

Biogas Cogeneration

RELIABLE • ENVIRONMENTAL • POWER • HEAT



POWERLINK

ABOUT US

PowerLink, founded in 2001, is a manufacturer focusing on gas cogeneration. PowerLink is committed to provide global users with advanced technology and excellent quality distributed Cogeneration Equipment and system solutions for natural gas and biogas. There is one R&D center and three manufacturing factories across the world. PowerLink has a global distribution marketing network with more than 200 sales service providers in more than 100 countries, and has set up subsidiaries in China, the United Kingdom, the United States and Australia. PowerLink insists on providing professional and high-quality products and services for global users, and on providing advanced, environmentally friendly, safe and valuable green energy products and systems for users.

PowerLink Natural Gas Cogeneration is suitable for industrial users such as hotels, hospitals, schools, clubs, large-scale commercial organizations and factories. It can provide users with a system solution of cogeneration of heat, power and cold. The power ranges from 10 Kw to 2000 Kw. It belongs to advanced distributed energy products. It can provide users with a new choice of energy supply. Compared with traditional energy, the cost of energy is greatly reduced.

PowerLink biogas cogeneration is suitable for anaerobic fermentation of organic matter in agriculture and animal husbandry or biogas power generation in COD degradation process of industrial organic wastewater. The output power of the unit is from 50Kw to 2000 Kw. The generated power can be used for self-use or residual power transmission grid or all transmission grid. It belongs to advanced renewable distributed energy products and installed in large quantities in industrial and agricultural users.

PowerLink Gas Generator is suitable for natural gas, petroleum associated gas and low calorific value gas fuel. Its power output ranges from 12 Kw to 2000 Kw. It provides a complete solution for petroleum exploitation, traditional energy substitution and energy regeneration.

From concept to finished product delivery, we strictly implement the product quality system of ISO 9001:2000. Every product has passed strict and standard manufacturing, testing and inspection to ensure reliable quality.

PowerLink is not only a single equipment manufacturer, but also a solution provider for energy systems in various industries. It develops, manufactures, distributes, run projects, provide services, and invests in distributed energy resources in the field of energy equipment. PowerLink has become a global advanced, green, environmentally friendly and safe energy system supplier.

POWERLINK Biogas Cogeneration

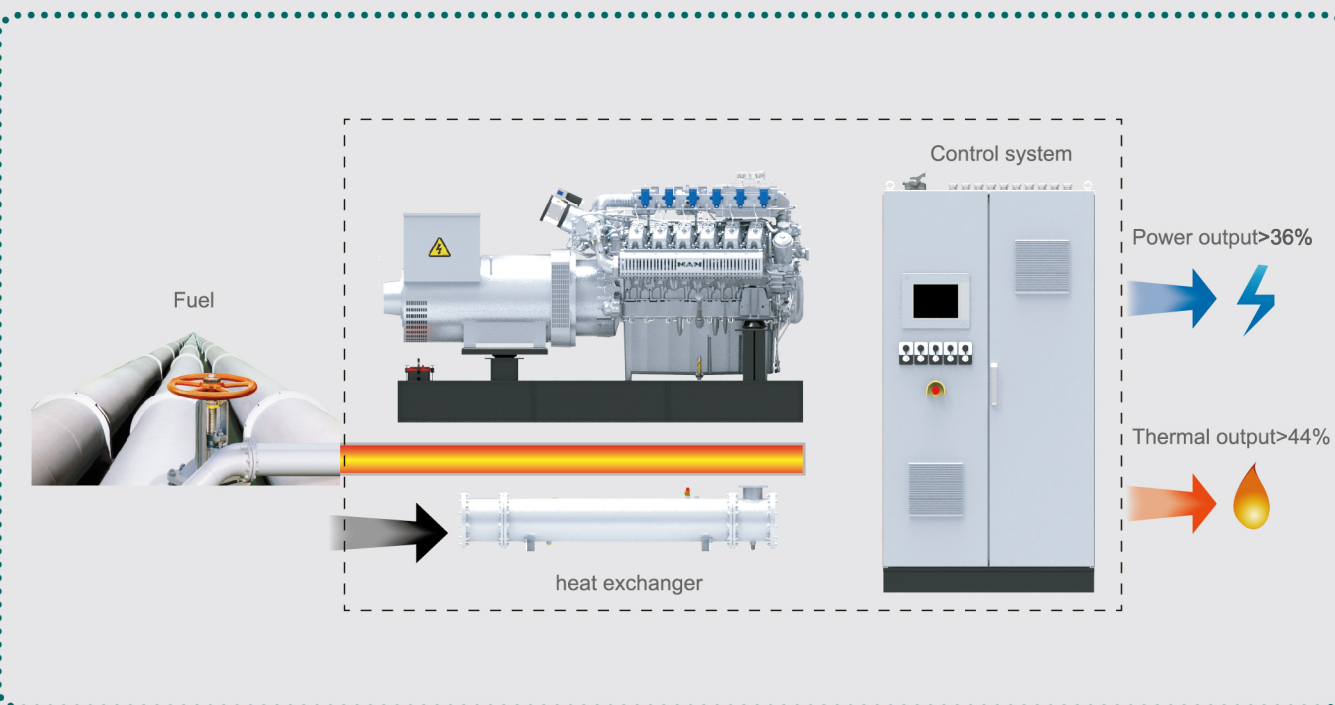
The energy supply equipment not only provides electric energy, but also provides heat energy, which is called CHP. The mechanical energy can be converted into electricity energy and heat energy, and heat energy can be used for heating, refrigerating or producing steam. The combined utilization of heat and power can increase the comprehensive utilization efficiency of energy to more than 90% in the process of power generation, so as to avoid the energy dispersion into the atmosphere. It can save as much as 40% of the primary energy and reduce carbon dioxide emissions by 60%. This is the reason why CHP is highly efficient and environmentally friendly.

