

COGENERATION

We Produce Green Energy ...



埃特斯动力设备有限公司
ETTES POWER MACHINERY CO LTD

Web: www.ettespower.com
Tel: +86-22-23796980
Fax: +86-22-23796811
E-mail: info@ettespower.com
Add: No.188, Anshan West Road, Tianjin, China

Technical data is subject to change without prior notice. For more information, please contact Ettes Power or your local agent.

More information



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CHP

Power Range : 50-1000KW



Power, Heat, Bio-energy

■ Superior Engine Generation
Drive a Better World



About Combined Heat and Power-CHP

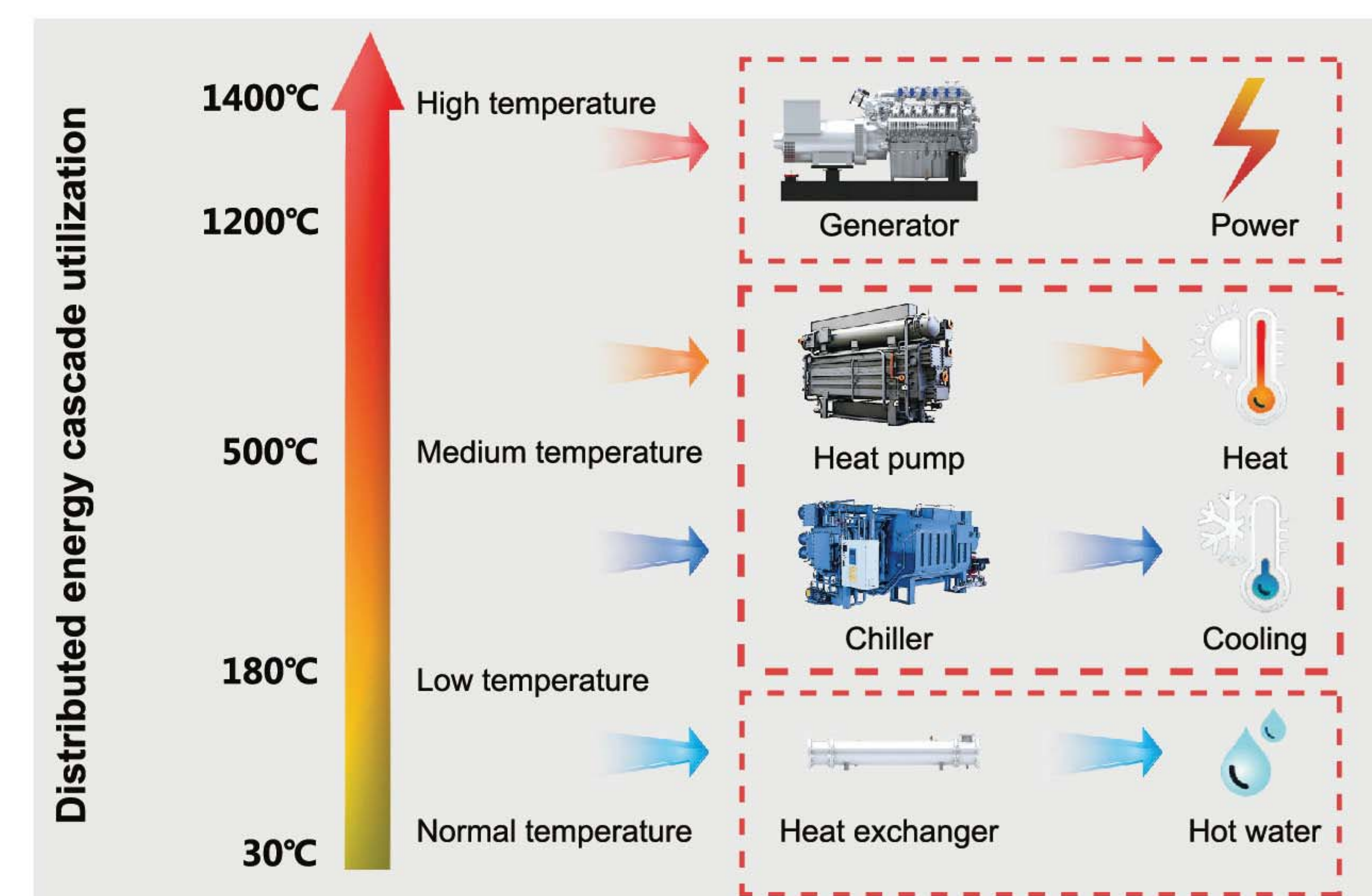
Advanced power supply equipment providing both power and heat

- High-efficiency
- Environmentally friendly
- Energy saving
- Powerful



Efficient and environmentally friendly energy utilization technology

- Achieve the energy cascade utilization of heat, power and cooling with up to 90% overall energy utilization rate
- No need to transport and distribute and no distribution loss
- Compared with traditional fuel coal and fossil energy, reduce the emission of NOx and CO2 by 60%-80% with nearly zero SO2 and dust emission
- Fuel can be natural gas or some special gases such as biogas, coal mine gas, oil associated gas and landfill gas



High-quality Product Design System



The Functions of CHP

Efficient CHP equipment with green energy to lower cost

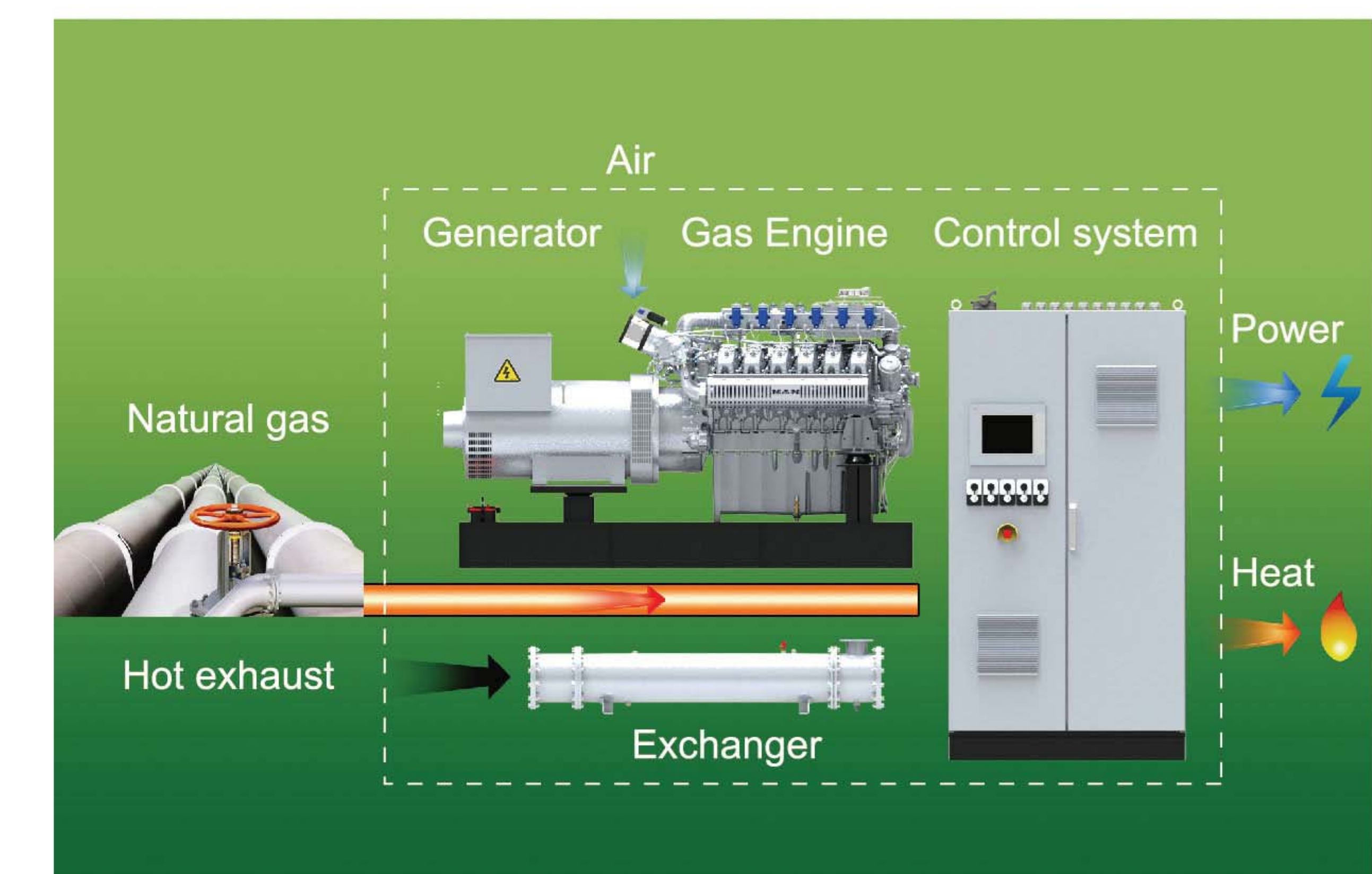
- Independent on-site energy with small footprint
- Suitable for different gas compositions and types with output meeting the standard of natural gas set
- Intelligent control system achieving comprehensive and effective monitor
- Instead of diesel oil saving long-distance transportation cost
- Durable parts for continuous 50,000 service hours
- Containerized CHP unit for quick installation and running



