amico
Gas Power Systems

Leading Gas Engine & Generator / CHP Technologies

Natural Gas Generators & CHPs/CCHPs
50Hz/60Hz, 18-4,500kWe

Reliable, Efficient, Digital

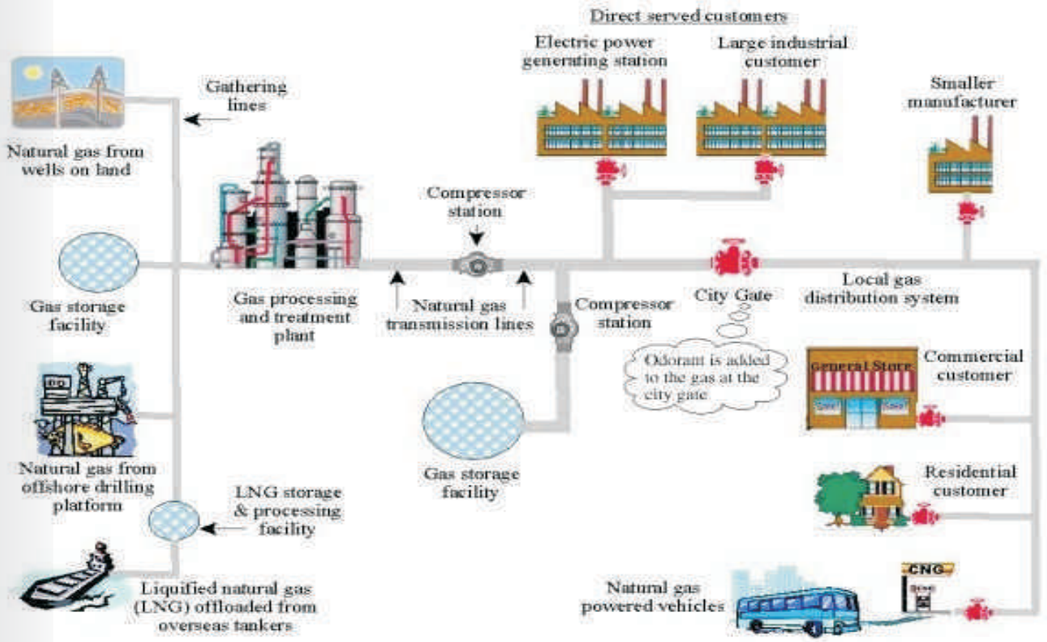
Content

1 About Natural Gas & Quality Requirement

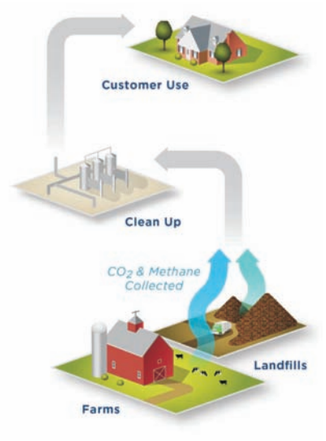
1.1 About Natural Gas

Fossil fuel natural gas occurs deep beneath the earth's surface. Natural gas consists mainly of methane, a compound with one carbon atom and four hydrogen atoms. Natural gas also contains small amounts of hydrocarbon gas liquids and nonhydrocarbon gases.

Millions of years ago, the remains of plants and animals (diatoms) decayed and built up in thick layers, sometimes mixed with sand and silt. Over time, these layers were buried under sand, silt, and rock. Pressure and heat changed some of this organic material into coal, some into oil (petroleum), and some into natural gas. In some places, the natural gas moved into large cracks and spaces between layers of overlying rock. In other places, natural gas occurs in the tiny pores (spaces) within some formations of shale, sandstone, and other types of sedimentary rock, where it is referred to as shale gas or tight gas. Natural gas also occurs in coal deposits, which is called coalbed methane.



Renewable natural gas or biomethane produced from existing waste streams and a variety of renewable and sustainable biomass sources, including animal waste, landfills, crop residuals and food waste. Once processed, it is interchangeable with traditional pipeline-quality natural gas.

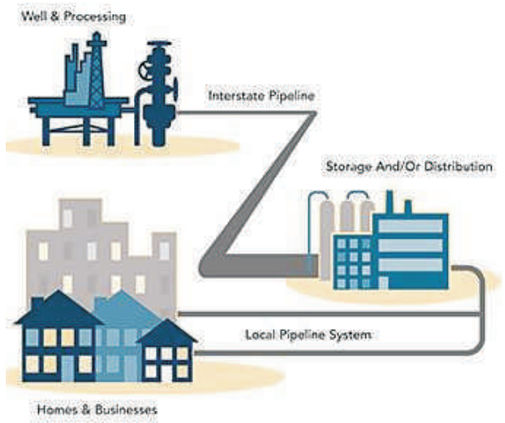


Did you know?

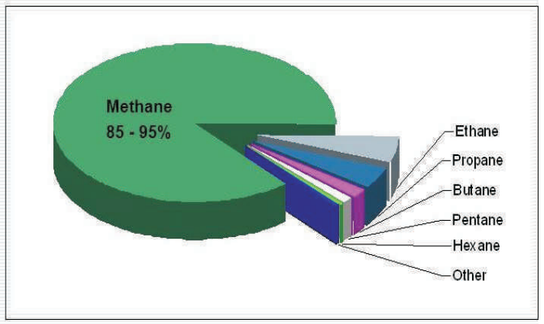
Because natural gas is colorless, odorless, and tasteless, distributors add mercaptan (a chemical that smells like sulfur) to give natural gas a distinct unpleasant odor (it smells like rotten eggs). This added odor serves as a safety measure to help detect leaks in natural gas pipelines.

Our natural gas generators and CHPs/CCHPs are applicable to pipeline natural gas, compressed natural gas or liquefied natural gas.