POWERLINK Biogas Cogeneration

Efficient and environmentally friendly energy utilization technology

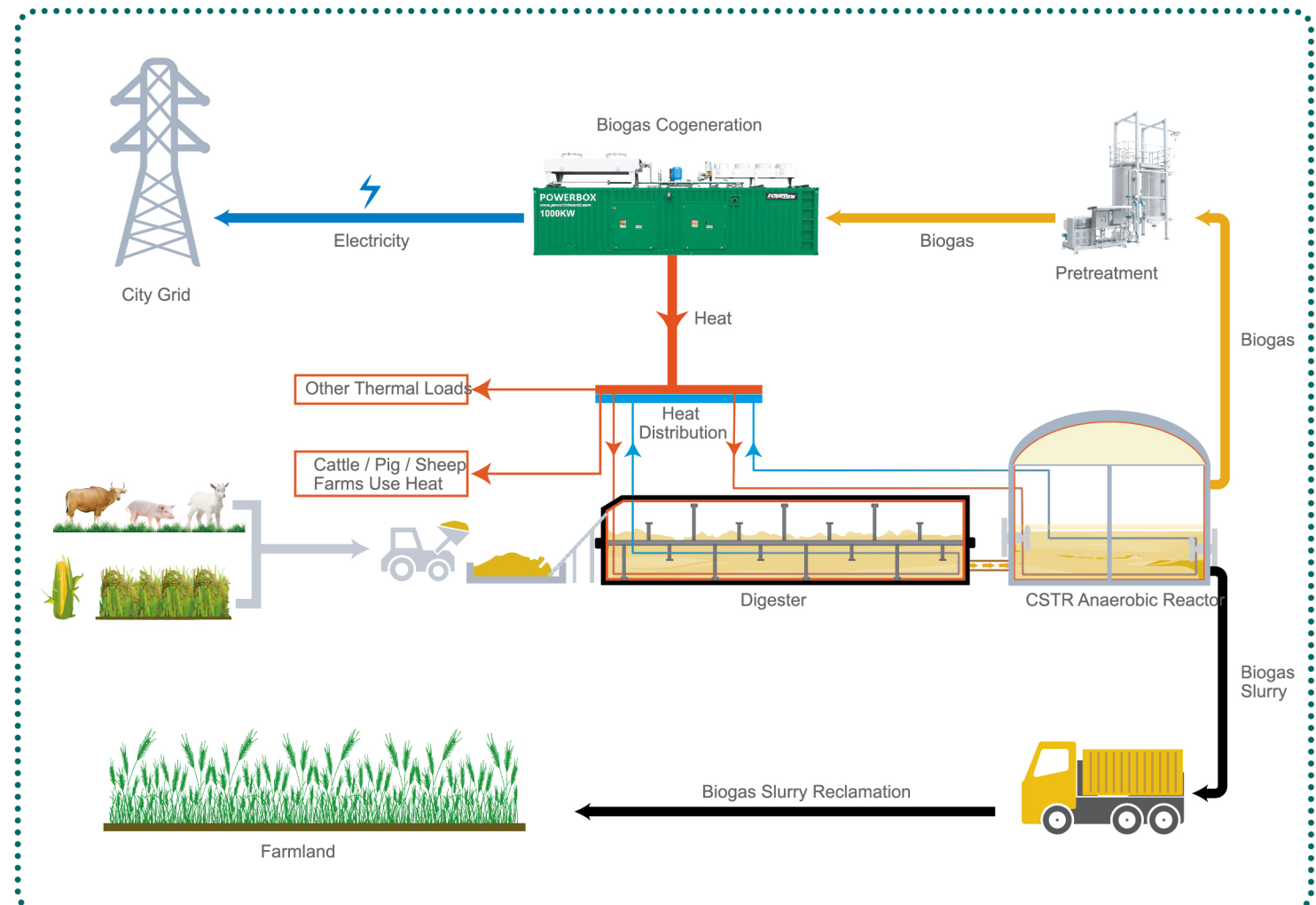
- Applied in agriculture, animal husbandry, organic waste water, garbage burying and other fields, thereby providing electricity energy and heat energy for biogas engineering, and improving the comprehensive benefit of power plant.
- Realize the Steam, heat and electricity are three kinds of energy being produced on a cascade utilization, the heat generated from POWERLINK biogas cogeneration is fully used. The comprehensive utilization of energy will be raised to more than 80%.
- Compared to conventional coal-fired and fossil fuels, POWERLINK biogas cogeneration uses lean combustion technology and NOx and CO2 emissions are reduced by 60%-80%, and dust emissions closer to zero.