Commercial CHP

Safe and reliable distributed energy

- Cooling system, heating system and power system are put into module and distributed around users, making energy utilization safe and reliable
- Main elements of the product: gas engine, generator, heat exchange system and intelligent control system
- Suitable for large commercial communities, hotels, residential buildings etc



Distributed Energy

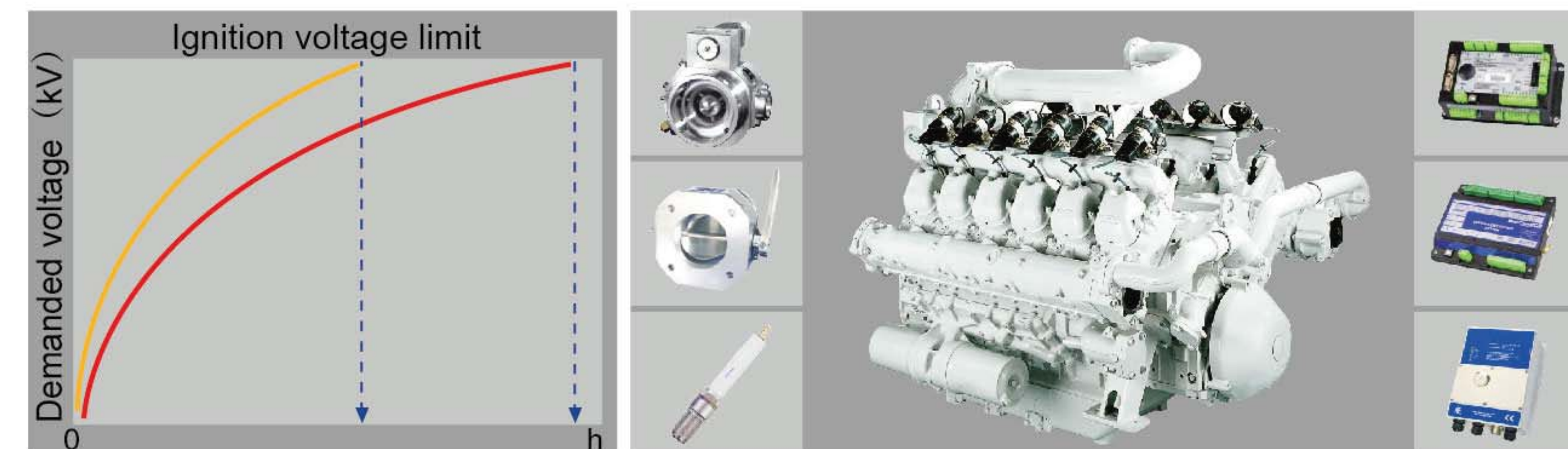
Perfect Product Manufacturing System



Technical Features of CHP

► Many advanced technologies integrated

- Highly efficient gas engine with stable and strong power
- Lean combustion technology with high air/fuel ratio
- Automatic oil refilling system
- Natural and forced ventilation integration technology
- Frequency conversion control technology for fans