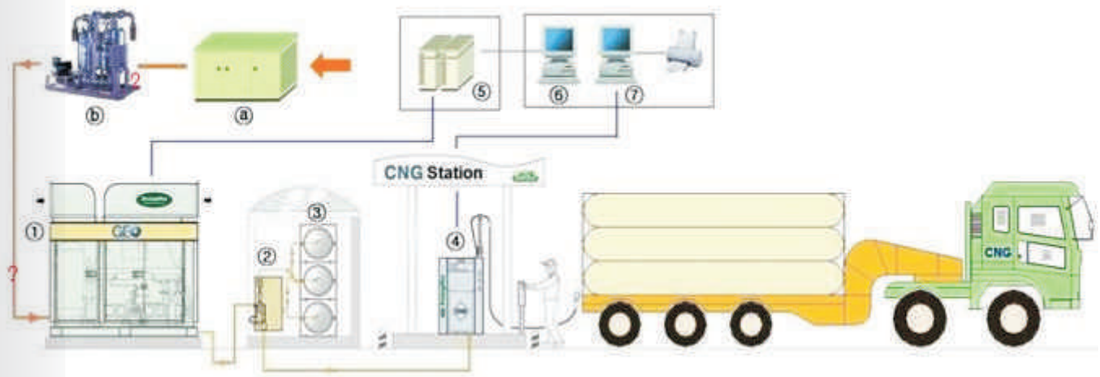
1.2 Pipeline Natural Gas–PNG



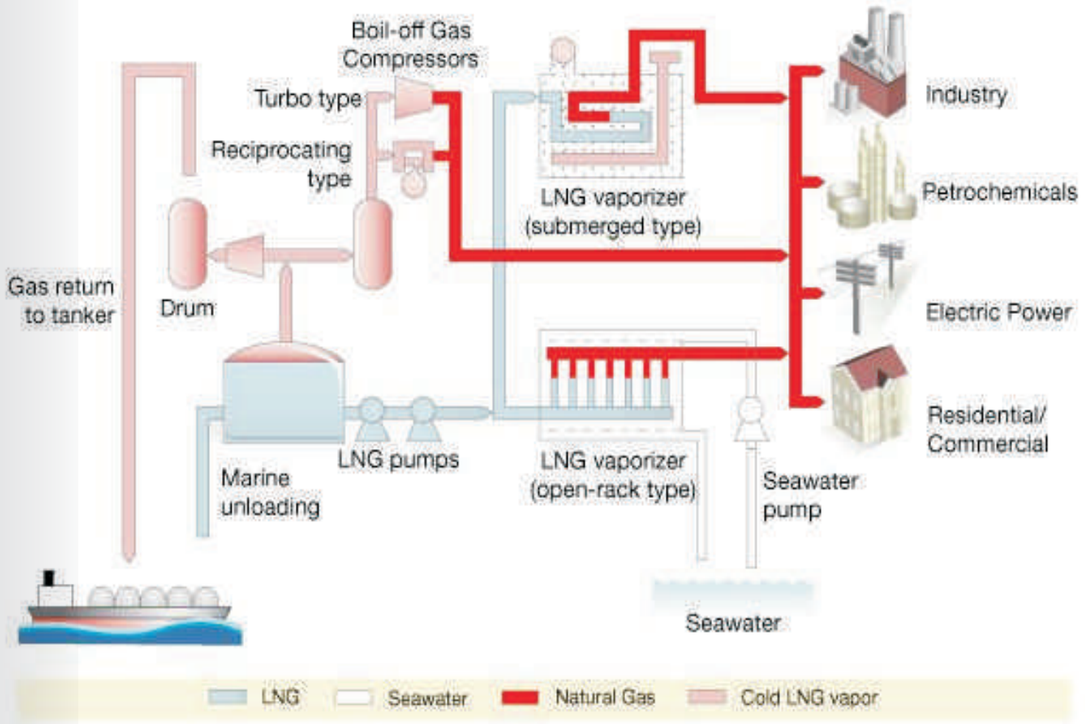
Pipeline Natural Gas composition



1.3 Compressed Natural Gas-CNG



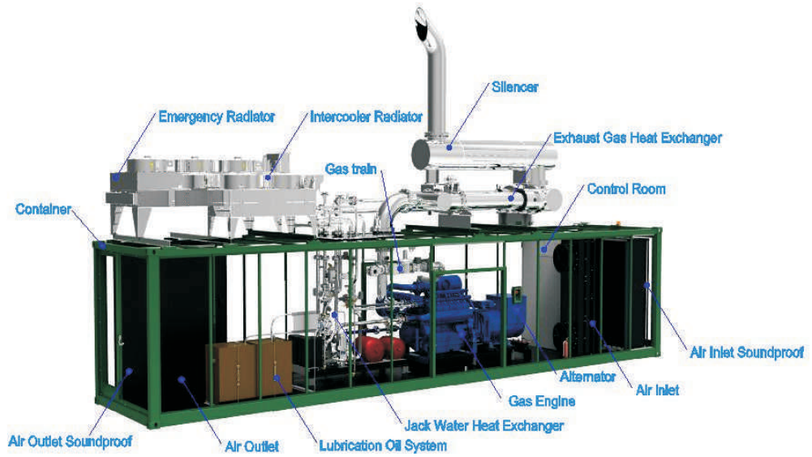
1.4 Liquefied Natural Gas-LNG

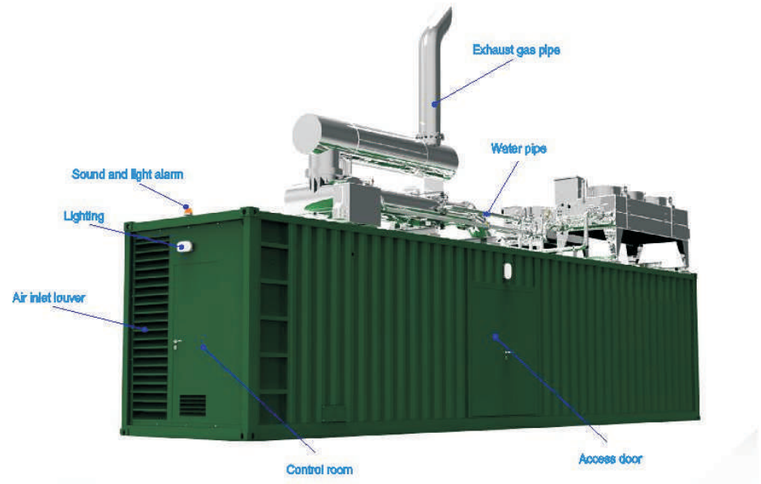


1.5 Quality Requirement

Parameter	Symbol	Value	Unit	Remarks
Methane number	MZ	> 80		lower MZ on request
Calorific value	Hu,N	> 5	kWh / Nm^3	
Chlorine content	Cl	< 80	mg / Nm^3_{CH4}	Chlorine as volatile compound
Fluorine content	F	< 40	mg / Nm^3_{CH4}	Fluorine as volatile compound
Total-Fluorine-Chloriner	f (Cl,F)	< 80	mg / Nm^3_{CH4}	
Dust content < 5 □m		< 10	mg / Nm^3_{CH4}	
Oil vapour		< 400	mg / Nm^3_{CH4}	no condensation in whole suction part
Volatile organic compunds	VOC	< 25	mg / Nm^3_{CH4}	higher VOC consult AMICO
Silicon content [x1]	Si	< 2	mg / Nm^3_{CH4}	higher siliconconsult AMICO
Sulphur content	S	< 200	mg / Nm^3	
Hydrogen sulphide	H_2S	< 150 /< 228	ppm / mg / Nm^3	higher H_2S consult AMICO
Ammonia content	NH_3	< 40 / < 30	ppm / mg / Nm^3	
Relative humidity	φ	< 60	%	no condensation in the whole suction
Temperature gas mixer outlet	T_G	10 < T_G< 30	°C	

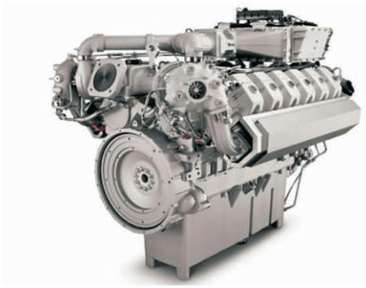
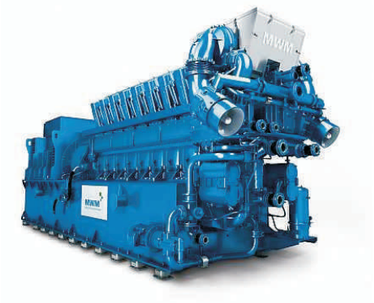
2 Main Structure & Features of Natural Gas Generators/CHPs





2.1 Reliable & Efficient Gas Engines

- Worldwide name brands like MAN, MWM, Cummins, Steyr gas engines are used. Some engines are optimized by our engineers for specific applications.
- The gas engines are reliable and powerful with an overhaul interval up to 50,000 operating hours.
- Electrical efficiency up to 44.6%.

2.2 High Efficient Alternators

- Worldwide name brands like Mecc alte, Marelli, Leroy Somer and Stamford are used.
- Some models are customized for specific applications.
- Reliable with high efficiency.
- Globe service available.

