

# TGE2000S-NG

## Natural gas Genset

### Main configuration and features:

- Highly efficient gas engine
- AC synchronous alternator
- Gas safety train and gas protection device against leakage
- Cooling system suitable for ambient temperature up to 50°C
- Advanced engine control system, including: ignition system, detonation control system ,speed control system , air/fuel ratio control system and cylinder temp. protection system
- Strict shop test for all gensets
- Able to be used directly outdoors with durable and firm characteristics and design against rain and dust
- Industrial silencer reduces the noise by 12-20dB(A)
- Integrated the control & switch cabinet
- Multi-functional control system with easy operation
- Data communication interfaces integrated into control system
- Monitoring battery voltage and charging from mains
- Bus interface for connecting to higher level control unit



#### Structure and control cabinet

Structure Type	40 feet high-cube
Spraying Process	High quality painting
Electrical control cabinet	Integrated into canopy,IP54
Noise level@7m,dB(A)	100

#### Dimension and weight

Dimension ( LxWxH ) , mm	12192x2438x2896
Weight, kg	24000

#### Special statement :

1. The technical data are based on natural gas with a lower calorific value of 9.5 kWh/Nm<sup>3</sup>.The technical data indicated is based on standard conditions according to ISO8528/1, ISO3046/1 and BS5514/1.
2. The technical data is measured in standard conditions:  
Absolute atmospheric pressure: 100kPa  
Ambient temperature : 25°C  
Relative air humidity : 30%
3. Rating adaptation at ambient conditions acc to DIN ISO 3046/1.  
The tolerance for the specific fuel consumption is + 5 % at rated output.
4. Dimension and weight above are just for standard product ,and may be subject to change. As this document is used only for presale reference, take the specification supplied by PowerLink before ordering as final.

#### Electric data @50Hz

Voltage-V	Power-kW	Efficiency-%	Current-A
380	2000	42.9	3798
400	2000	42.9	3609
415	2000	42.9	3478

#### Fuel and emission

Fuel type	Natural gas
Methane number	MN > 80
Low heat value ( kWh/m <sup>3</sup> )	10.19
Gas density ( Kg/m <sup>3</sup> )	0.8
NOx , mg/Nm <sup>3</sup>	≤500
CO , mg/Nm <sup>3</sup>	≤300
Fuel consumption @100% load, m <sup>3</sup> /h	458
Supply gas pressure range (gage pressure), kPa	10~20

### Genset performance data and manufacturing technology

Genset model	TGE2000S-NG	Telephone interference factor(TIF)	≤50
Frequency(Hz)	50	Telephone harmonious factor(THF)	≤2% , as per BS4999
Electrical output power (kW)	2000	<p><b>Manufacturing technology</b></p> <ul style="list-style-type: none"> <li>● Special welded base frame, inner vibration isolators and design for whole lifting</li> <li>● With high quality paint, enduring brightness as well resistance against abrasion and defacing</li> <li>● Installation manual, operation and maintenance manual circuit diagram</li> </ul> <p><b>Standards and certificate</b></p> <ul style="list-style-type: none"> <li>● ISO3046 , ISO8528 , GB2820</li> <li>● BS5000PT99 , AS1359 , IEC34</li> <li>● ISO9001:2008 quality system certification</li> </ul>	
Genset electrical efficiency	42.9%		
Overload runtime at 1.1xSe(hour)	1		
Steady-state voltage deviation	≤±1%		
Transient-state voltage deviation	-15%~20%		
Voltage recovery time(s)	≤4		
Voltage unbalance	1%		
Steady-state frequency regulation	±0.5%		
Transient -state frequency regulation	±5%		
Frequency recovery time(s)	≤3		
Steady-state frequency band	0.5%		
Recovery time response(s)	0.5		

Gas engine		AC alternator	
Model	TCG2020V20	Model	MJB 560LA4
NO. of cylinders	20	Rated output power @400V (kW)	2100
Cylinders arrangement	V-form	Power factor	0.8
Bore x Stroke (mm)	170x195	Rated current @400V (A)	3789
Displacement (L)	88.5	Excitation system	PMG
Cooling system	Water cooled	THF (BS EN60034- 1)	<2%
Rated speed (rpm)	1500	TIF (NEMA MG 1-22)	<50
Rated output power (kW)	2061	Winding material	100% copper
Fuel input	4667	Wiring connection	Star
Intake system	Turbocharged, intercooled	Rotor insulation class	H
Oil consumption (kg/h)	0.6	Winding pitch	2/3
Combustion type	Lean burn	A.V.R. model	R450
Battery voltage	24V	Voltage fluctuation(no load to full load)	± 0.5%
Coolant type	Glycol mixture	Housing protection	IP23
Gas consumption(m³/h)@ 100%load	458	Excitation method	Brushless
75%load	353	Rated ambient temperature(°C)	40
50%load	249	Rated stator temperature rise(°C)	125

## GCC-861 control system

The advanced control system is adopted with all necessary protection and control functions of genset.