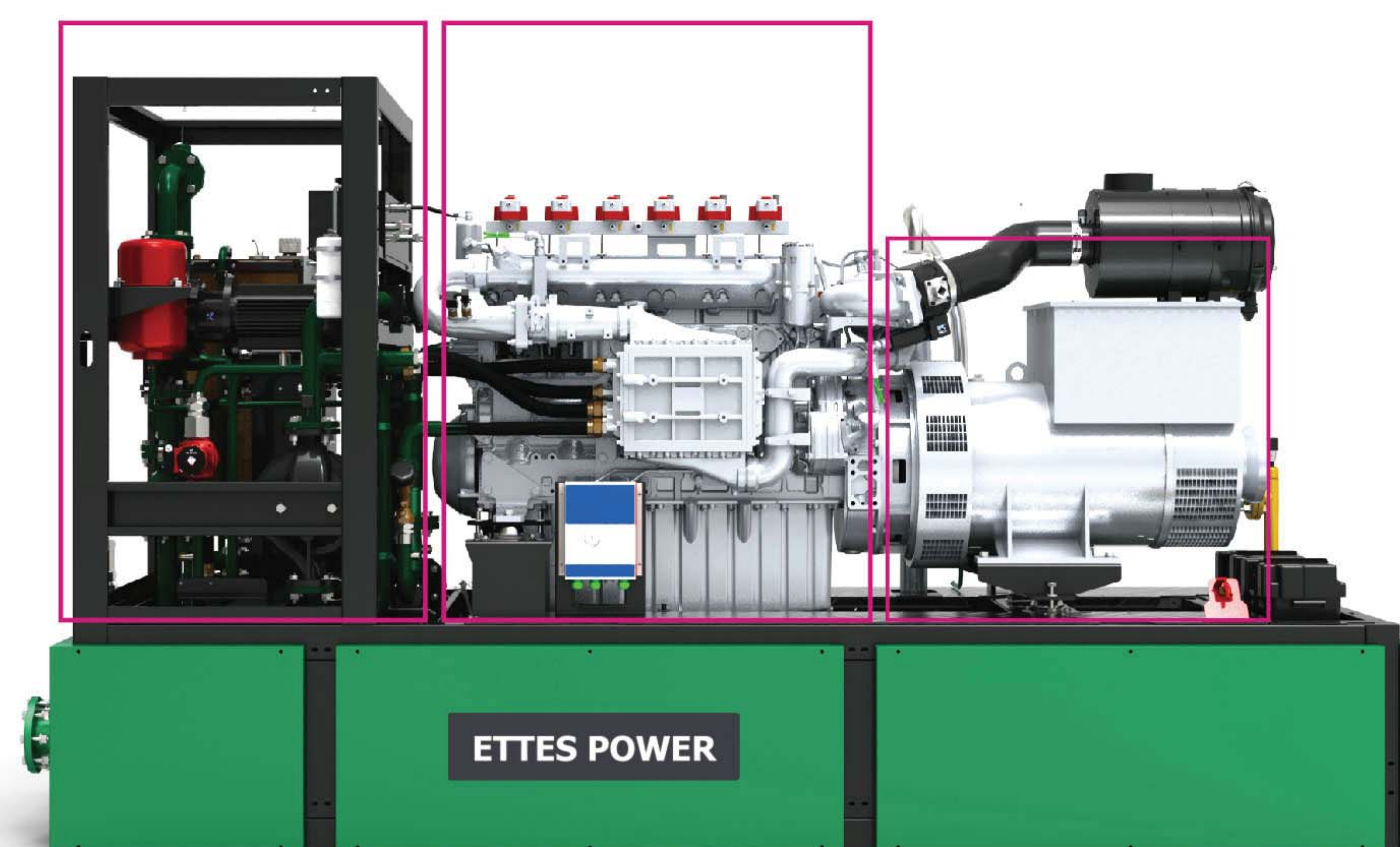
► Intact configuration and control

- Touch-screen operation control system
- Electronic ignition control system based on microprocessor
- Exact speed control system for high stability of frequency
- Power output through air cooled synchronous generator
- Heat recovery through coolant and exhaust exchangers
- Integrated control cabinet with comprehensive monitor, control and protection



► Module design

- Fuel input system, power output system and heat output systems all adopt module design for convenient and fast installation and use
- Access doors is easily dismountable
- Outdoor type units can be used directly outdoors without engine rooms



Power output: 50-1000kW
Heat output: 79-1091kW



- 1 Gas engine
- 2 Synchronous alternator
- 3 Gas train
- 4 Heat exchanger-exhaust gas/water
- 5 Daily oil tank
- 6 Control cabinet
- 7 Ventilation duct

► Paralleling functions

- Several units can run in paralleling mode for heavy-duty demand and automatically parallel or disconnect according to the changes of load
- Paralleling with mains can output power to mains, replace it or operate for peak shaving

► Multiple working modes and control methods

- All power control switch, oil filling control switch, fan modes control switch can be operated easily
- Operation of fans can be controlled automatically or manually

► Frequency conversion control technology for fans

- No need to start fans in low temperature
- Start several fans in medium temperature to both supply power and lower gas consumption

► Advanced waste heat recovery system

- The power produced during the unit operation can meet the demand of users, at the same time a mass of heat in the jacket water and exhaust gas can be recovered through heat exchangers, heat recovery boilers and chillers to provide users heat and cooling



Humanized Design and Intelligent Control

► Automatic operation system with touch screen

- 10-inch colored touch display screen for easy data reading
- Intact parameter monitor and control of fuel, engines and generators
- Monitor and control of pumps, valves and fans
- Local or remote monitor and control
- Automatic oil refilling system for continuous unit running
- Extensible input and output control meeting the users' localization demands

► Paralleling and control cabinet

- Integrated paralleling and control cabinet as standard configuration with IP54 protection
- Internal integrated controller and electrical equipment
- Paralleling function with other units or mains and control and protection functions
- Master control system for whole unit with interface to higher level control unit
- Easy paralleling with mains in peak shaving mode, output to mains mode or isolated mode

► Automatic charging system

- Automatically check the voltage of the battery ensuring the voltage in the applicable range and the unit can start at any time

► Power switch cabinet

- With IP54 protection and internal integrated electrical components such as main breaker, CT, VT and busbar, the cabinet control output of power



► Lighting system

- Interior lighting system provides sufficient lighting for convenient daily maintenance and service

► Controller communication interface

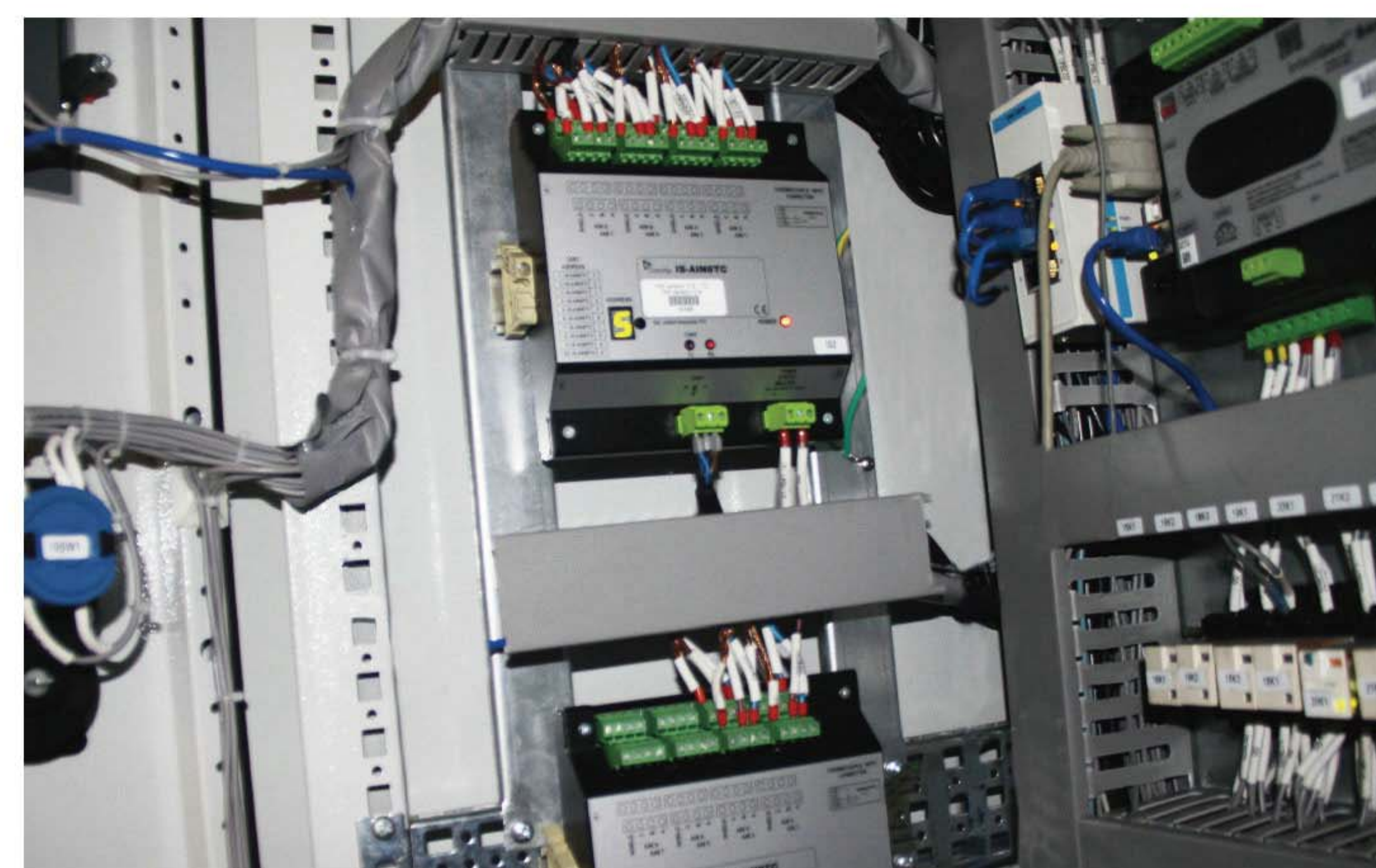
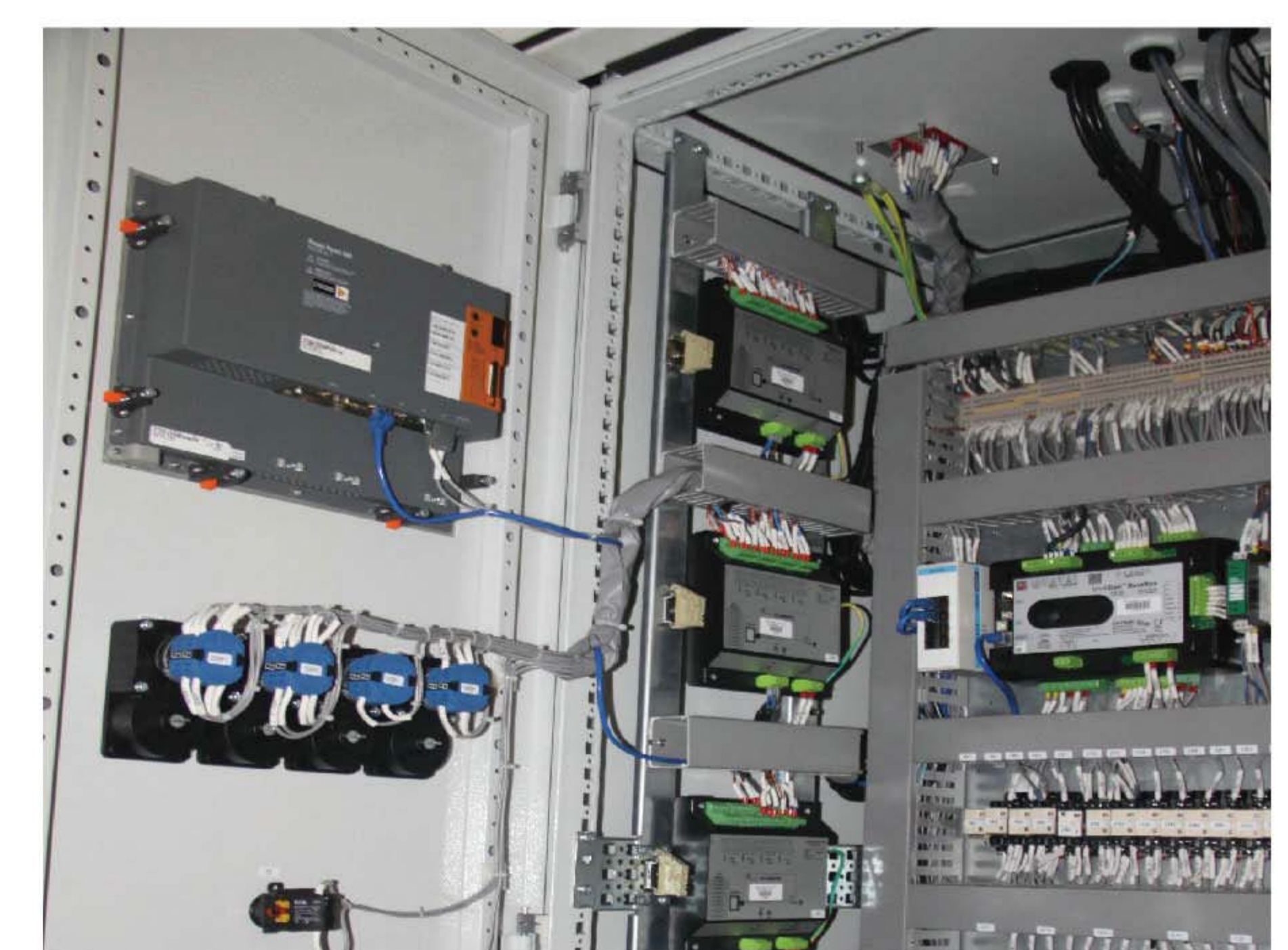
- For remote monitor and other communication functions