mecc alte

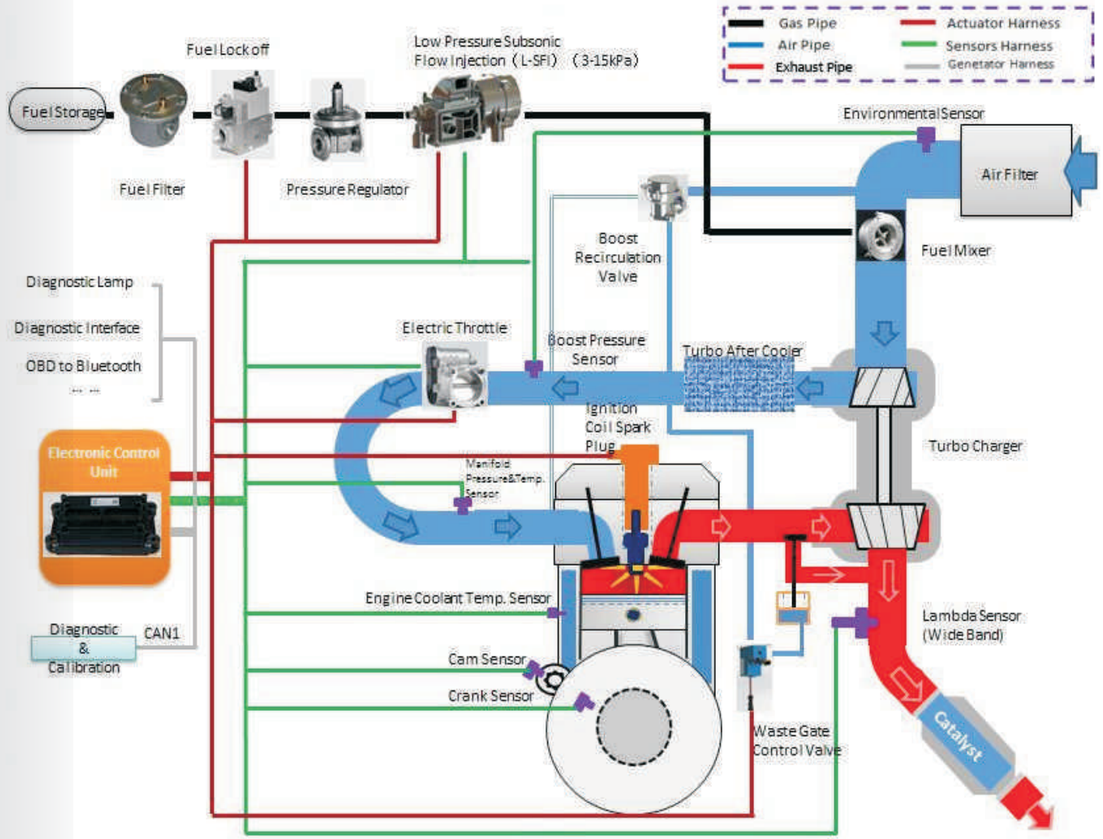
LEROY SOMER

STAMFORD power generation

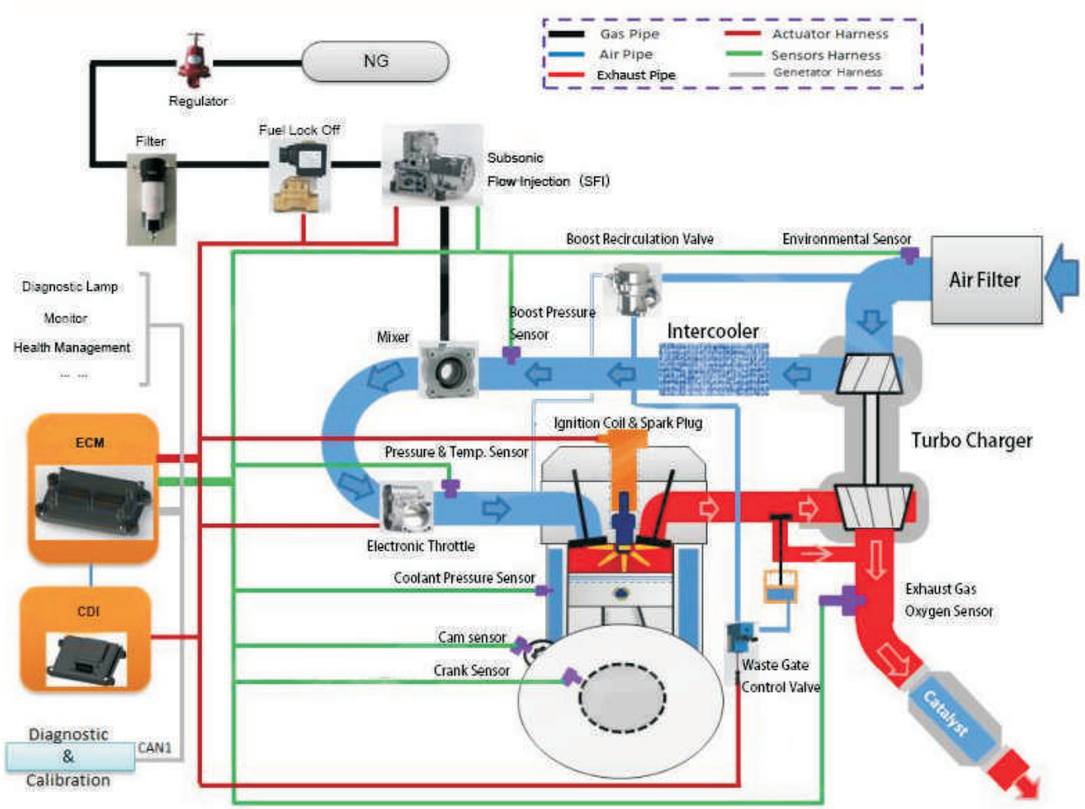
2.3 JIGREN State-of-the-Art Gas Engine Control System PM1000

PM1000 is the world's leading system with an integration of ignition, speed governor, AFR (air-fuel ratio), detonation control and lean-burn technologies.

System Overview 1: Low Intake Pressure of Natural Gas 30-150mbar



System Overview 2: High Intake Pressure of Natural Gas 2.0~7 Bar



Advantage of JIGREN PM1000

- Widening the lean-burn limit，Improved the Engine thermal efficiency, and make a good economy
- Flow control valve based on high speed motor, control of high intensive reading and fast response
- The non-contact continuous flow injection, high reliability, wide adaptability
- Speed control algorithm based on physical model to meet the demanding of the transient operating conditions
- Because accurate air calculation model，and closed-loop + self-adapted fuel control, the air-fuel ratio control is in high accuracy
- Low emission of NOx, meet the Non-road emission standards of various countries.
- High accuracy flow valve, lowered the fluctuating requirement at the inlet.

Applicable to

Gas：

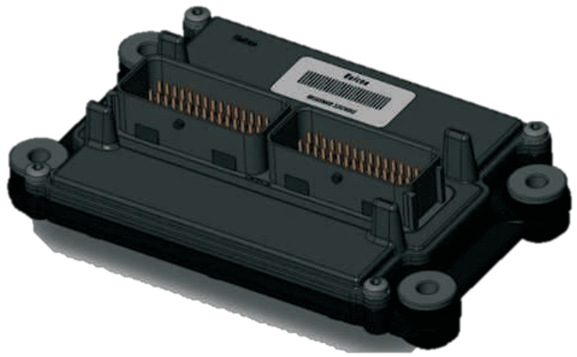
- Natural Gas
- Biogas
- Synth Gas
- Special Gas

Engine:

- Number of Cylinder:4-cylinder to 16-cylinder gas engine
- Displacement:3L-80L
- Type: Straight to V type

Environment:

- Altitude：0M to 3000M
- Ambient temperature：-40°F to 140°F
- Relative humidity：0~100%



Key Control Module ECU 90

- Advanced transient control
- 32 bit CPU
- The response speed of the engine control system ≤5ms.
- Accurate adaptive ignition control to ensure accurate ignition of each cycle.
- Perfect protection function
- Design of ignition drive circuit with overheat protection and in-rush protection function.
- Vibration monitoring, fault diagnosis, engine protection deceleration and shutdown function.
- Instantaneous current shock protection circuit design, meets the requirements of classification society certification.
- Strong adaptability
- 3 way independent communication link based on CAN bus
- Open interface, fully compatible with the world's top controller, such as DIFI.
- Can be mounted on engine body.

Low Pressure Fuel Control LSFI

LSFI: Intake Pressure:3~15 kPa

LSFI-330：300kW@NG

LSFI-660：660kW@NG

MSFI: Intake Pressure: 2~4.5 Bar

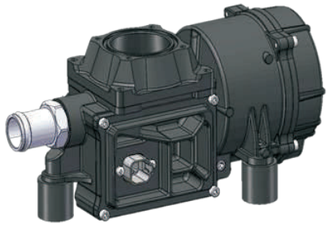
Forced induction

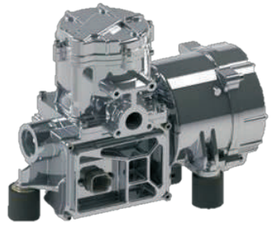
Applicable to 250kW Medium Pressure Engine

SFI： Intake Pressure：4.5~7 Bar

SFI-450：450HP @NG

SFI-300: 300HP @NG





- Continuous flow Injection
- Dirt and oil resistant
- High reliability
- Long term calibration stability
- Well established fault diagnosis

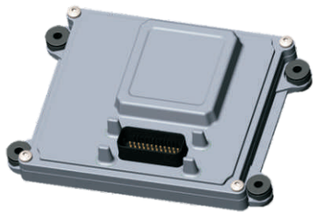
Ignition System Programme

No. of Cylinders	4	6	8	10	12	16	20	24

1 industrial ECU
(inductor: 60mJ)