Efficiency of biogas cogeneration



POWERLINK biogas cogeneration has been widely used in various fields, mainly includes:

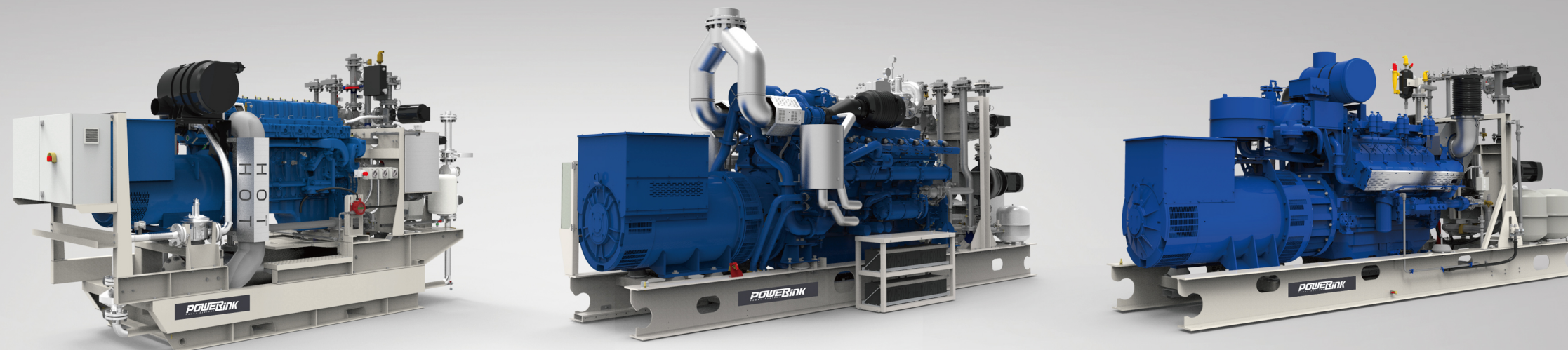
- Agricultural field: corn straw, rice straw, wheat straw, watermelon vine, greenhouse and so on.
- Livestock industry: pig farms, cattle farms, chicken farms, sheep farms, farmhouse and so on.
- Industrial Organic waste water: brewery, paper mill, food factory, palm oil factory, etc.