► Automatic oil refilling system

- The oil level controller monitors the engine oil at any time. When the level is lower than the set point, daily auxiliary oil pump will fill automatically until reaching the set point. With big-size inspection window, the oil level controller is convenient to check the oil level

► Support OSC (online and offline service center) service system

- Easy connection to the computer for convenient data share and control
- Achieving remote monitor and inspection, inspection aid and faults diagnosis
- Running status monitored and parameter feedback of all units which have been delivered



High Safety

Products are fitted with many kinds of sensors and safety valves, integrating control, measurement and protection functions

► Cylinder temperature protection system

-Cylinder temperature sensors or exhaust manifold temperature sensors can measure the combustion or exhaust gas temperature and send signals to the control system to monitor engine's operation condition and ensure normal operation



► Detonation control system

-Based on the signals from sensors, the controller sends out analog signals to ignition system after processing so as to adjust ignition timing, reduce load or shutdown to avoid detonation

► Gas leakage protection device

-This avoids gas leakage and once the gas leaks, gas pipeline will be turned off and alarms will be sent out



► Lightning protection device

-The device can introduce lightning into the earth and protect personnel and equipment from lightning stroke



► Smoke alarm system

-Internal smoke status is detected in time and once excessive smoke is detected, the system would send out a warning to prevent fire spreading or explosion

► Electrical inlet and outlet shutter

-The shutters control inlet and outlet automatically, i.e. close shutters when CHP unit stops or open them when CHP unit starts, thus these achieve automatic adjustment and prevent small animals entering into the unit when it stops. Once gas leakage happens, they are closed automatically to isolate internal air and prevent explosion

► Air circuit breaker

-Well-known brand breaker is integrated into breaker cabinet with control and various protection functions against overload, short circuit, under voltage etc

► Emergency radiator

-When the heat load is lower, the radiator is used to cool jacket water and turbocharged mixture to keep coolant and suction mixture temperature in permissible range

► Separation of heavy current and light current

-All the cables have protective covers with support and fixation device



High Durability

► Coupling connection

-Coupling between engine and alternator dampens rotational vibrations and load surge, and limits torque to protect the actuator from overload

► Integrated oil filtration system

-Equipped filters separate dust, metal scraps, carbon deposit etc. efficiently and restrain abrasion of engine parts for example crankshaft to prolong the unit's lifetime

► Standard container frame

-Made of corten steel, the container is manufactured as ISO standard container and accordant with shipping regulations and CSA certificate. Stainless steel bolts and locks are installed on the exterior of container for corrosion resistance and long life

► High-strength base frame

-High quality steel monocoque base frame with reinforcement design is manufactured with advanced welding technology