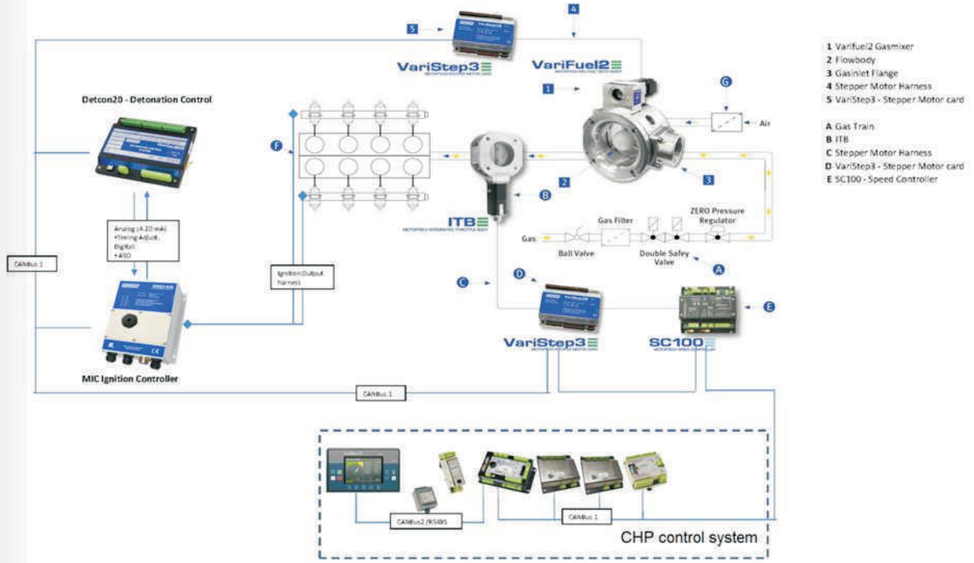
1 industrial ECU
1 CDI (Capacitor ignition controller)
(200mJ,300mJ,500mJ)

2 CDI
Parallel operation



- Ignition electric currency calibrable
- Ignition continuous time calibrable
- Hyper ignition energy, reliable ignition

2.4 Option-Motortech Gas Generator Control System



High Energy Ignition Controller

With 300 mJ primary energy, the new MIC3+ series provides a reliable combustion on engines up to 12 cylinders even with weakest or fluctuating caloric values of the gas. Next to high variable ignition energy, an accurate spark timing and diversified online diagnostics help to improve engine efficiency, spark plug life and availability of the equipment under the strictest emission regulations.

Air/Fuel Ratio Control Systems

In many countries of the world, alternative fuels like bio gases have taken over to become a major source for electricity production with gas engines. Due to the constantly changing quality or varying BTU levels, the

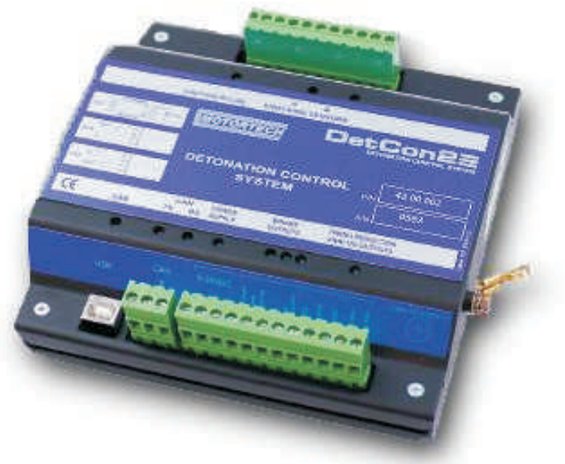
demand for more sophisticated Air/Gas mixing equipment has increased. MOTORTECH has designed a line of venture type mixers, their electronic controls and butterfly valves (throttles) to control the gas engines in a more accurate way.

Lean-Burn Emission Controller

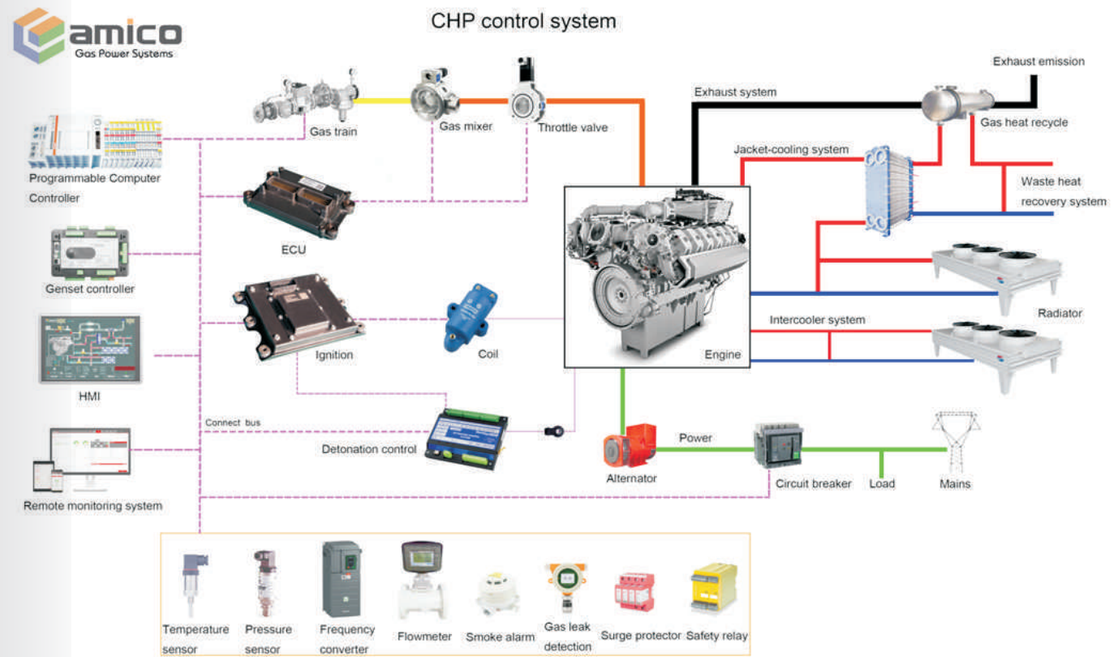
The EmCon5 is a lean-burn emission controller for gas engine co-generation units. It is designed to control the exhaust gas emission levels based on indirect measurements. Simply three input signals are required for the control purpose: manifold inlet pressure and temperature and engine load. A CH4 input signal is optional. Use of an oxygen sensor is not required.

Following initial measurements of the engine emission levels and successful analysis, the EmCon5 guarantees optimal operation of the gas engine at the predefined emission limits.

Detonation control system: Single cylinder sensors constantly monitor the sound level of the combustion chamber. If detonation is detected the system will take steps to eliminate detonation immediately.



2.5 AMICO CHP Control System CCS100



PLC Power Supply: 8 to 36 V DC

-Inputs sensor type: 0 to 20 mA DC, mV, ±10V DC, ±5V DC, ±2.5V DC, RTD

-Analog Outputs type: 0 to 20 mA DC, ±10V DC

10"HMI

-TFT Display/ 65535 colors

-Display resolution: 1024x 600

-1 x Ethernet, 1 x RS485/422, 1 x RS232

-USB1/USB2: 1 master, 1 slave

-Application memory: 128M

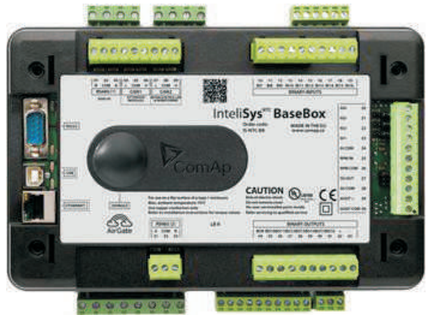
Design According to ESD and SIS System Principles:

-Includes original CHP control function block: heat-led and electricity-led.

-Many communication options-easy remote supervising and servicing, support Ethernet connection (RJ45), RS485 serial port.

-Consistent with IEC1131-3, support LAD (ladder diagram), STL (statement table), FBD (functional block diagram)
-Jacket water/Outlet water temperature PID control
-Jacket water pump, Outlet water pump, Intercooler pump, Cooling fan VFC function
-Flexible calibration of sensor and sensor fault detection
-Integrated fixed and configurable protections
-Record and display all data and alarm of engine and generator
ESD: Emergency Shutdown Device
SIS: Safety Instrumented System

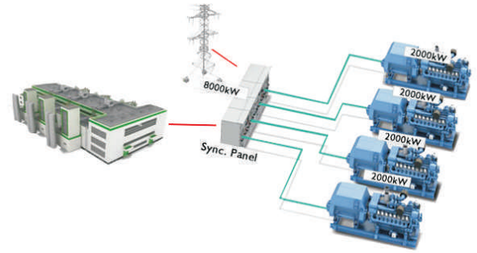
2.6 Option: ComAp CHP Controller



- Premium generator controller for both single and multiple gensets operating in standby or parallel modes
- Support of cogeneration (CHP) and other complex applications
- To be used in conjunction with detachable colour displays InteliVision 8 or InteliVision 5
- Complete integrated generator solution and signal sharing via CAN bus – minimum external components needed
- Many communication options – easy remote supervising and servicing
- Generator performance log for easy problem tracing
- Automatic synchronizing and control breaker
- Baseload, Import / Export, TempByPower, Peak shaving, Voltage and PF control (AVR)
- Generator measurement: U, I, Hz, kW, kVAr, kVA, PF, kWh, kVAhr
- Mains measurement: U, I, Hz, kW, kVAr, PF
- Selectable measurement ranges for AC voltages and currents – 120 / 277 V, 0–1 / 0–5 A
- True RMS (TRMS) is used with Voltage, Current and Power measurement
- Inputs and outputs configurable for various customer needs
- Bipolar binary output – possibility to use BO as High or Low side switch
- 1× RS232 / 2× RS485 interface with Modbus protocol support; Analog / GSM / ISDN / CDMA modem communication support; SMS messages; secondary RS485 converter is isolated
- AirGate support
- Ethernet connection (RJ45)
- USB 2.0 slave interface
- Event -based history (up to 4000 records) with customer-selectable list of stored values; RTC; statistic values
- Postmortem history (50 records)
- Integrated PLC programmable functions
- Integrated fixed and configurable protections
- Customized firmware solution

