

# ACG30S-6NG

## Natural Gas MCHP Unit

### Main configuration and features:

- Highly efficient gas engine
- Water-cooled AC asynchronous 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
- Control cabinet and switch cabinet
- Multi-functional control system with simple operation
- Data communication interfaces integrated into control system
- Battery charger
- Daily oil tank
- Silencer
- Connecting to the grid mode



### Structure and Control Cabinet

|                            |                             |
|----------------------------|-----------------------------|
| Structure Type             | Soundproof canopy           |
| Spraying Process           | High quality powder coating |
| Electrical control cabinet | Integrated into canopy,IP54 |
| Noise level@7m, dB(A)      | < 55                        |

#### Special statement :

- 1、 The technical data is based on natural gas with a lower calorific value of 36MJ/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.

### Fuel and Emission

|                                                |             |
|------------------------------------------------|-------------|
| Gas medium                                     | Natural gas |
| Methane number                                 | MN > 80     |
| NOx , mg/Nm <sup>3</sup>                       | ≤500        |
| NMHC , mg/Nm <sup>3</sup>                      | ≤150        |
| Supply gas pressure range (gage pressure), kPa | 10~20       |

### Dimension and Weight

|                          |                |
|--------------------------|----------------|
| Dimension ( LxWxH ) , mm | 1850x1060x1300 |
| Weight, kg               | 1630           |

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### CHP Unit performance data and manufacturing technology

|                                           |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                                     | ACG30S-6NG | <b>Manufacturing technology</b><br>Special welded base frame, inner vibration isolators and design for whole lifting<br>With high quality paint, enduring brightness as well resistance against abrasion and defacing<br>Installation manual, operation and maintenance manual<br>circuit diagram<br><br><b>Standards and certificate</b><br>★ ISO3046 , ISO8528 , GB2820<br>★ BS5000PT99 , AS1359 , IEC34<br>ISO9001:2008 quality system certification |
| Electric output power ( kWe ) @ 100% load | 30         |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Thermal output power (kWt) @ 100% load    | 54         |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Gas Input (kW) @100% load                 | 88         |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Electric efficiency@100% load             | 34.1%      |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Thermal efficiency@100% load              | 61.4%      |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Total efficiency@100% load                | 95.5%      |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Heating water temp. outlet(°C)            | 90~95      |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Heating water temp. return(°C)            | 82-87      |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

### Gas engine

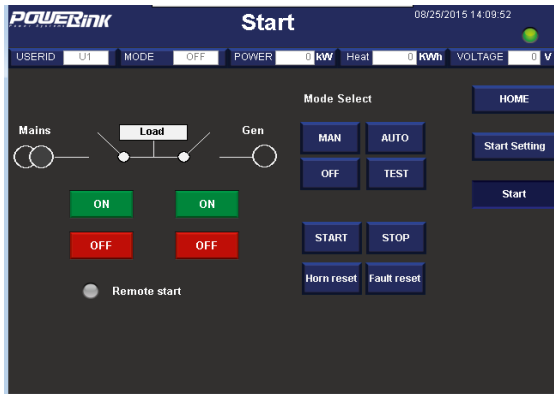
|                             |                   |                                                 |     |
|-----------------------------|-------------------|-------------------------------------------------|-----|
| Brand                       | PowerLink         | <b>Energy balance and gas flow</b>              |     |
| Model                       | GX5S-E02          | Mechanical power @ 100%Load (kW)                | 40  |
| Speed (rpm)                 | 1800              | Coolant heat @ 100%Load (kW)                    | 24  |
| NO. of cylinders            | 4 (in-line)       | Exhaust heat @ 100%Load (kW)                    | 35  |
| Bore x Stroke (mm)          | 105x124           | Max. radiation heat (kW)                        | 2.0 |
| Displacement (L)            | 4.3               | Combustion air flow @ 100%Load (kg/h)           | 250 |
| Cooling system              | Water cooled      | Exhaust gas flow @ 100%Load (kg/h)              | 273 |
| Intake system               | Natural aspirated | Rated Exhaust temperature @ 100%Load (°C)       | 561 |
| Lube oil consumption (kg/h) | 0.006             | Gas consumption (m <sup>3</sup> /h) @ 100% load | 8.8 |
| Battery voltage(V)          | 12                | 75% load                                        | 6.7 |
| Coolant type                | Glycol mixture    | 50% load                                        | 4.5 |