► Flexible exhaust bellows

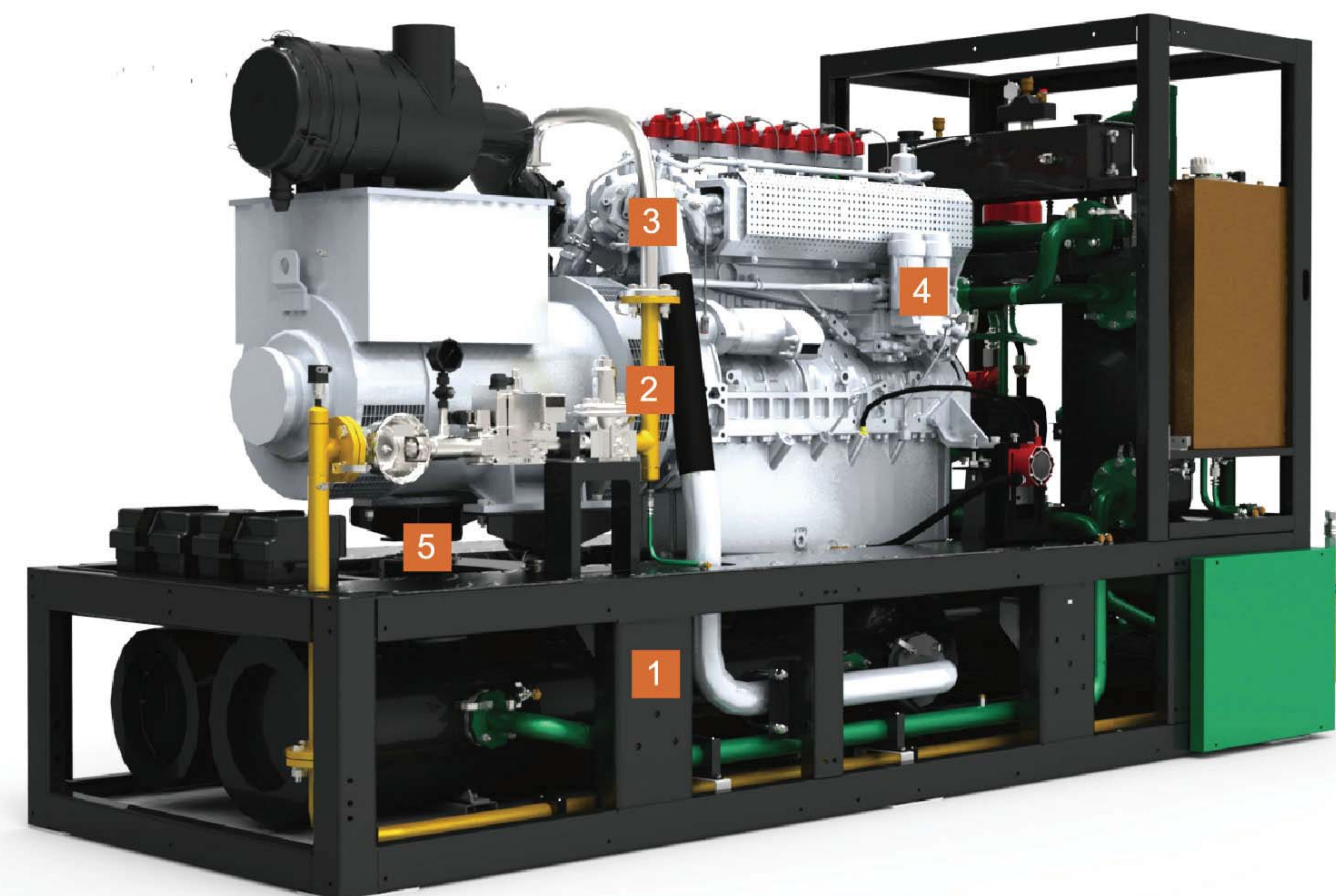
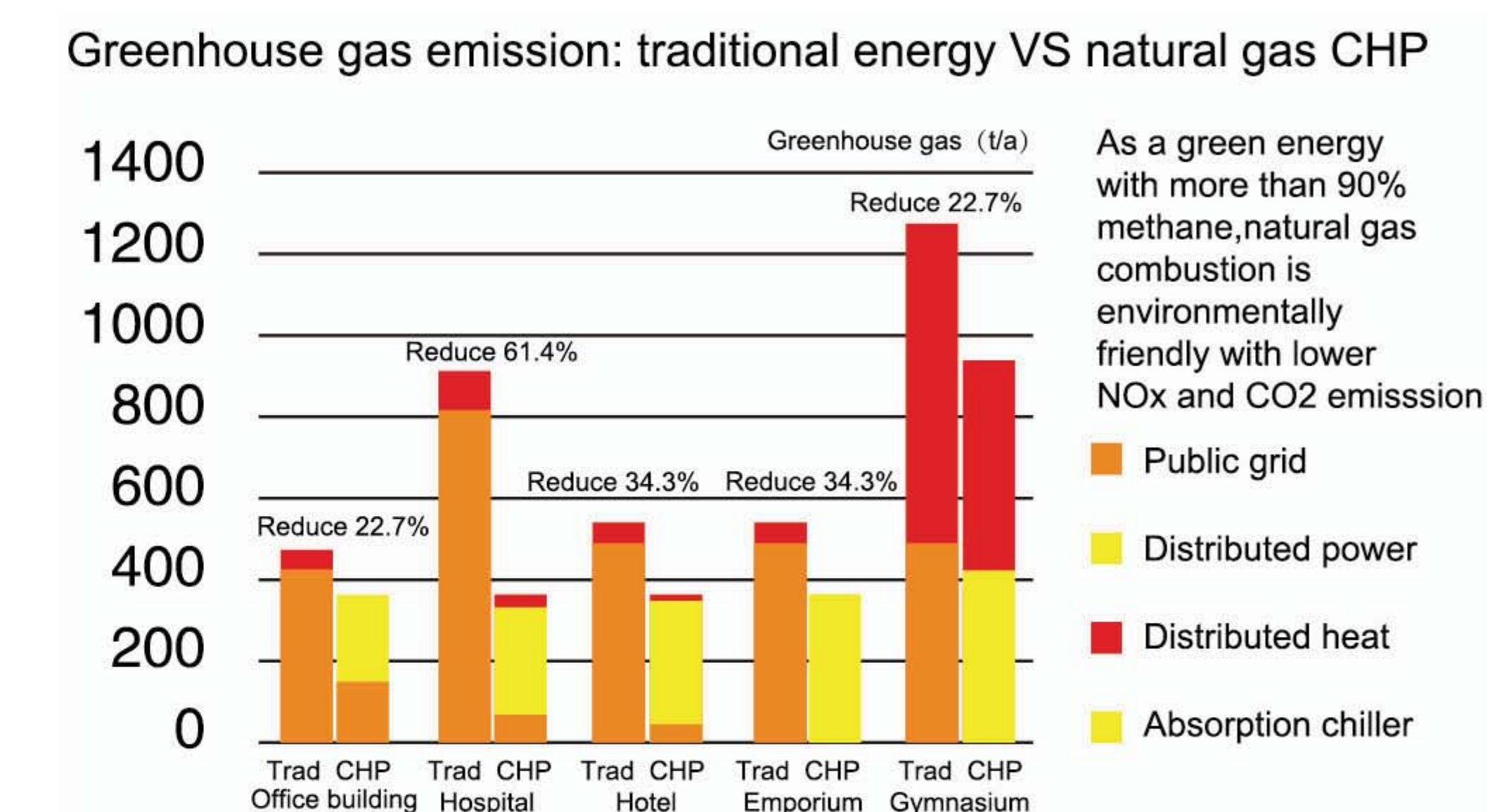
-Bellows installed between exhaust manifold and silencer keeps exhaust assembly in flexible connection, depresses vibration and noise and prolongs the service life of exhaust system

► Vibration isolators

-Vibration isolators with high capability are installed between engine/alternator and base frame, and anti-vibration capability of CHP unit is in accordance with GB/T2820.9

