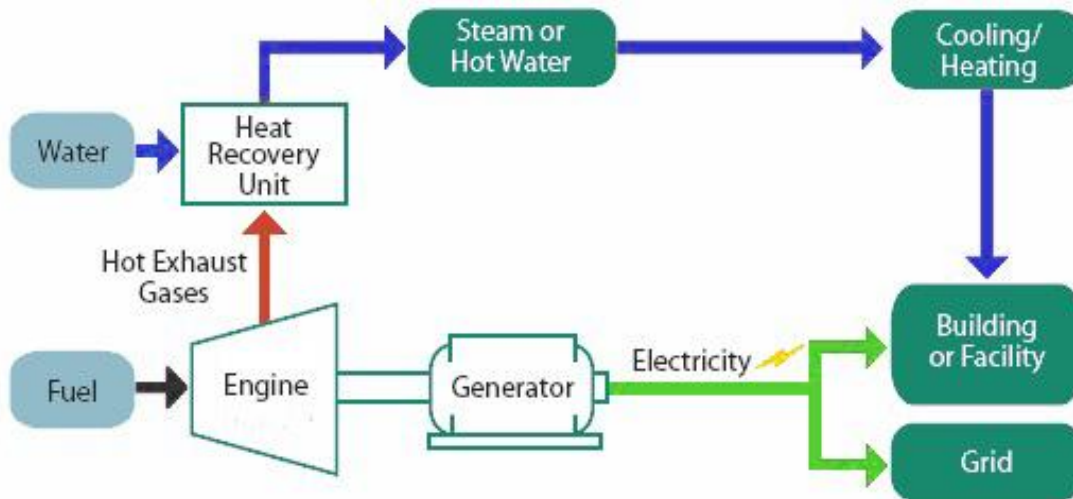
Standard Features

- 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

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.