GXC1000-BG

Biogas CHP Unit

We Produce Green Energy...

Standard Basic Module

- Highly efficient gas engine
- Highly reliable AC synchronous alternator
- Gas train
- Exhaust/water heat exchanger
- Water/water heat exchanger
- Heating circulation system
- Advanced engine control system, including: ignition system, detonation control system ,speed control system , air/fuel ratio control system
- Industrial silencer
- Control cabinet and switch cabinet
- Multi-functional control system with simple operation
- Data communication interfaces integrated into control system
- Battery charger
- Automatic oil refilling system
- Island mode or connecting to the grid mode

Structure and Control Cabinet

Structure Type	Open type
Spraying Process	High quality powder coating
Electrical control cabinet	Integrated,IP54
Noise level @1m, dB(A)	108
@7m, dB(A)	94
@10m, dB(A)	88

Dimension and Weight

Dimension (LxWxH) , mm	7000x2200x2300
Weight, kg	11000

Special statement :

1、The technical data is based on a gas mixture of 60% methane and 40% carbondioxid with a calorific value of 6,0 kWh/Nm³ and a methane no. > 100.

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、Technical data 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.

Power and Efficiency @50Hz

Electric power -kW	1000	Electric efficiency	38.1%
Thermal power-kW	1223	Thermal efficiency	46.6%
Fuel Input -kW	2625	Total efficiency	84.7%

Fuel and Emission

Fuel type	Special gas
Fuel composition	60%-CH_4/40%-CO_2
Methane number	MN >100
Excess air factor（Lambda）	1.55
Fuel consumption @100% load, m³/h	438
Supply gas pressure range (gage pressure), kPa	10~20
Emission	
NOx , mg/Nm^3	<500mg/Nm³
CO , mg/Nm^3	<650mg/Nm³
HCHO (formaldehyde) , mg/Nm³	<60mg/Nm³
NMHC , mg/Nm³	<150mg/Nm³

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Standard Basic Module + Container (Optional)

Dimension and Noise Level	
Optional container（mm）（customized container modeling service available）	☐ 12192*2438*2896 ☐ 12192*3000*2896 ☐ 13500*3000*2896 ☐ 15000*3200*3000 ☐ 17000*3200*3000
Noise Level@ 1m，dB(A)	82.1
@ 7m，dB(A)	73.1
@ 10m，dB(A)	69.1

☐ Outdoor application enabled, weatherproof and dustproof, corrosion preventive □ Environmental friendly low emission

☐ Modular designed and manufactured for plug and play □ Low noise does not affect the surrounding environment

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POWERink Power Systems
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CHP Unit performance data and manufacturing technology

Model	GXC1000-BG
Frequency (Hz)	50
Electric output power (kW)	1000
Thermal output power (kW)	1223
Electric efficiency	38.1%
Thermal efficiency	46.6%
Total efficiency	84.7%
Heating water temp. outlet(℃)	90~95
Heating water temp. return(℃)	82~87
Hot water production @inlet 82℃/outlet 90℃[t/h]	124
Voltage recovery time(s)	≤4
Steady-state frequency regulation	±0.5%
Transient -state frequency regulation	±5%
Steady-state frequency band	0.5%
Recovery time response(s)	0.5
Frequency recovery time(s)	≤3
Telephone interference factor(TIF)	≤50
Telephone harmonious factor(THF)	≤2% , as per BS4999

Power and efficiency

Load	100%	75%	50%
Electric power (kW)	1000	750	500
Heat power (kW)	1223	916	614
Energy input (kW)	2625	1958	1323
Electric efficiency	38.1%	38.3%	37.8%
Heat efficiency	46.6%	46.8%	46.4%
Total efficiency	84.7%	85.1%	84.2%

Manufacturing technology

- Special welded base frame, inner vibration isolators and design for whole lifting
- With high-class coating, endurable brightness as well resistance against abrasion and defacing
- Installation manual, operation and maintenance manual wiring program

Standards and certificate

- ISO3046 , ISO8528 , GB2820
- BS5000PT99 , AS1359 , IEC34
- ISO9001:2008 quality system certification

Gas engine

Brand	PowerLink
Model	GX80C-LE02C
NO. of cylinders	12
Bore x Stroke (mm)	200x210
Displacement (L)	80
Cooling system	Water cooled
Rated speed (rpm)	1500
Intake system	Turbocharged, intercooled
Lube Oil consumption(kg/h)	0.3
Combustion type	Lean burn
Battery voltage(V)	24
Coolant type	Glycol mixture

Energy balance and gas flow

Mechanical power (kW)	1250
Coolant heat (kW)	650
Radiation heat max. (kW)	110
Exhaust heat up to 120°C (kW)	573
Fuel Input (kW)	2625
Combustion air flow(kg/h)	4760
Exhaust gas flow(kg/h)	5316
Exhaust gas temperature(℃)	≤550
Gas consumption(m^3/h) @100% load	438
75% load	326
50% load	221