Open set

Electric power: 50kWe-2000kWe

Thermal power: 69kwt-2019kWt



Soundproof

Electric power: 50kWe-560kWe

Thermal power: 69kwt-716kWt



Container

Electric power: 50kWe-2000kWe

Thermal power: 69kwt-2019kWt





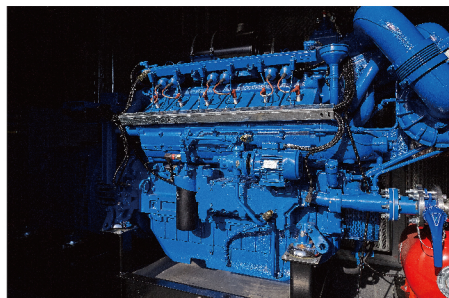
Modular design

The fuel input system, the power output system and the heat output system are designed with modular structure, which is convenient and fast to install and quick to use. The overhaul door is removable, and the outdoor unit can be dismantled at any time. It can be used outdoors without the computer room. It is easy and convenient.



Ultra low noise, does not affect the surrounding environment

Industrial muffler can reduce the noise value 12-20dB (A). The unit is equipped with noise proof cotton, which can effectively reduce the noise of the unit.



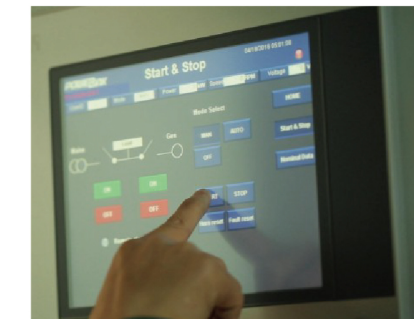
Low emissions, comply with environmental protection requirements

Lean combustion technology improves CO₂ emissions, and the thermal efficiency can be increased by more than 8% compared with the general equivalence ratio of the engine. It can effectively reduce the CO and HC in the emission, and inhibit the high temperature conditions for NO_x production.



Technical characteristics of POWERLINK biogas cogeneration

Modular design can be quickly installed, put into use, ultra-low noise, low emissions, meet the environmental requirements; flexible grid technology...



Flexible grid connection technology

The PCC300 control system has flexible grid connected control technology, which can be used for meeting the island mode and the synchronizing mode without restrictions.



Advanced waste heat recovery and utilization system

The operation of the unit generates electricity, which can meet user demands, at the same time the engine water jacket would discharge the excess of waste heat. Refrigerant equipment would take full advantage to utilise and to fully recover through the heat exchanger and the waste heat boiler, which would provide the users with heating and cooling energy simultaneously.



Fan frequency conversion control technology

In the low temperature environment, the wind turbine does not need to start, and only part of the fan gets started in the mid-temperature environment, which not only meets the power of the unit, but also reduces the fuel consumption.

POWERFUL ENGINE

High Durability

• Coupling connection

The engine and generator are elastically connected by couplings, which bear the torque and load fluctuation, and limit the torque to the actuator overload

• Integral lubricating oil filtration system

The engine is equipped with high performance filters to remove dust, metal particles, carbon deposits and other components in the engine oil, which effectively slows down the wear of crankshaft and other parts, and extends the service life

• High strength chassis

The engine and generator base made out of the whole steel structure have high strength and good endurance

• Damping rubber pad

A high performance damping pad is installed between the engine and generator and chassis. The new vibration proof capability of the unit meets the requirements of GB/T2820.9

• Elastic ripple management

Installed in the engine exhaust manifold and muffler, the entire exhaust system contains elastic connections, damping and noise reduction facilities, all contributes to a longer life of the product effectively



Professional air intake and exhaust design, good cooling effect



Low noise, does not affect the surrounding environment



Fully automatic unattended, automatic start and stop



The unit runs stably, reliably and continuously

- 1 Gas inlet safety valve group
- 2 Exhaust louver
- 3 Gas leakage protection device
- 4 Lubricating oil filtration system
- 5 Air filter



High Safety

POWERLINK biogas cogeneration is equipped with a variety of sensors, safety valves, set control, measurement and safety functions in one unit

- **Knock control system**

The detonation controller has a sensor which sends the analog signal to the ignition system after processing to adjust the ignition timing, and reduces the load or stop, to avoid the occurrence of detonation.

- **Gas leakage protection device**

If gas leakage occurs, the gas pipeline will be automatically cut off and alarm signal will be send out.

- **Lightning protection device**

The lightning protection device is introduced to protect the equipment and personnel from lightning stroke.

- **Smoke alarm system**

Timely detection of smoke concentration inside the unit, once detected excessive smoke, immediately set off an alarm to prevent fire spread or explosion.