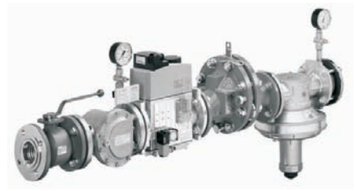
2.7 Paralleling & Grid Synchronizing Operation

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

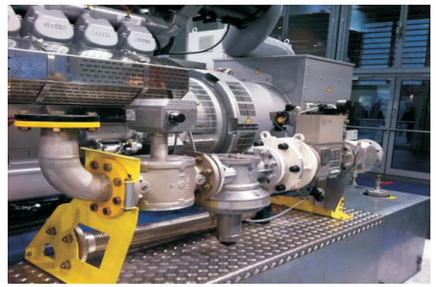


2.8 Gas Train

- AMICO offers high quality gas trains. The gas trains will be produced customer- and application specific, based on recognized European standards and guidelines.



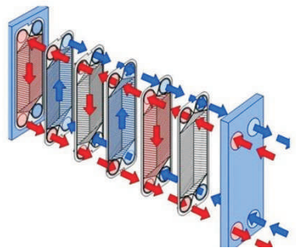
- Equipped with components such as ball valves, gas filter, double block & bleed solenoid valves, flame arrestor, pressure regulator, pressure switches. Most of the parts are from Kromschroeder or DUNGS Germany with CE certification.



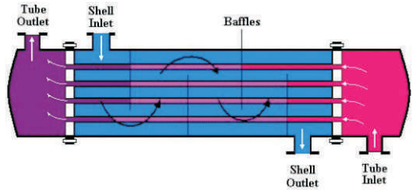
- All gas trains will be tested for leaks and function after assembly and prior to delivery, whereas all welded parts are strength tested.
- Our gas trains meet your local safety regulations.

2.9 Heat Recovery System

- The power produced during the CHP 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 to provide heat.



- Plate Heat Exchanger for Jacket Water Heat and for Oil Cooling
- Shell & Tube Heat Exchanger for Exhaust Gas
- Special anti-corrosion treatment

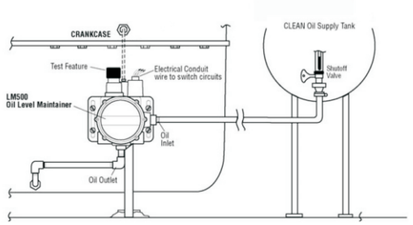


2.10 Automatic Oil Refilling System

- As crankcase oil level drops, the LM500 float also drops and opens the Thumb-Valve™. This allows oil to flow from the supply tank through the LM500 and into the crankcase

Pipe Mount

- When proper level is achieved in the crankcase, the LM500 float rises causing the Thumb-Valve to close off further oil flow
- If the clean oil supply is depleted and oil level continues to fall, the low-level switch will operate an alarm or equipment shutdown.



2.11 Digital & Modular Design

- Digital-center system with touch screen for easy data reading
- Intact parameter monitor and control of fuel, engine and alternator
- Monitor and control of pumps, valves and fans
- Support online and offline servicing
- Easy connection to the computer for convenient data share and control
- Achieving remote monitor and inspection, inspection aid and faults diagnosis
- Automatic oil refilling system for continuous unit running
- Extensible input and output control meeting the user's localization demands
- Biogas input, Electricity output and heat output, weatherproof and silent proof canopies all adopt modular design for convenient and fast installation and operation.
- Access doors are easily dismountable
- Outdoor type units can be used directly outdoors without engine rooms

2.12 High Safety

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

- **Cylinder Temperature Protection System (Option)**
  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 (Option)**
  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 for Silent Type**
  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 for Silent Type

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 generator unit stops or open them when generator 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.

Lighting System for Silent Type

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

Air Circuit Breaker

The 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.

2.13 High Durability

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 standards.

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 Containerized Canopy

-Made of corten steel, the containerized canopy is manufactured as ISO standard 20ft or 40ft 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.

-Anti-locking mechanisms are equipped inside both sides of the canopy to avoid personnel being locked.

-Both weather proof and silent canopies are available.

-Specially treated for your specific application. 10 year outdoor guaranteed.

-Sound level is 65dB(A) @ 10 meters for silent canopy and super silent one is available on request.

High-Strength Base Frame

High quality steel monocoque base frame with reinforcement design is manufactured with advanced welding technology. Base frame adopts waterproof design to avoid leakage of coolant and lube oil.

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.

2.14 The Custom-made Solution for Your Specific Application

Your biogas generators /CHPs may apply to:

-Hot weather area

-Cold weather area

-Salty or dusty or corrosive places….

Do not worry. Contact our sales staff and get a custom-made solution for your specific application.

3 Natural Gas mCHPs with Water Cooled Asynchronous Alternators 20-50kWe

- mCHP: Micro Combined Heating & Power
- Continuous running, 24-7-365
- Quality Warranty: 5,000 running hours or 18 months after delivery
- Legend: AMC-AMICO, N-Natural Gas, S-Silent Canopy, C-Cogen, AS-Water Cooled Asynchronous Alternator
- All mCHPs must be connected with the Grid, not possible for island use

3.1 Model List –mCHPs with AS Alternators, 50Hz, 400V/230V, 1500RPM, H-125/40, PF=1

Line	CHP/COGEN Model #	COP Elec. Power	Efficiency			Gas Engine Model #	Zanardi Alternator Model #
			Elec.	Thermal	Total		
1	AMC20NSC-AS	20 kWe	30.1%	71.4%	101.5 %	AMC 4Y	AS225/4120WC50
2	AMC30NSC-AS	30 kWe	31.8%	70.0%	101.8%	AMC 4B	AS225/4200WC50
3	AMC50NSC-AS	50 kWe	32.5%	69.5%	102.0%	AMC 6B	AS225/4370WC50

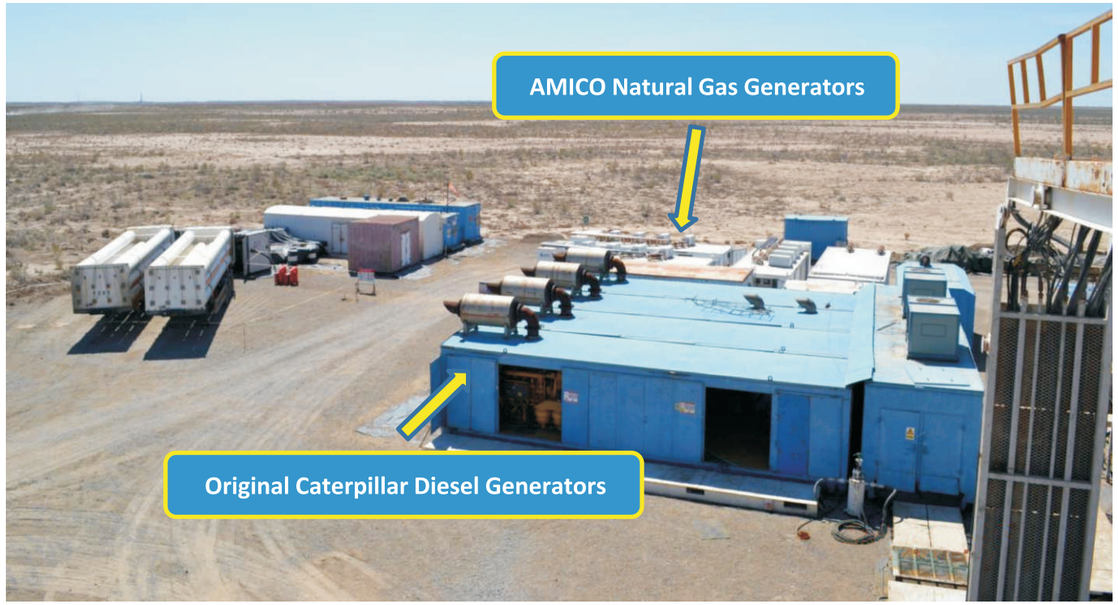
3.2 Model List –mCHPs with AS Alternators, 60Hz, 480V/277V, 1800RPM, H-125/40, PF=1

Line	CHP/COGEN Model #	COP Elec. Power	Efficiency			Gas Engine Model #	Zanardi Alternator Model #
			Elec.	Thermal	Total		
1	AMC20N6SC-AS	20 kWe	30.1%	71.7%	101.8%	AMC 4Y	AS225/4120WC60
2	AMC30N6SC-AS	30 kWe	32.1%	70.0%	102.1%	AMC 4B	AS225/4200WC60
3	AMC50N6SC-AS	50 kWe	32.8%	69.4%	102.2%	AMC 6B	AS225/4370WC60

Brochure of Natural Gas mCHPs with Water Cooled Asynchronous Alternators:
Please contact our int'l sales staff to get detailed brochure.

