

# GXC35-6NG

## Natural Gas CHP Unit

### Standard Basic Module

- Highly efficient gas engine
- AC synchronous alternator
- Gas safety train
- Cooling system suitable for ambient temperature up to 50°C
- Advanced engine control system, including: ignition system, speed control system, air/fuel ratio control system
- Strict shop test for all gensets
- Industrial silencer reduces the noise by 12-20dB(A)
- Integrated the control & switch cabinet
- Data communication interfaces integrated into control system
- Bus interface for connecting to higher level control unit



### Structure and Control Cabinet

|                            |                             |
|----------------------------|-----------------------------|
| Structure Type             | Open type                   |
| Spraying Process           | High quality powder coating |
| Electrical control cabinet | Integrated, IP54            |
| Noise level @1m, dB(A)     | 88.1                        |
| @7m, dB(A)                 | 84.2                        |
| @10m, dB(A)                | 80.8                        |

### Dimension and Weight

|                        |                |
|------------------------|----------------|
| Dimension (LxWxH) , mm | 2800x1050x1550 |
| Weight, kg             | 1800           |

#### Special statement:

1. The technical data is based on natural gas with a lower calorific value of 34.2MJ/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. 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 @60Hz

|                    |      |                     |       |
|--------------------|------|---------------------|-------|
| Electric power -kW | 35   | Electric efficiency | 34.2% |
| Thermal power-kW   | 53.4 | Thermal efficiency  | 51.8% |
| Fuel Input -kW     | 103  | Total efficiency    | 86.0% |

### Fuel and Emission

|                                                |                        |
|------------------------------------------------|------------------------|
| Fuel type                                      | Natural gas            |
| Methane number                                 | MN > 80                |
| Excess air factor ( Lambda )                   | 1.2                    |
| Fuel consumption @100% load, m <sup>3</sup> /h | 10.9                   |
| Supply gas pressure range (gage pressure), kPa | 10~20                  |
| <b>Emission</b>                                |                        |
| NOx, mg/Nm <sup>3</sup>                        | <500mg/Nm <sup>3</sup> |
| CO, mg/Nm <sup>3</sup>                         | <650mg/Nm <sup>3</sup> |
| HCHO (formaldehyde) , mg/Nm <sup>3</sup>       | <60mg/Nm <sup>3</sup>  |
| NMHC, mg/Nm <sup>3</sup>                       | <150mg/Nm <sup>3</sup> |

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Natural Gas CHP Unit



## Standard Basic Module + Soundproof (Optional)



### Dimension and Noise Level

|                        |                  |
|------------------------|------------------|
| Canopy Size            | 3000*1050*1550mm |
| Noise Level@ 1m, dB(A) | 75.1             |
| @ 7m, dB(A)            | 62.2             |
| @ 10m, dB(A)           | 60.4             |

- ☐ Modular designed and manufactured for plug and play
- ☐ Environmental friendly low emission
- ☐ Small indoor space required for installation
- ☐ Low noise does not affect the surrounding environment



# GXC35-6NG

Natural Gas CHP Unit



## Standard Basic Module + Container (Optional)



### Dimension and Noise Level

|                                                   |                                          |
|---------------------------------------------------|------------------------------------------|
| Optional container (mm)                           | <input type="checkbox"/> 7000*2300*2500  |
| (customized container modeling service available) | <input type="checkbox"/> 6058*2438*2591  |
|                                                   | <input type="checkbox"/> 12192*2438*2896 |
| Noise Level@ 1m, dB(A)                            | 73                                       |
| @ 7m, dB(A)                                       | 60                                       |
| @ 10m, dB(A)                                      | 58                                       |

- ☐ 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





### CHP Unit performance data and manufacturing technology

| Model                                             | GXC35-6NG          | Power and efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |       |       |
|---------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|
| Frequency (Hz)                                    | 50                 | Load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 100%  | 75%   | 50%   |
| Electric output power (kW)                        | 35                 | Electric power (kW)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50    | 37.5  | 25    |
| Thermal output power (kW)                         | 53.4               | Heat power (kW)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 70    | 53    | 36    |
| Electric efficiency                               | 34.2%              | Energy input (kW)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 155   | 115   | 80    |
| Thermal efficiency                                | 51.8%              | Electric efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 32.3% | 32.7% | 31.1% |
| Total efficiency                                  | 86.0%              | Heat efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 45.2% | 46.1% | 45%   |
| Heating water temp. outlet(°C)                    | 90~95              | Total efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 77.5% | 78.8% | 76.1% |
| Heating water temp. return(°C)                    | 82~87              | <b>Manufacturing technology</b> <ul style="list-style-type: none"> <li>Special welded base frame, inner vibration isolators and design for whole lifting</li> <li>With high-class coating, enduring brightness as well resistance against abrasion and defacing</li> <li>Installation manual, operation and maintenance manual wiring program</li> </ul> <b>Standards and certificate</b> <ul style="list-style-type: none"> <li>ISO3046, ISO8528, GB2820</li> <li>BS5000PT99, AS1359, IEC34</li> <li>ISO9001:2008 quality system certification</li> </ul> |       |       |       |
| Hot water production @inlet 82°C/outlet 90°C[t/h] | 7.1                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       |       |       |
| 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 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       |       |       |