- **Electric inlet and exhaust louver**

Contains an automatic controlled exhaust, automatic shutdown system when the unit fails, and opens back up when in use. The automatic adjustment system will be stored within the unit when not in use to prevent the entry of small animals. During the event of gas leakage, the automatic closing prevents the air from being isolated in the unit, which therefore prevents explosion.

BIOGAS COGENERATION

Intelligent Control

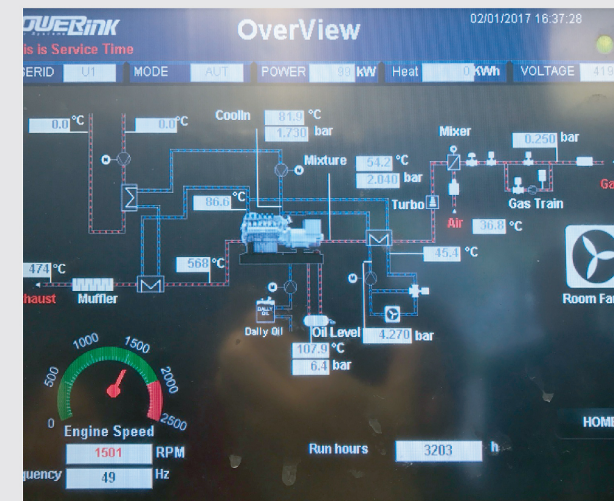
Advanced control unit

Micro processing electronic ignition control system and speed control system, omni directional detection, control and protection.

Local or remote login detection and control unit.

Scalable input / output control to meet customer localization requirements.

The whole life cycle of the Internet of things management system, understanding of CHP related information.



Automatic oil filling system

The oil level controller monitors the oil level of the engine. When the value is lower than the set value, the auxiliary oil tank will automatically refuel and stop after the set value is reached. The oil level controller is built with a large inspection window, which makes it easier to during checks.

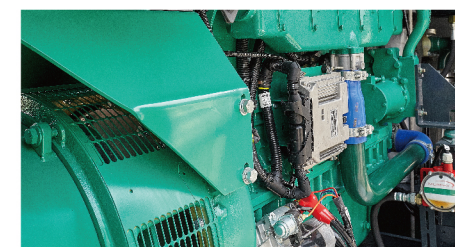
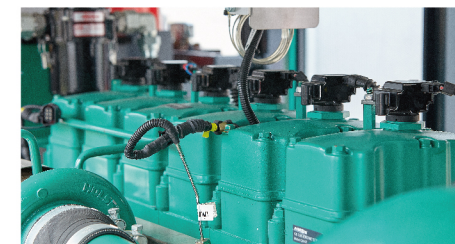
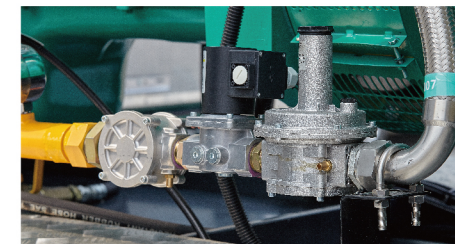
GXC series

High performance price ratio



Product features

- Market positioning is high value, electric power covers from 50~1000kWe
- Lean combustion technology is adopted for high efficiency and low emission
- Modular structure design, can be quickly installed and put into use
- It has three design structures, open, soundproof and outdoor, which can meet the different requirement of the application environment
- PCC300 control system, advanced intelligence, which reduces labour cost
- Automatic filling of the oil system to ensure the long duration of the unit running time
- Continuous operation up to 6000h, overhaul cycle 30000h
- It is mainly used in agriculture and animal husbandry, and provides power and heat for biogas project



GXC series type spectrum

Model	Electric power/kWe	Thermal power/kWt	Electric efficiency	Thermal efficiency	Total efficiency
GXC50-BG	50	69	32.6%	45.3%	77.9%
GXC100-BG	100	138	35.2%	48.6%	83.8%
GXC150-BG	150	207	35.3%	48.8%	84.1%
GXC200-BG	200	272	35.5%	48.3%	83.8%
GXC250-BG	250	319	36.5%	46.6%	83.1%
GXC350-BG (*)	350	429	37.8%	46.3%	84.1%
GXC550-BG (*)	550	672	38.4%	46.9%	85.3%
GXC800-BG (*)	800	970	38.2%	46.3%	84.5%
GXC1000-BG (*)	1000	1223	38.1%	46.6%	84.7%

Notes:

1) The above data is for reference only, for precise data please see the technical specification; 2) Based on the data of methane value: MN>100, low thermal value: LHV = 21.6MJ/Nm³; 3) (*) Expected to be listed in June 2018.