AC alternator

Brand	PowerLink	Wiring connection	Star
Model	PL7A	Rotor insulation class	H
Rated output power @400V (kW)	1300	Winding pitch	2/3
Power factor	0.8	A.V.R. model	MX341
Rated current @400V (A)	2346	Voltage fluctuation(no load to full load)	± 0.5%
Excitation system	PMG	Drip proof	IP23
THF (BS EN60034- 1)	<2%	Excitation method	Brushless
TIF (NEMA MG 1-22)	<50	Rated ambient temperature(℃)	40
Winding material	100% copper	Rated stator temperature rise(℃)	125

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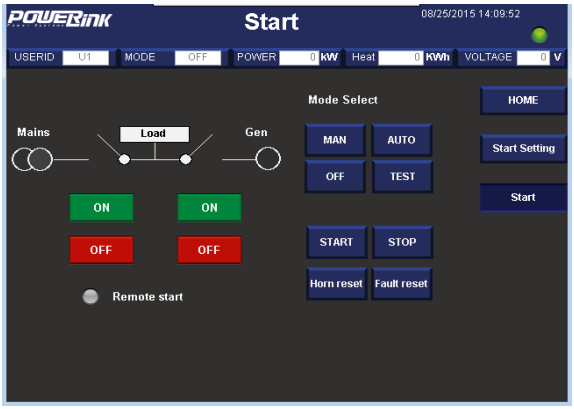
PCC-300 control system

Programmable control system is adopted with touch screen display , and various functions, including: engine protection and control, CHP parallel and grid connection, and CHP control functions, as well as communication functions，etc.



Main functions

- Engine monitor：coolant, lubrication, exhaust, battery
- Supply gas circuit monitor：pressure, temperature and CH4 content
- Auto paralleling and load share
- Voltage and PF control
- Alternator data：U, I, Hz, kW, kVA, kVAr, PF, kWh, kVAh
- Grid data：U, I, Hz, kW, kVAr, PF
- Modbus communication protocol based on RS232 and RS485 interfaces
- SMS message
- Internet connection and USB 2.0 interface
- 10-inch touch screen
- Internet monitor, auto orientation and cloud communication
- 1000 history events log

Advantages

- Accordant with consumer requirement
- Complete control solution
- Convenient remote monitor and service
- Simplified engine start/stop control
- Enhanced stability and safety

Standard protection functions	Standard control functions	
Alternator protection - 2xReverse power - 2xOverload - 4xOvercurrent - 1xOvervoltage - 1xUndervoltage - 1xOver/underfrequency 1xUnbalanced current	**Powercontrol** - RPM control(synchronization) - Power control(grid connection) - Load share(island)	**Voltage control** - Voltage tracking (synchronization) - Voltage control(island) - PF control(grid connection) - Reactive power share (island）
	Lubrication control - Auto refilling - Warning and monitoring	**Pump control** - Cooling system - Emergency radiator
Busbar/ Grid protection - 1xOvervoltage - 1xUndervoltage - 1xOver/under frequency - 1xPhase sequence - 1xROCOF alarm	**Fan control** - Ventilation for engine room - Radiator fan - Emergency radiator fan	**Valve control** - Cooling system - Heating system - Emergency radiator
	Engine protection - Various routine and customized protection functions - Monitoring	

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Standard configuration

Engine	Alternator	Canopy and base	Electrical cabinet
Gas engine Ignition system Lambda controller Speed control system Electrical start motor Battery system Detonation control system Lockable isolator switch Turbocharger & intercooler Jacket water heater	PMG AC alternator H class insulation IP23 protection AVR voltage regulator	Steel monocoque base frame Engine bracket Vibration isolators Alternator base	Air circuit breaker PCC300 control system 10.4-inch touch screen Communication interfaces Breaker cabinet Mains floating charger Paralleling protection
Gas supply system	**Lubrication system**	**Standard voltage**	**Intake/ exhaust system**
Gas safety train Air/fuel mixer Throttle valve Flame arrester	Oil filter Daily auxiliary oil tank Auto refilling oil system New and waste oil tank (Only applicable to container)	380/220V 400/230V 415/240V 440/254V	Air filter Exhaust silencer Exhaust bellows Gas leakage protection(Only applicable to canopy and container)
Heat exchange system	**Service and documents**		
Exhaust/water heat exchanger Jacket water circulation pump Water/water heat exchanger Mixture circulation pump Expansion tank, Shut-off valve Three-way valve Intercooler radiator Emergency radiator	Tools package Installation and operation manual Maintenance manual Software manual Parts manual	Engine operation and maintenance manual Gas quality declaration Control system manual After service guide	

Optional configuration

Alternator	Electrical system	Gas supply system
Space heater Treatments against humidity and corrosion	RCD ATS control cabinet Thermal power gauge Electric power gauge	Gas flow gauge Emergency relief flare Water separator Gas compressor Gas purification plant
Voltage	**Service and documents**	**Exhaust system**
220V 230V240V	Service tools Maintenance and service parts	Three-way catalytic converter