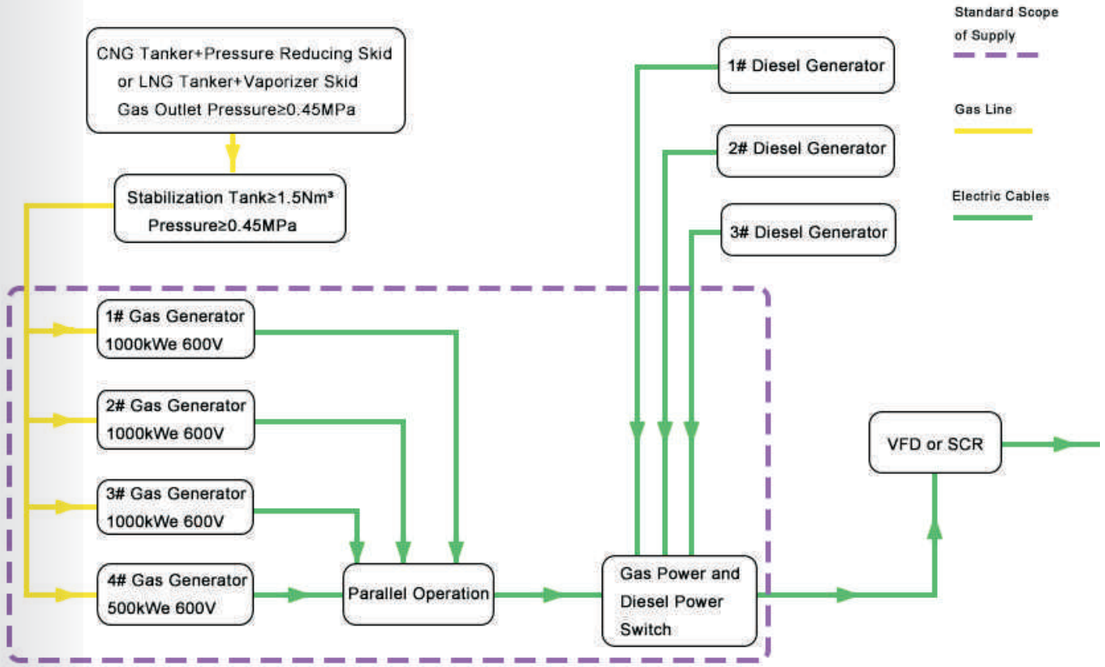
4 Natural Gas Generators for Electrical Drilling Rigs

We manufacture natural gas generators for electrical drilling rigs and natural gas engine modules for mechanical drilling rigs.



Using AMICO Natural Gas Generators to Replace Original Caterpillar Diesel Generators

4.1 Scheme of Using Natural Gas Generators to Replace Diesel Generators



Scheme of Using Natural Gas Generators to Replace Diesel Generators

4.2 Power Range

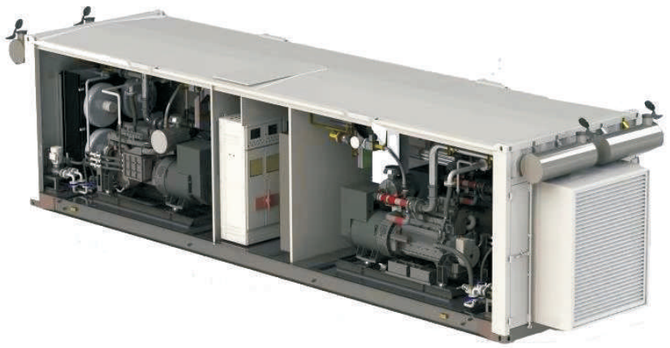
250kW-5,000kW/600V/50Hz/60Hz, or any power you need.

Scheme 1: Gas Generators Powered by Steyr Gas Engines

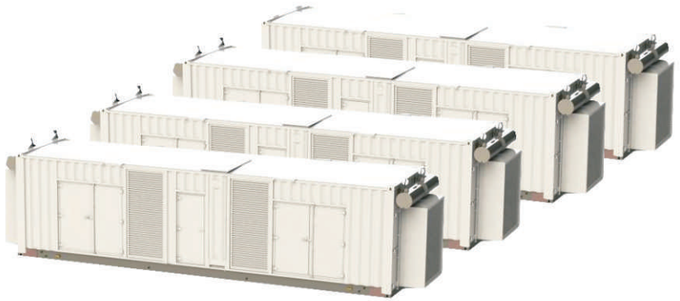
3×E-BoxS1000 + 1xE-BoxS500=3,500kWe, with parallel operation.

-each E-BoxS1000 consists of 4×250kWe natural gas generators with parallel operation.

-each E-BoxS500 consists of 2×250kWe natural gas generators with parallel operation.



Each E-BoxM1000 Consists of 4×250kWe Gas Generators



A Typical Application of 3,500kWe

Scheme 2: Gas Generators Powered by MAN E3262 LE212 Gas Engines

3×E-BoxM1000 + 1xE-BoxM500=3,500kWe, with parallel operation.

-each E-BoxM1000 consists of 2×500kWe natural gas generators with parallel operation.

-each E-BoxM500 consists of 1x500kWe natural gas generator with parallel operation of E-BoxM1000.

Brochure of Natural Gas Generators & Engine Modules for Drilling Rigs:

Please contact our int'l sales staff to get detailed brochure.

5 Model List-Prime/Standby Natural Gas Generators

5.1 Model List-Prime/Standby Natural Gas Generators, 50Hz, 400V/230V, 1500RPM, H-125/40, PF=1

Quality Warranty: 5,000 running hours or 12 months.

Legend: AMC-AMICO, N-Natural Gas, S-Silent Canopy/Optional

Line	Genset Model #	Prime Power	Elec. Efficiency	Gas Engine Model #	Meccalte Alternator Model #
1	AMC18NS	18 kWe	29.6 %	AMC 4Y	ECP28-VL4A(24kW)
2	AMC30NS	30 kWe	31.8 %	AMC 4B	ECP32-3S4B(34kW)
3	AMC40NS	40 kWe	34.4 %	AMC 4BTAA	ECP32-2M4B(50kW)
4	AMC50NS	50 kWe	32.5 %	AMC 6B	ECP32-3L4B(60kW)
5	AMC90NS	90 kWe	36.3 %	AMC 6BTAA	ECP34-1L4A(108kW)
6	AMC120NS	120 kWe	36.2 %	AMC 6CTAA	ECO38-1S4A(144kW)
7	AMC150NS	150 kWe	36.8 %	AMC 6LTAA	ECO38-1L4A(200kW)
8	AMC160NS	160 kWe	37.3 %	Steyr T10	ECO38-1L4A(200kW)
9	AMC220NS	220 kWe	36.5%	AMC NTAA855	ECO38- 2L4A(240kW)
10	AMC250NS	250 kWe	37.3 %	Steyr T12	ECO38-3L4A(280kW)
11	AMC300NS	300 kWe	37.8%	AMC KTAA19	ECO40-2S4A(360kW)
12	AMC500NS	500 kWe	38.2%	AMC KTAA38	ECO40-2L4(544kW)

5.2 Model List-Prime/Standby Natural Gas Generators, 60Hz, 480V/277V, 1800RPM, H-125/40, PF=1

Quality Warranty: 5,000 running hours or 12 months.