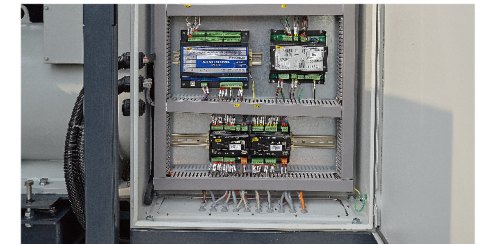
CG series

High value



Product features

- Market positioning is high value, electric power covers from 66~1000kWe
- Lean combustion technology is adopted for high efficiency and low emission
- Modular structure design, can be quickly installed and put into use
- It has three design structures, open, soundproof and outdoor, which can meet the different requirement of the application environment
- PCC300 control system, advanced intelligence, which reduces labour cost
- Automatic filling of the oil system to ensure the long duration of the unit running time
- Continuous operation up to 8000h, overhaul cycle 50000h
- It is mainly used in agriculture, animal husbandry and organic waste water to provide power and heat for biogas project



CG series type spectrum

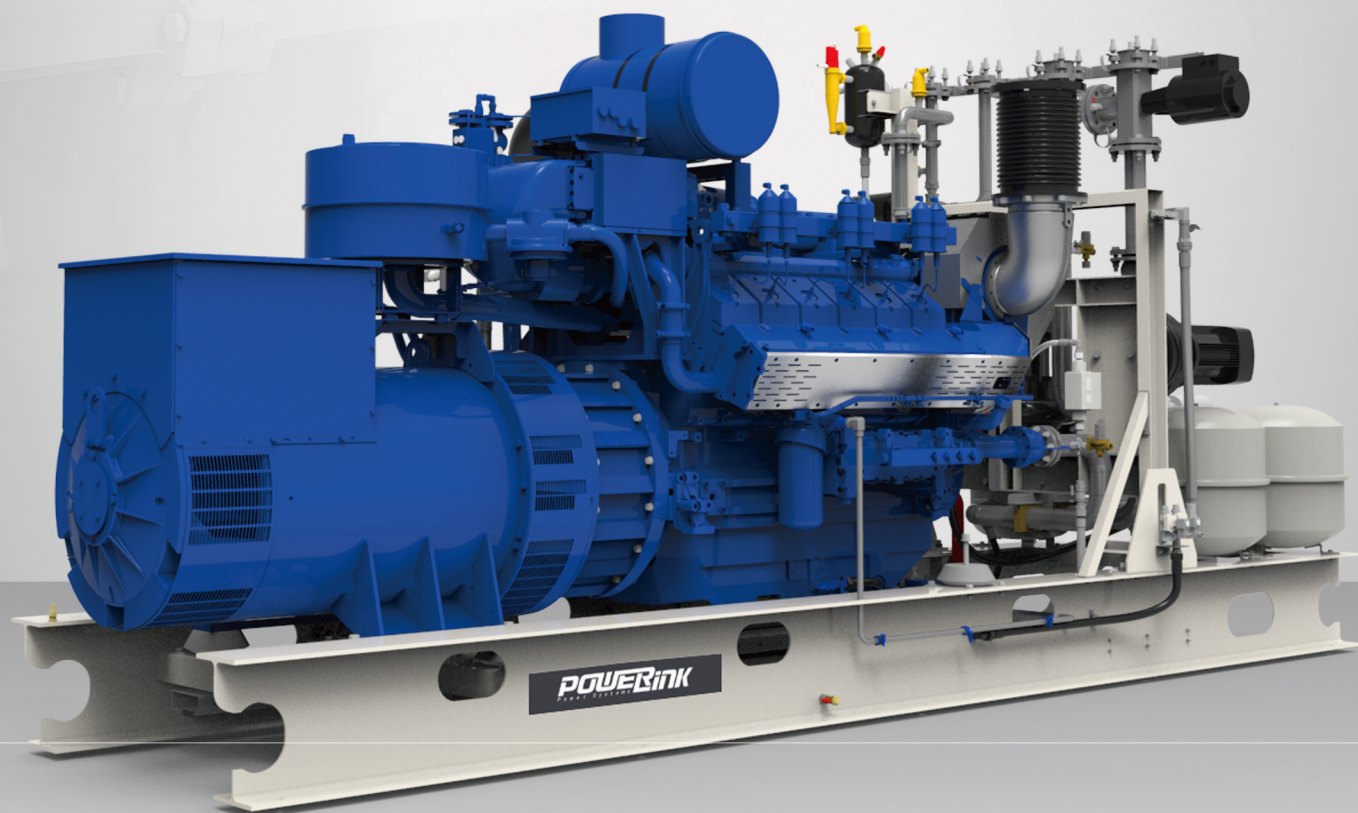
Model	Electric power/kWe	Thermal power/kWt	Electric efficiency	Thermal efficiency	Total efficiency
CG66-BG	66	90	38.3%	52%	90.2%
CG100-BG	100	135	36.5%	49.3%	85.8%
CG200-BG	200	255	36.7%	46.8%	83.5%
CG220-BG	220	269	40.2%	49.1%	89.3%
CG250-BG	250	325	38.1%	49.6%	87.7%
CG350-BG	350	450	39.3%	50.5%	89.8%
CG400-BG	400	528	38.1%	50.3%	88.4%
CG450-BG	450	549	40.1%	48.9%	89%
CG520-BG	520	654	38.3%	48.2%	86.5%
CG875-BG	875	1026	38.2%	44.8%	83.0%
CG1000-BG	1000	1090	38.7%	42.2%	80.9%