Main functions	
<ul style="list-style-type: none"> <li>- Engine monitor : coolant, lubrication, exhaust, battery</li> <li>- Supply gas circuit monitor: pressure, temperature and CH4 content</li> <li>- Auto paralleling and load share</li> <li>- Voltage and PF control</li> <li>- Alternator data : U, I, Hz, kW, kVA, kVA<sub>r</sub>, PF, kWh, kVAh</li> <li>- Grid data: U, I, Hz, kW, kVA<sub>r</sub>, PF</li> </ul>	<ul style="list-style-type: none"> <li>- Modbus communication protocol based on RS232 and RS485 interfaces</li> <li>- SMS message</li> <li>- Internet connection and USB 2.0 interface</li> <li>- 10-inch touch screen</li> <li>- Internet monitor, auto orientation and cloud communication</li> <li>- 1000 history events log</li> </ul>
Advantages	
<ul style="list-style-type: none"> <li>- Accordant with consumer requirement</li> <li>- Complete control solution</li> <li>- Convenient remote monitor and service</li> </ul>	<ul style="list-style-type: none"> <li>- Simplified engine start/stop control</li> <li>- Enhanced stability and safety</li> </ul>

Standard protection functions	Standard control functions	
<b>Alternator protection</b> <ul style="list-style-type: none"> <li>- 2xReverse power</li> <li>- 2xOverload</li> <li>- 4xOvercurrent</li> <li>- 1xOvervoltage</li> <li>- 1xUndervoltage</li> <li>- 1xOver/under frequency</li> <li>- 1xUnbalanced current</li> </ul>	<b>Power control</b> <ul style="list-style-type: none"> <li>- RPM control(synchronization)</li> <li>- Power control(grid connection)</li> <li>- Load share(island )</li> </ul>	<b>Voltage control</b> <ul style="list-style-type: none"> <li>- Voltage tracking (synchronization)</li> <li>- Voltage control(island)</li> <li>- PF control(grid connection)</li> <li>- Reactive power share (island )</li> </ul>
	<b>Lubrication control</b> <ul style="list-style-type: none"> <li>- Auto refilling</li> <li>- Warning and monitoring</li> </ul>	<b>Pump control</b> <ul style="list-style-type: none"> <li>- Cooling system</li> <li>- Emergency radiator</li> </ul>
<b>Busbar/mains protection</b> <ul style="list-style-type: none"> <li>- 1xOvervoltage</li> <li>- 1xUndervoltage</li> <li>- 1xOver/under frequency</li> <li>- 1xPhase sequence</li> <li>- 1xROCOF alarm</li> </ul>	<b>Fan control</b> <ul style="list-style-type: none"> <li>- Ventilation for engine room</li> <li>- Radiator fan</li> <li>- Emergency radiator fan</li> </ul>	<b>Valve control</b> <ul style="list-style-type: none"> <li>- Cooling system</li> <li>- Heating system</li> <li>- Emergency radiator</li> </ul>
	<b>Engine protection</b> <ul style="list-style-type: none"> <li>- Various routine and customized protection functions</li> <li>- Monitoring</li> </ul>	

### Standard configuration

Engine	Alternator	Canopy and base	Electrical cabinet
Gas engine Oil pressure sensor Coolant temperature sensor Inlet water temp./Pressure sensor Electrical start motor Crankshaft position sensor Battery system Cylinder temp. protection system Lambda controller Detonation control system Speed control system Lockable isolator switch Air/oil separator	PMG AC alternator H class insulation IP23 protection AVR voltage regulator	Steel monocoque base frame Engine bracket Vibration isolators Alternator base Soundproof canopy	PLC LCD screen Air circuit breaker Paralleling control system Communication interfaces Breaker cabinet Lighting system Mains float charger
Gas supply system	Lubrication system	Standard voltage	Induction/ exhaust system
Gas safety train Air/fuel mixer Throttle valve Flame arrester	Oil filter Daily auxiliary oil tank Auto refilling oil system	380/220V 400/230V 415/240V	Air filter Charge cooler Restriction indicator Exhaust silencer Exhaust bellows
Cooling system	Service and documents		
Remote radiator Jacket water circulation pump Mixture circulation pump Coolant level switch	Tools package Installation and operation manual Maintenance manual Software manual Parts manual	Engine operation and maintenance manual Gas quality specification Control system manual After service guide Standard package	

### Optional configuration

Engine	Alternator	Lubrication system
Jacket water heater	Space heater Treatments against humidity and corrosion	New and used oil tank Automatic oil refilling device
Electrical system	Exhaust system	Service and documents
RCD Grounding bar Lightning protection	Three-way catalytic converter	Service tools Maintenance and service parts
Voltage	Gas supply system	Exhaust gas using
200V 220V 230V 240V	Gas flow gauge	Exhaust gas evaporator LiBr refrigerator

Data is subject to change without prior notice as new products are always developed.  
Please contact PowerLink or local agent with any doubts or for more information