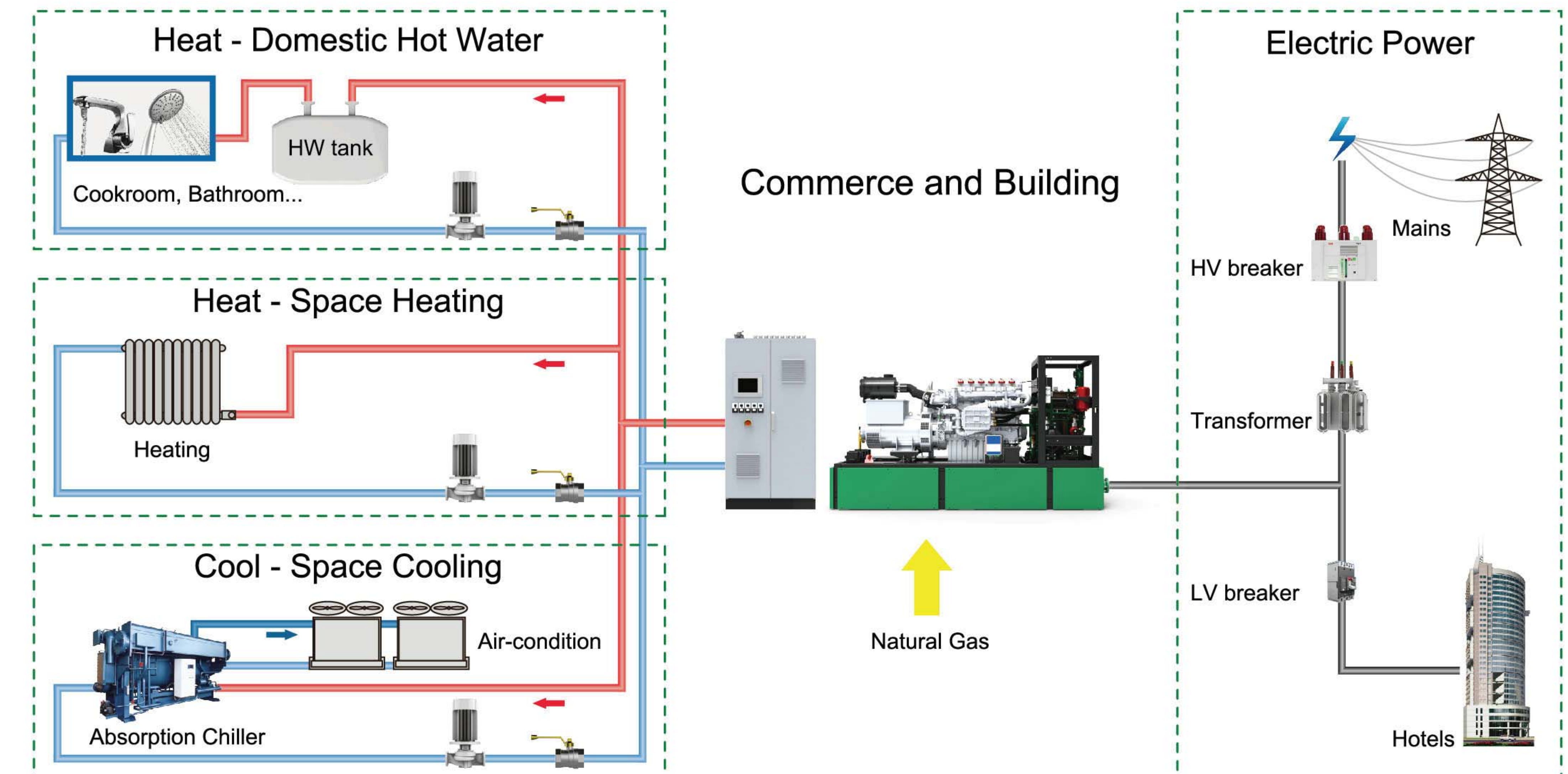
► Accordant with emission requirement

-Advanced gas engine emission control lower NOx and CO2 by 60-80% and SO2 and dust to nearly zero compared with coal and fossil energy. Baseframe adopts waterproof design to avoid leakage of coolant and lube oil



- 1 High-strength base frame
- 2 Coupling
- 3 Stainless steel pipes
- 4 Oil filtration system
- 5 Vibration isolator