Notes:

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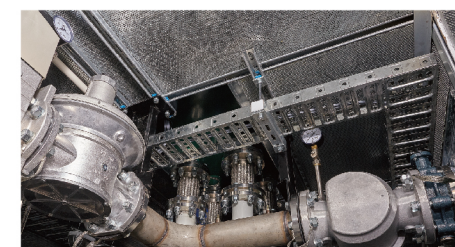
TCG series

High value



Product features

- Market positioning is high value, electric power covers from 600~2000kWe
- Lean combustion technology is adopted for high efficiency and low emission
- Modular structure design, can be quickly installed and put into use
- There are two kinds of design structures, open and outdoor, which can meet the different requirement of the application environment
- PCC300 control system, advanced intelligence, which reduces labour cost
- Automatic filling of the oil system to ensure the long duration of the unit running time
- Continuous operation up to 8000h, overhaul cycle 48000h
- It is mainly used in agriculture, animal husbandry and organic waste water to provide power and heat for biogas project



TCG series type spectrum

Model	Electric power/kWe	Thermal power/kWt	Electric efficiency	Thermal efficiency	Total efficiency
TCG600-BG	600	594	42.7%	42.3%	85.0%
TCG800-BG	800	791	42.8%	42.3%	85.1%
TCG1000-BG	1000	1007	42.0%	42.3%	84.3%
TCG1200-BG	1200	1248	42.1%	43.8%	85.9%
TCG1560-BG	1560	1642	41.8%	44.0%	85.8%
TCG2000-BG	2000	2019	42.9%	43.3%	86.2%

Notes:

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2MW electric heat
steam cogeneration
in organic
wastewater field

- CHP: 2xCG1000S-BG
- Electrical output mode:
10.5kV high voltage
Internet access
- Field / fuel:
Cogeneration of heat and
steam / Biogas
- Total output electric power:
2 Mwe

Cattle farm 200kW
cow manure
anaerobic
fermentation project

- CHP: 1xGXC200S-BG
- Field / fuel:
Cogeneration / Biogas
- Electrical output mode:
low voltage Internet
- Total output electric power:
200kWe



Cases

The field of agriculture
and animal husbandry
biogas -- 75kW power
generation project

- CHP: 1x GXC75C-BG
- Electrical output mode:
low voltage Internet
- Field / fuel:
Cogeneration / Biogas
- Total output electric power:
75kWe



Farm 1.1 biogas
generating unit
project

- CHP:
1xCG1000S-BG,
1xCG100S-BG
- Electrical output mode:
low voltage Internet
- Field / fuel:
Cogeneration / Biogas
- Total output electric power:
1.1 Mwe



1MW landfill gas
generating unit
project

- CHP: 1xPB1000S-BG
- Field / fuel:
Garbage power
generation / landfill gas
- Total output electric power:
1 Mwe





Funing, Jiangsu

- Pig farm 500kw Biogas Cogeneration Project
- Biogas Cogeneration: 2*GXC250C-BG
- Field / fuel: Farming/biogas
- Total output electric power: 500kW