Legend: AMC-AMICO, N-Natural Gas, S-Silent Canopy/Optional, 6-60Hz

Line	Genset Model #	Prime Power	Elec. Efficiency	Gas Engine Model #	Meccalte Alternator Model #
1	AMC20N6S	20 kWe	30.1 %	AMC 4Y	ECO28-2L4A(24Kw)
2	AMC33N6S	33 kWe	32.1 %	AMC 4B	ECP32-3S4B(40.8Kw)
3	AMC45N6S	45 kWe	32.4 %	AMC 4BTAA	ECP32-1M4B(48Kw)
4	AMC55N6S	55 kWe	32.5 %	AMC 6B	ECP32-2M4B(60Kw)
5	AMC90N6S	90 kWe	35.3 %	AMC 6BTAA	ECP34-2S4A(101Kw)
6	AMC120N6S	120 kWe	36.2 %	AMC 6CTAA	ECP34-1L4A(130Kw)
7	AMC160N6S	160 kWe	36.8 %	AMC 6LTAA	ECO38-2S4A(192Kw)
8	AMC180N6S	180 kWe	37.3 %	Steyr T10	ECO38-3S4A(216Kw)
9	AMC220N6S	220 kWe	37.5%	AMC NTAA855	ECO38-1L4A(240Kw)
10	AMC250N6S	250 kWe	37.3 %	Steyr T12	ECO38-2L4A(288Kw)
11	AMC320N6S	320 kWe	37.8%	AMC KTAA19	ECO40-1L4A(384Kw)
12	AMC550N6S	550 kWe	38.5%	AMC KTAA38	ECO40-1.5L4A(595Kw)

6 Natural Gas Generators & CHPs/CCHPs
--Reliable, Efficient, Digital--

CHP: Combined Heating & Power
For Continuous Running, 24-7-365
Quality Warranty: 5,000 running hours for CHPs powered by made-in-China engines and 8,000 hours for made-in-Germany MAN & MWM engines
Legend: AMC-AMICO, N-Natural Gas, S-Silent Canopy/Optional, C-Cogen

6.1 Model List- COP Natural Gas Generators & CHPs/CCHPs, 50Hz, 400V/230V, 1500RPM, H-125/40, PF=1

Line	CHP/COGEN Model #	COP Elec. Power	Efficiency			Gas Engine Model #	Meccalte/ Marelli Alternator Model #
			Elec.	Thermal	Total		
Natural Gas Gensets/CHPs Powered by Made-in-China Gas Engines							
1	AMC18NSC	18 kWe	29.60%	52.30%	81.90%	AMC 4Y	ECP28-VL4A(24kW)
2	AMC30NSC	30 kWe	31.80%	49.00%	80.80%	AMC 4B	ECP32-3S4B(34kW)
3	AMC40NSC	40 kWe	34.40%	49.40%	83.80%	AMC 4BTAA	ECP32- 2M4B(50kW)
4	AMC50NSC	50 kWe	32.50%	47.10%	79.60%	AMC 6B	ECP32- 3L4B(60kW)
5	AMC90NSC	90 kWe	36.30%	47.60%	83.90%	AMC 6BTAA	ECP34-1L4A(108kW)
6	AMC120NSC	120 kWe	36.20%	46.50%	82.70%	AMC 6CTAA	ECO38-1S4A(144kW)
7	AMC150NSC	150 kWe	36.80%	46.30%	83.10%	AMC 6LTAA	ECO38-1L4A(200kW)
8	AMC160NSC	160 kWe	37.30%	50.30%	87.60%	Steyr T10	ECO38-1L4A(200kW)
9	AMC200NSC	200 kWe	37.30%	42.80%	80.10%	Steyr T12	ECO38- 2L4A(240kW)
10	AMC220NSC	220 kWe	36.50%	46.80%	83.30%	AMC NTAA855	ECO38- 3L4A(280kW)
11	AMC300NSC	300 kWe	37.80%	45.60%	83.40%	AMC KTAA19	ECO40- 2S4A(360kW)
12	AMC500NSC	500 kWe	38.20%	47.20%	85.40%	AMC KTAA38	ECO40-2L4(544kW)
Natural Gas Gensets/CHPs Powered by Made-in-Germany MAN Gas Engines							
13	AMC200NSC	200kWe	41.7%	44.4%	86.10%	MAN E2676 LE202	ECO38-2L4A(240kW)
14	AMC250NSC	250kWe	38.2%	49.3%	87.50%	MAN E3262 E302	ECO38-3L4A(280kW)
15	AMC350NSC	350kWe	40.9%	44.8%	85.70%	MAN E3268 LE212	ECO40- 3S4B(400kW)
16	AMC420NSC	420kWe	39.6%	46.4%	86.00%	MAN E3262 LE232	ECO40-1.5L4B(500kW)
17	AMC520NSC	520kWe	40.0%	45.9%	85.90%	MAN E3262 LE202	ECO40-VL4B(600kW)
Natural Gas Gensets/CHPs Powered by Made-in-Germany MWM Gas Engines							
18	AMC400NSC	400 kWe	43.1%	43.6%	86.7%	MWM TCG3016V08	ECO40-1.5L4B(500kW)
19	AMC600NSC	600 kWe	43.3%	44.6%	87.9%	MWM TCG3016V12	ECO43- 2S4A(744kW)
20	AMC800NSC	800 kWe	43.5%	44.6%	88.1%	MWM TCG3016V16	ECO43- 2M4A(920kW)
21	AMC1000NSC	1000 kWe	43.0%	45.4%	88.4%	MWMTCG2020V12	MJB450LA4
22	AMC1200NSC	1200 kWe	43.6%	43.3%	86.9%	MWM TCG2020V12	MJB450LB4
23	AMC1500NSC	1500 kWe	40.9%	45.7%	86.6%	MWM TCG2020V16K	MJB500MC4
24	AMC2000NSC	2000 kWe	42.4%	42.5%	86.9%	MWMTCG2020V20	MJB560LA4
25	AMC3333NSC	3333 kWe	43.9%	42.6%	86.5%	MWM TCG2032V12	MJB800MB6
26	AMC4500NSC	4500 kWe	42.6%	43.2%	87.8%	MWM TCG2032BV16	MJH800MC6

Remarks:

- Other voltages like 380V, 415V, 440V, etc. are available on request.
- Each CHP consists of gas train, continuous oil supply system & remote radiator. All CHPs are with public grid synchronizing device.
- Power & electrical efficiency are based on ISO3046/1 conditions. Heat is based on exhaust gas @120°C
  The technical data are based on natural gas with a calorific value of 10 kWh/Nm³ and a methane no. > 80
  Standard conditions: atmospheric pressure absolute: 100 kPa, air temperature 25 °C, relative air humidity 30 %
  The tolerance for the specific fuel consumption is + 5 % at rated output
  The tolerance for the usable heat is 7 % at rated output
  The coolant data are based on a 40 % portion of antifreeze