Product Application of Natural Gas

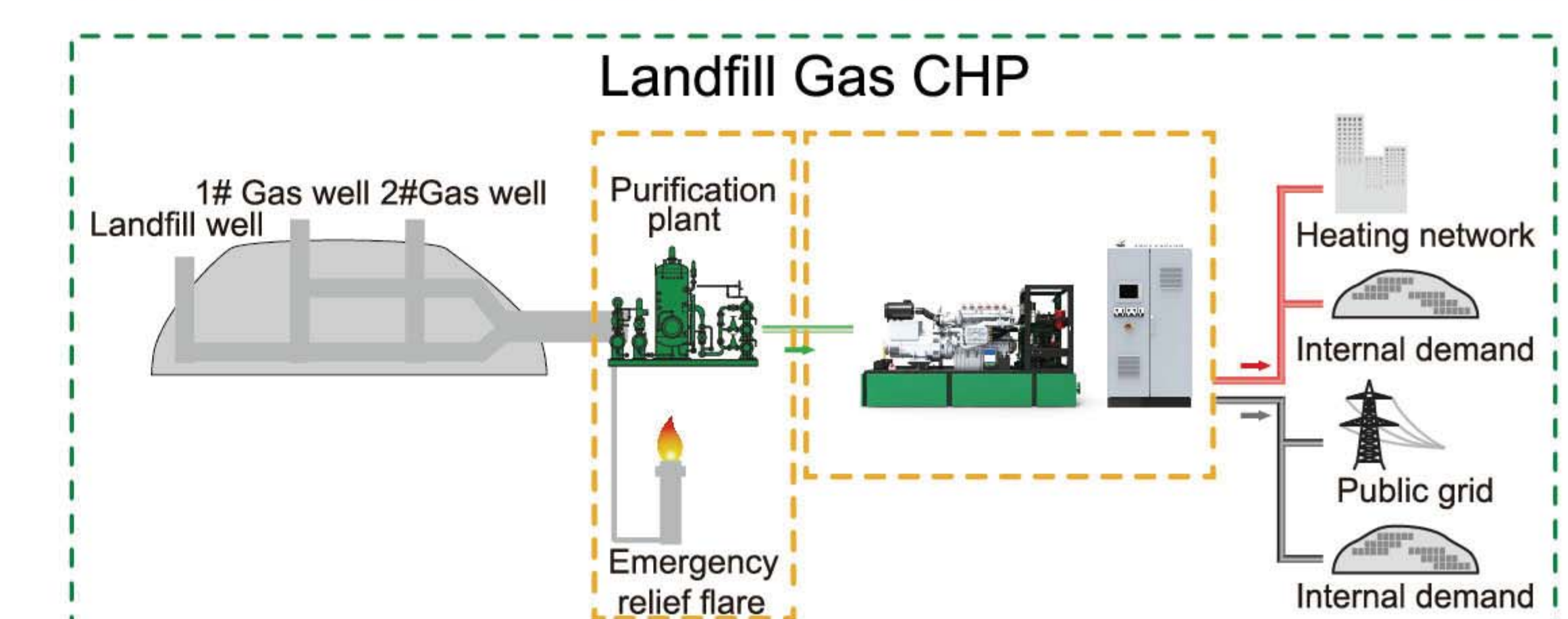
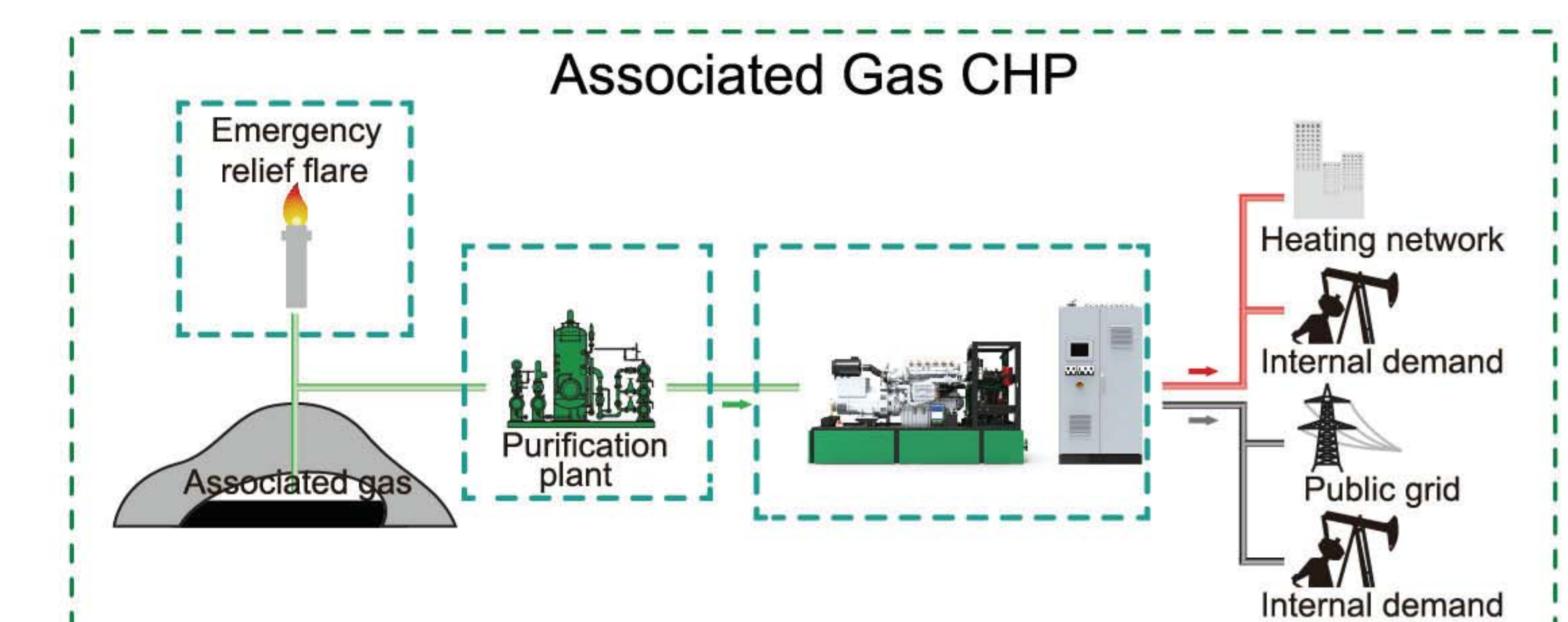
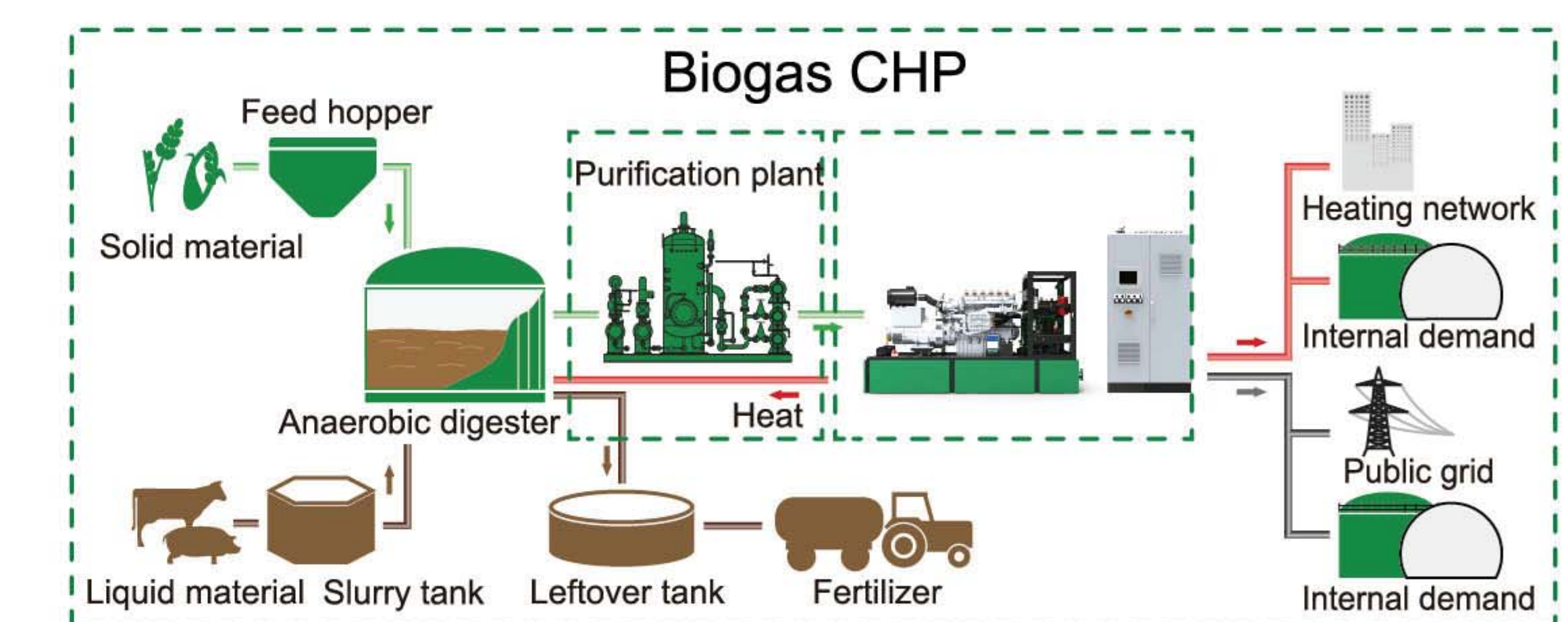


Application of Special Gas

■ CHP solves the problem of waste disposal and protects the environment. Electricity produced meets the local demand and public grid. Heat produced is recovered to optimize the living condition.

■ With purification treatment, associated gas can be used as the fuel of CHP units to supply continuous power and heat for oil field drilling and guarantee the normal production.

■ About 100~200m³ landfill gas with the heat value of 3.5~5.5kWh/m³ is produced per 1 ton landfill. It is a high-quality fuel used on the CHP units, and so this saves energy and protects the environment.



MAN Series Products Overview

-50Hz

Open/Soundproof Type CHP Natural Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EM-50N	50	E0834E302	L4	33.80%	53.40%	87.20%
EM-100N	100	E0836LE302	L6	35.50%	48.90%	84.40%
EM-200N	200	E2876LE302	L6	37.20%	48.90%	86.10%
EM-250N	250	E2848LE322	V12	36.70%	48.70%	85.40%
EM-400N	400	E2842LE322	V12	38.60%	44.40%	83.00%
EM-520N	520	E3262LE202	V12	38.80%	48.30%	87.10%
EP-875N	875	4016-61TRS1	V16	38.20%	44.80%	83.00%
EP-1000N	1000	4016-61TRS2	V16	38.70%	42.20%	80.90%

Open/Soundproof Type CHP Special Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EM-66B	66	E0834E302	L4	36.90%	52.00%	88.90%
EM-100B	100	E0836LE202	L6	36.50%	49.30%	85.80%
EM-200B	200	E2876LE202	L6	36.70%	46.80%	83.50%
EM-250B	250	E2848LE322	V12	38.10%	49.60%	87.70%
EM-400B	400	E2842LE202	V12	38.10%	50.30%	88.40%
EM-520B	520	E3262LE202	V12	38.30%	48.20%	86.50%
EP-875B	875	4016-61TRS1	V16	38.20%	44.80%	83.00%
EP-1000B	1000	4016-61TRS2	V16	38.70%	42.20%	80.90%