Zhenghe, Jiangxi

- Farm, 2MW Biogas Cogeneration Project
- Biogas Cogeneration: 2*CG1000S-BG 1*CG1001S-BG
- Field / fuel: Farming/biogas
- Total output electric power: 2MW

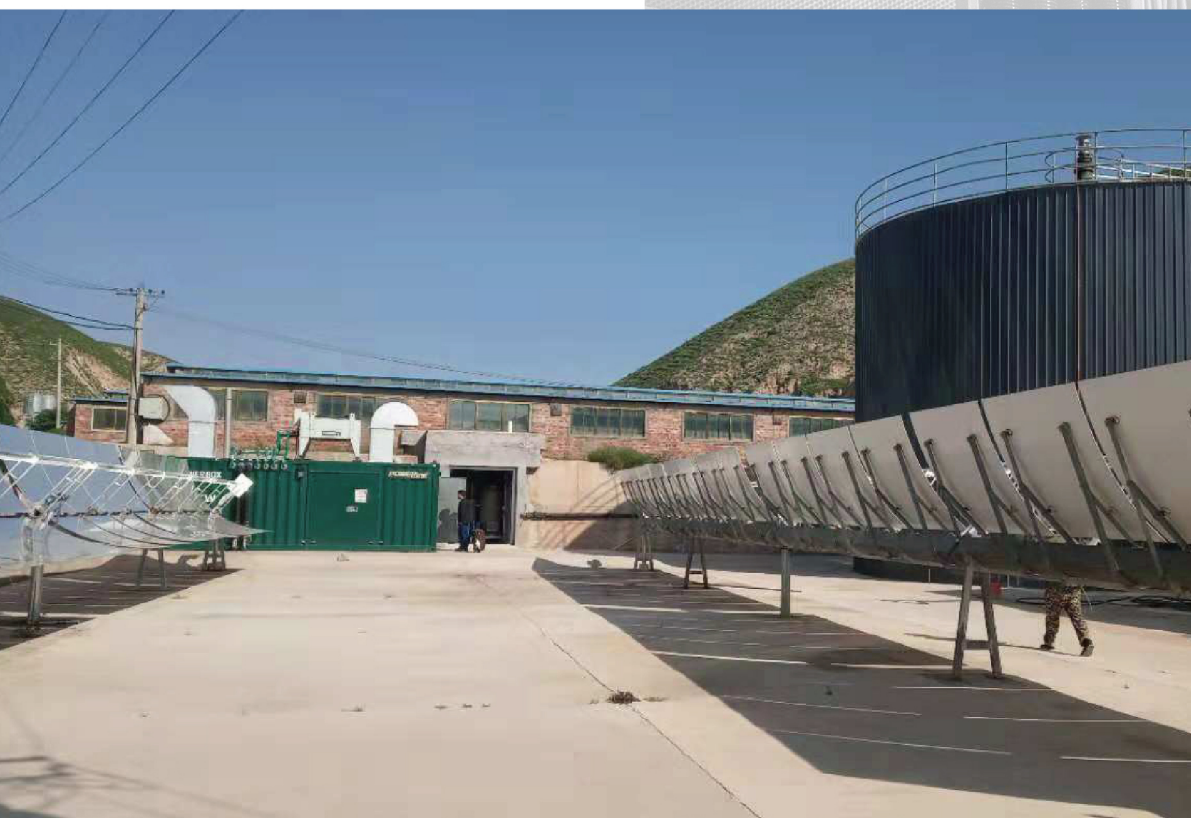


Biogas Application Case



Sanfeng, Chongqing

- Waste treatment, 1.8MW Biogas Power Generation Project
- Biogas Cogeneration: 3*TGE600-BG
- Field / fuel: Waste treatment / biogas
- Total output electric power: 1.8MW



Gansu cattle farm

- Cattle farm 150kw Biogas Power Generation Project
- Biogas Cogeneration: 1*GXC150C-BG
- Field / fuel: Farming/biogas
- Total output electric power: 150kW

Wankai, Zhejiang

- Industrial organic wastewater 200kw Biogas Power Generation Project
- Biogas Cogeneration: 1*GXE200C-BG
- Field / fuel: Industrial organic wastewater/biogas
- Total output electric power: 200kW



Biogas Application Case



Yucheng, Shandong

- Cattle Farm 2MW Biogas Power Generation Project
- Biogas Cogeneration: 4*CG500DS-BG
- Field / fuel: Livestock manure/biogas
- Total output electric power: 2MW