### Gas engine

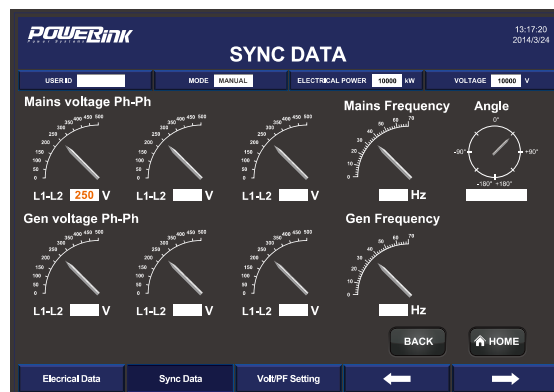
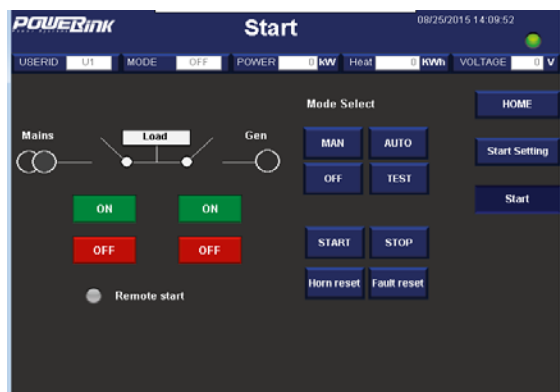
| Brand                      | PowerLink                 | Energy balance and gas flow       |      |
|----------------------------|---------------------------|-----------------------------------|------|
| Model                      | GX5S-E02                  | Mechanical power (kW)             | 41   |
| NO. of cylinders           | 4 in-line                 | Coolant heat (kW)                 | 27.4 |
| Bore x Stroke (mm)         | 105x124                   | Radiation heat max. (kW)          | 7    |
| Displacement (L)           | 4.3                       | Exhaust heat up to 120°C (kW)     | 26   |
| Cooling system             | Water cooled              | Fuel Input (kW)                   | 103  |
| Rated speed (rpm)          | 1800                      | Combustion air flow(kg/h)         | 204  |
| Intake system              | Turbocharged, intercooled | Exhaust gas flow(kg/h)            | 212  |
| Lube Oil consumption(kg/h) | 0.015                     | Exhaust gas temperature(°C)       | 561  |
| Combustion type            | Lean burn                 | Gas consumption (m³/h) @100% load | 10.9 |
| Battery voltage(V)         | 24                        | 75% load                          | 8.2  |
| Coolant type               | Glycol mixture            | 50% load                          | 5.5  |

### AC alternator

|                               |             |                                           |           |
|-------------------------------|-------------|-------------------------------------------|-----------|
| Brand                         | PowerLink   | Wiring connection                         | Star      |
| Model                         | PL2D        | Rotor insulation class                    | H         |
| Rated output power @400V (kW) | 70          | Winding pitch                             | 2/3       |
| Power factor                  | 0.8         | A.V.R. model                              | MX341     |
| Rated current @400V (A)       | 126         | 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(°C)             | 40        |
| Winding material              | 100% copper | Rated stator temperature rise(°C)         | 125       |

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

### Optional configuration

| Engine/Alternator                                                                  | Electrical system                                                         | Gas supply system                                                                                                 |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Jacket water radiator<br>Space heater<br>Treatments against humidity and corrosion | RCD<br>ATS control cabinet<br>Thermal power gauge<br>Electric power gauge | Gas flow gauge<br>Emergency pressure relief torch<br>Water separator<br>Gas compressor<br>Gas purification device |
| Voltage                                                                            | Exhaust system                                                            | Exhaust gas using                                                                                                 |
| 220V 230V240V                                                                      | Three-way catalytic converter                                             | Steam boiler<br>LiBr refrigerator                                                                                 |