### AC alternator

|                                    |             |                                           |           |
|------------------------------------|-------------|-------------------------------------------|-----------|
| Brand                              | PowerLink   | Cooling mode                              | Water     |
| Model                              | AS30        | Rotor insulation class                    | H         |
| Rated output power @208V/60Hz (kW) | 36          | Winding pitch                             | 2/3       |
| Power factor                       | 0.79        | Voltage fluctuation(no load to full load) | ± 0.5%    |
| Rated current @208V/60Hz (A)       | 66          | 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 has multiple functions, including: engine protection and control, connecting CHP to the grid, and CHP control functions, as well as communication functions, etc.



#### Main functions

- Engine monitor : coolant, lubrication, exhaust, battery
- Auto connecting to the grid and load share
- Voltage and PF control
- Alternator data : U, I, Hz, kW, kVA, kVA<sub>r</sub>, PF, kWh, kVA<sub>h</sub>
- Grid data: U, I, Hz, kW, kVA<sub>r</sub>, PF
- Display thermal power
- Modbus communication protocol based on RS232 and RS485 interfaces
- SMS message
- Internet connection and USB interface
- LED display 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/under frequency</li> <li>- 1xUnbalanced current</li> </ul> | <b>Power control</b> <ul style="list-style-type: none"> <li>- RPM control</li> <li>- Power control(grid connection)</li> <li>- Load share</li> </ul>   | <b>Voltage control</b> <ul style="list-style-type: none"> <li>- Voltage tracking</li> <li>- Voltage control</li> <li>- PF control(grid connection)</li> <li>- Reactive power share</li> </ul> |
|                                                                                                                                                                                                                                                                      | <b>Lubrication control</b> <ul style="list-style-type: none"> <li>- Warning</li> <li>- Monitoring</li> </ul>                                           | <b>Pump control</b> <ul style="list-style-type: none"> <li>- Cooling system</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>Engine protection</b> <ul style="list-style-type: none"> <li>- Various routine and customized protection functions</li> <li>- Monitoring</li> </ul> | <b>Valve control</b> <ul style="list-style-type: none"> <li>- Cooling system</li> <li>- Heating system</li> </ul>                                                                             |

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## 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 | AC asynchronous alternator<br>Water-cooled type<br>H class insulation<br>IP23 protection                    | Steel monocoque base<br>frame<br>Engine bracket<br>Vibration isolators<br>Soundproof canopy                                            | Main circuit breaker<br>Display screen<br>Mains floating charger<br>Thermal overload relay<br>Communication interface |
| Gas supply system                                                                                                                                  | Lubrication system                                                                                          | Standard voltage                                                                                                                       | Induction/ exhaust system                                                                                             |
| Gas train<br>Air/fuel mixer<br>Throttle valve                                                                                                      | Oil filter<br>Daily oil tank                                                                                | 208V<br>220V<br>230V<br>240V                                                                                                           | Air filter<br>Exhaust silencer<br>Exhaust bellows                                                                     |
| Heat exchange system                                                                                                                               | Service and documents                                                                                       |                                                                                                                                        |                                                                                                                       |
| Exhaust / water heat exchanger<br>Jacket water heat exchanger<br>Expansion tank<br>Three-way valve<br>Circulation pump                             | 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<br>Standard package |                                                                                                                       |

## Optional configuration

| Engine/Alternator                         | Electrical system                                  | Gas supply system         |
|-------------------------------------------|----------------------------------------------------|---------------------------|
| Treatments against humidity and corrosion | RCD<br>Thermal power gauge<br>Electric power gauge | Gas flow gauge            |
| Voltage                                   | Exhaust system                                     | Oil tanks                 |
| 416V, 440V, 460V, 480V                    | Three-way catalytic converter                      | Clean and waste oil tanks |