- Power output is based on ISO3046/1 conditions
- Lower heat value requirement: >31MJ/Nm³ or 7404 calorie/Nm³
- Electrical efficiency is based on pf=0.8 and ISO3046/1 conditions. Heat is recovered from jacket water and exhaust gas @120°C
- Ambient temperature:-25~50°C and latitude: less than 1000m

MAN Series Products Overview

-60Hz

Open/Soundproof Type CHP Natural Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EM-60N6	60	E0834E302	L4	35.30%	53.50%	88.80%
EM-100N6	100	E0836LE202	L6	35.50%	48.90%	84.40%
EM-200N6	200	E2876LE302	L6	35.30%	50.80%	86.10%
EM-280N6	280	E2848LE322	V12	36.10%	49.50%	85.60%
EM-380N6	380	E2842LE332	V12	37.20%	50.20%	87.40%
EM-560N6	560	E3262LE202	V12	38.20%	49.90%	88.10%

Open/Soundproof Type CHP Special Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EM-66B6	66	E0834LE302	L4	36.10%	52.50%	88.60%
EM-100B6	100	E0836LE202	L6	35.10%	53.70%	88.80%
EM-180B6	180	E2876LE302	L6	34.60%	50.80%	85.40%
EM-250B6	250	E2848LE322	V12	35.70%	51.30%	87.00%
EM-400B6	400	E2842LE322	V12	36.60%	52.30%	88.90%
EM-560B6	560	E3262LE202	V12	37.40%	51.50%	88.90%

- Special gases: biogas, coal mine gas, associated gas, landfill gas and sewage gas
- Power output is based on ISO3046/1 conditions
- Lower heat value requirement: >15MJ/Nm³ or 3583 calorie/Nm³
- Electrical efficiency is based on pf=0.8 and ISO3046/1 conditions. Heat is recovered from jacket water and exhaust gas @120°C
- Ambient temperature:-25~50°C and latitude: less than 1000m

MWM Series Products Overview

-50Hz

Open/Soundproof Type CHP Natural Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EMW-400N	400	TCG2016V08C	V8	42.30%	45.20%	87.50%
EMW-600N	600	TCG2016V12C	V12	42.00%	45.80%	87.80%
EMW-800N	800	TCG2016V16C	V16	42.50%	45.30%	87.80%
EMW-1000N	1000	TCG2020V12K1	V12	40.00%	47.00%	87.00%
EMW-1200N	1200	TCG2020V12	V12	43.60%	43.30%	86.90%
EMW-1500N	1500	TCG2020V16K	V16	40.90%	45.70%	86.60%
EMW-1560N	1560	TCG2020V16	V16	43.20%	43.80%	87.00%
EMW-2000N	2000	TCG2020V20	V20	43.70%	43.20%	86.90%

Open/Soundproof Type CHP Special Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EMW-400B	400	TCG2016V08C	V8	42.80%	42.10%	84.90%
EMW-600B	600	TCG2016V12C	V12	42.70%	42.30%	85.00%
EMW-800B	800	TCG2016V16C	V16	42.80%	42.30%	85.10%
EMW-1200B	1200	TCG2020V12	V12	42.00%	43.80%	85.80%
EMW-1560B	1560	TCG2020V16	V16	41.70%	44.00%	85.70%
EMW-2000B	2000	TCG2020V20	V20	42.90%	43.30%	86.20%

- Power output is based on ISO3046/1 at U=0.4kV, cos=1.0
- Methane number is MN70 (MN80 for some engine models)
- Exhaust gas cooled to 120°C
- NO_x≤500mg/Nm³; exhaust gas dry at 5% O₂

MWM Series Products Overview

-60Hz

Open/Soundproof Type CHP Natural Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EMW-400N6	400	TCG2016V08C	V8	41.40%	46.00%	87.40%
EMW-600N6	600	TCG2016V12C	V12	41.30%	46.50%	87.80%
EMW-800N6	800	TCG2016V16C	V16	41.60%	46.30%	87.90%
EMW-1125N6	1125	TCG2020V12K	V12	40.70%	45.60%	86.30%
EMW-1200N6	1200	TCG2020V12	V12	43.40%	43.20%	86.60%
EMW-1500N6	1500	TCG2020V16K	V16	40.60%	45.70%	86.30%
EMW-1560N6	1560	TCG2020V16	V16	43.00%	43.70%	86.70%
EMW-2000N6	2000	TCG2020V20	V20	43.40%	43.20%	86.60%

Open/Soundproof Type CHP Special Gas

Model	COP/kW	Engine Model	Configuration	Heat Eff.	Elec Eff.	Tot. Eff.
EMW-400B6	400	TCG2016V08C	V8	41.60%	43.20%	84.80%
EMW-600B6	600	TCG2016V12C	V12	41.40%	43.70%	85.10%
EMW-800B6	800	TCG2016V16C	V16	41.70%	43.30%	85.00%
EMW-1200B6	1200	TCG2020V12	V12	41.80%	43.80%	85.60%
EMW-1560B6	1560	TCG2020V16	V16	41.40%	43.90%	85.30%
EMW-2000B6	2000	TCG2020V20	V20	42.60%	43.30%	85.90%

- Special gases: biogas, landfill gas and sewage gas
- Power output is based on ISO3046/1 at U=0.48kV, cos=1.0
- Exhaust gas cooled to 150°C
- NO_x≤500mg/Nm³; exhaust gas dry at 5% O₂



Product Types and Main Application Fields

Natural gas CHP

-As one of main applications of CHP products, natural gas CHP is widely used in industry and commercial fields. The CHP core parts are four-stroke gas engine, heat recovery and utilization system, safety protection and monitor system, and humanized operation interface.

-Due to the compositions of natural gas benefit sufficient combustion, it's not necessary to fit gas treatment device like filters.



Biogas and other special gases CHP

-Biogas and other special gases CHP units generate power and heat saving the costs, protecting the environment and reducing pollution.

-Biogas and bio-natural gas can be generated on site with easy operation, low costs and environment protection.

-As biogas is one of best fuels used on CHP, PowerLink is committed to design and offer users customized solutions to supply power and heat with the fuel of biogas.



Optimum Solutions for You

-New CHP units is designed to supply and reliable onsite energy with high efficiency, accordant with current emission standards, convenient to install and open type, soundproof type and containerized type are optional. The CHP products are suitable for all industries and fields, such as renewable gas/useable waste gas, distributed energy/waste heat utilization and oil field power.

Renewable gas/usable waste gas

-Biogas, landfill gas, sewage gas, coal mine gas, special gas (steel gas, wood gas and special processed gas) are available

-Replace fossil fuel

-Reduce the emission of CO₂ and NO_x, and lower SO₂ and dust emission to nearly zero.

-Long service intervals and low operation costs during its service life

Distributed energy and waste heat utilization(natural gas)

-Supply reliable energy in the distant area

-Meet local demand for electricity

-Avoid the loss during transportation

-Increase overall efficiency

Oil field power(associated gas)



Industry

Industry heating
Food, chemical and feed processing
Paper mill
Pharmacy
Woodware

Commercial

House/apartment/public heating
Hotel/conference center/airport/restaurant
Rest home/nursing home/hospital
Administration/municipal building
Supermarket/shop/commercial building
Sports center/school/parking lot
Indoor or outdoor swimming pool/holiday resort
Regional/centralized heating (large scale)
Community or street/refrigerated warehouse

Agriculture

Modern farm
Stock yard/heninery
Gardening center