6.2 Model List- COP Natural Gas Generators & CHPs/CCHPs, 60Hz, 480V/277V, 1800RPM, H-125/40, PF=1

Line	CHP/COGEN Model #	COP Elec. Power	Efficiency			Gas Engine Model #	Meccalte/ Marelli Alternator Model #
			Elec.	Thermal	Total		
Natural Gas Gensets/CHPs Powered by Made-in-China Gas Engines							
1	AMC20N6SC	20 kWe	30.1%	52.3%	82.40%	AMC 4Y	ECO28-2L4A(24kW)
2	AMC33N6SC	33 kWe	32.1%	49.0%	81.10%	AMC 4B	ECP32-3S4B(40.8kW)
3	AMC45N6SC	45 kWe	32.4%	49.4%	81.80%	AMC 4BTAA	ECP32-1M4B(48kW)
4	AMC55N6SC	55 kWe	32.5%	48.1%	80.60%	AMC 6B	ECP32-2M4B(60kW)
5	AMC90N6SC	90 kWe	35.3%	47.6%	82.90%	AMC 6BTAA	ECP34-2S4A(101kW)
6	AMC120N6SC	120 kWe	36.2%	46.5%	82.70%	AMC 6CTAA	ECP34-1L4A(130kW)
7	AMC160N6SC	160 kWe	36.8%	50.3%	87.10%	Steyr T10	ECO38- 2S4A(192kW)
8	AMC180N6SC	180 kWe	37.3%	46.3%	83.60%	AMC 6LTAA	ECO38-3S4A(216kW)
9	AMC220N6SC	220 kWe	37.5%	42.8%	80.30%	Steyr T12	ECO38-1L4A(240kW)
10	AMC250N6SC	250 kWe	37.3%	46.8%	84.10%	AMC NTAA855	ECO38-2L4A(288kW)
11	AMC320N6SC	320 kWe	37.8%	45.6%	83.40%	AMC KTAA19	ECO40-1L4A(384kW)
12	AMC550N6SC	550 kWe	38.5%	47.2%	85.70%	AMC KTAA38	ECO40-1.5L4A(595kW)
Natural Gas Gensets/CHPs Powered by Made-in-Germany MAN Gas Engines							
13	AMC240N6SC	240kWe	39.5%	44.1%	83.6%	MAN E2676 LE202	ECO38-2L4A(288kW)
14	AMC280N6SC	280kWe	37.3%	52.1%	89.4%	MAN E3262 E302	ECO38-3L4A(336kW)
15	AMC370N6SC	370kWe	38.4%	45.3%	83.7%	MAN E3268 LE212	ECO40-22S4B(432kW)
16	AMC420N6SC	420 kWe	38.0%	47.9%	85.9%	MAN E3262 LE232	ECO40- 3S4B(480kW)
17	AMC560N6SC	560 kWe	38.8%	48.4%	87.2%	MAN E3262 LE202	ECO40-2L4B(653kW)
Natural Gas Gensets/CHPs Powered by Made-in-Germany MWM Gas Engines							
18	AMC400N6SC	400 kWe	42.1%	45.0%	87.1%	MWM TCG3016V08	ECO40-3S4A(480kW)
19	AMC600N6SC	600 kWe	42.4%	45.7%	88.1%	MWM TCG3016V12	ECO40- VL4A(720kW)
20	AMC800N6SC	800 kWe	42.6%	45.5%	88.1%	MWM TCG3016V16	ECO43-2S4A(893kW)
21	AMC1125N6SC	1125 kWe	40.7%	45.6%	86.3%	MWM TCG2020V12K	MJB450LA4
22	AMC1200N6SC	1200 kWe	43.4%	43.2%	86.6%	MWM TCG2020V12	MJB450LB4
23	AMC1500N6SC	1500 kWe	40.6%	45.7%	86.3%	MWM TCG2020V16K	MJB500MC4
24	AMC2000N6SC	2000 kWe	43.4%	43.2%	86.6%	MWM TCG2020V20	MJB560LA4
25	AMC3000N6SC	3000 kWe	43.9%	42.1%	86.0%	MWM TCG2032V12	MJB800MB6
26	AMC4000N6SC	4000 kWe	43.8%	42.4%	86.2%	MWM TCG2032V16	MJH800MC6

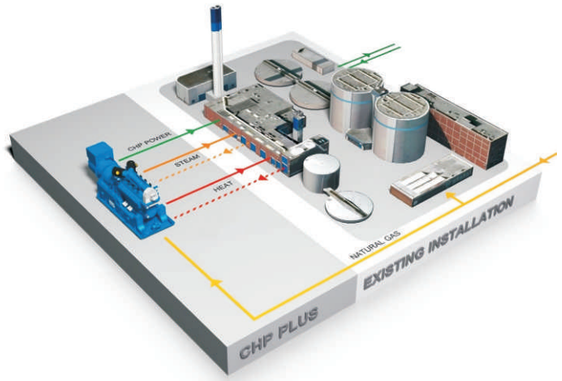
Remarks:

- Other voltages like 415V, 440V, 460V, etc. are available on request.
- Each CHP consists of gas train, continuous oil supply system & remote radiator. All CHPs are with public grid synchronizing device.

- Power & electrical efficiency are based on ISO3046/1 conditions. Heat is based on exhaust gas @120°C
  The technical data are based on natural gas with a calorific value of 10 kWh/Nm³ and a methane no. > 80
  Standard conditions: atmospheric pressure absolute: 100 kPa, air temperature 25 °C, relative air humidity 30 %
  The tolerance for the specific fuel consumption is + 5 % at rated output
  The tolerance for the usable heat is 7 % at rated output
  The coolant data are based on a 40 % portion of antifreeze

6.3 CHPs with Output of Steam

The high temperature exhaust goes to the boiler producing both hot water and steam with various temp. and pressure.



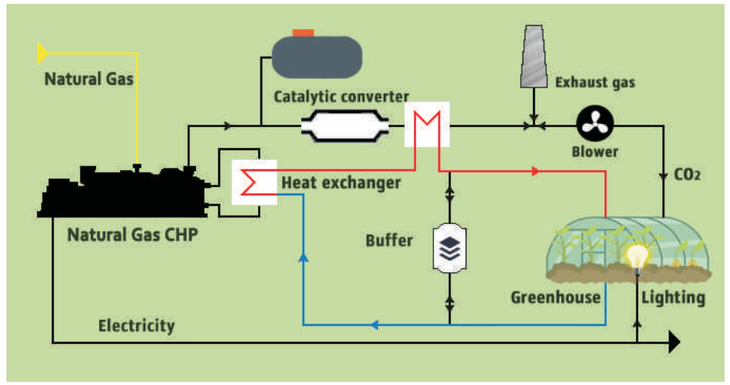
6.4 Producing CO2 for Greenhouse Plants Fast Growth

Exhaust Gas Purification:

After the purification of the exhaust gas with a special catalytic converter, the exhaust gas is cooled down by a heat exchanger to about 55°C and supplied to the greenhouse for CO2 enrichment.

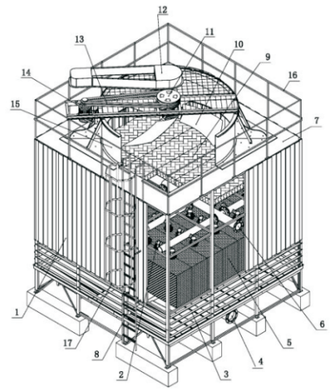
Increasing Harvest Yield by Enriching CO_2 :

Plants grow by converting CO_2 to carbon through photosynthesis. With increased artificial lighting, plants in greenhouses absorb even more CO_2. If the greenhouse is enriched with CO_2, the temperature kept on a constant level and sufficient lighting, plant growth and the harvest yield can be increased greatly.



7 Natural Gas CCHPs 200-4,500kWe

Due to economic reason, suggested CCHPs start from 200kWe.



The LiBr Absorption Chiller & Cooling Tower

7.1 The Custom-made Solution for Your Specific Applications

All our CCHPs are designed according to your specific requirements, please contact our sales staff and get a custom-made solution for your own applications.

7.2 The LiBr Absorption Chillers: Unit cooling capacity: 100kW - 11630kW

All our chillers are made by Deepblue, a Leader of Waste Heat Utilization Technology.
For detail information, please contact：

Mr. Paul / Oversea Sales Manager

Cell Phone: +86-156 8000 9866,

Email: young@dlhope.com

Website: www.slhvac.com

Hope Deepblue

8 Certificates

Our management and products have been certified by the relevant authorities.

- Certificate of Quality Management: ISO 9001-2015
- Certificate of Environmental Management System 2016/ISO 14001:2015
- Certificate of Occupation Health & Safety Management System: OHSAS 18001:2007
- EC Examination Certificate: Machinery Directive 2006/42/EC & the Low Voltage Directive 2014/35/EU
- UL, CSA & EPA Certificates: can be certified on request

9 Enquiry Form for Your Application

Customer name:						
CHP/Generator	CHP/COGEN		Generator (electricity only)			
Power(kWe):	COP (24/7)		Prime Power (hours per day)			
Quantity						
Hz & Voltage:						
Electricity is used for	Island Use		Grid		Parallel Yes/No	

Natural Gas Composition			General Data		
CH_4-Methane (C_1):	%:		Density (at 0 deg.C,101,325 kPa):		kg/m³
CO_2-Carbon Dioxide:	%:		Minimum heating value Hu		kWh / Nm³
N_2-Nitrogen:	%:		Available gas pressure on site		mbar
C_2H_6-Ethane (C_2):	%:		Methane Number:		
C_3H_8-Propane (C_3):	%:		Gas Type		
C_4H_{10}-Butane (C_4):	%:		PNG / CNG / LNG / Other		
C_5H_{12}-Pentane (C_5):	%:				
Sulphur (S):	mg/m³ :		Emission		
Hydrogen Sulphide (H_2S):	mg/m³ :		Emission: No Limit / TA luft / ½TA luft or other		
Chlorine (Cl):	mg/m³ :		EPA or other		
Fluorine (Fl):	mg/m³ :		Onsite Ambient Condition		
Silica (Si):	mg/m³ :		Highest/lowest Temp. / Altitude. / Humidity.		
Ammonia (NH_3):	mg/m³ :		Ambient: Clean) / Dusty/ Salt /other		
Dust Particles (3-10m):	mg/m³ :		Installation: Silent Canopy / Engine Room-Open Type / (other)		

amico
Gas Power Systems

LEADING GAS ENGINE &
GAS GENERATOR / CHP TECHNOLOGIES

amico
Gas Power Systems

AMICO GAS POWER CO.,LTD.
成都安美科燃气技术股份有限公司

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