

TECHNICAL DESCRIPTION SCOPE OF SUPPLY - MODULE

GC...N..
..3066D3

For Gas Cogeneration Module



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1 General Description

The module is made up of the following main groups:

- Engine (including gas control unit)
- Generator
- Heat discharge
- MMC (for system control, control, diagnosis)
- Sound insulating enclosure

In the internal combustion engine the energy contained in the fuel is converted into mechanical work and heat.

The generator which converts the mechanical work into electrical energy is connected to the engine by means of a flexible coupling. The connecting bell is equipped with a service opening, allowing the exchange of the coupling collar without shifting the engine or generator. The engine and the generator are connected to the base frame via flexible, vibration-dampening elements.

The engine coolant draws off the engine heat and the volume of heat removed from the exhaust gas by means of the exhaust heat exchanger. The drawn-off heat is fed to the heating water system via a plate heat exchanger. This plate heat exchanger, the exhaust unit with lambda probe and catalytic converter (option) are fully encased and installed in the base frame.

The plate heat exchanger represents the interface between the module and the on-site heating system.

All regulators, controllers and monitoring systems, as well as communication to and from outside, are implemented by means of the hardware and software from inside the control cabinet.

2 Control System

The control system contains all monitoring functions and control mechanisms necessary for operation. The MMC contains the evaluation and processing of all engine sensory modules as well as all necessary auxiliary drives and control functions of the system.

The control system includes the following components:

- Industrial PC (IPC) with touch screen, operating system, display, alarm logger and M-Graph
- Computer programmable control (CPC)
- Extension module (bus receiver)
- Various interfaces
- Activation of auxiliary drives

3 General Description of Engine

The 4-stroke Otto gas-aspirated series 400 engine operates in lambda-1 mode.

The engine is operated without supercharge and mixture cooler.

The air is not precompressed as it is in a turbocharger; instead, the movement of the pistons in the cylinders generate a vacuum which draws in the air.

The following components should be highlighted for series 400 engines:

- Crankcase with single cylinder heads
- Wet cylinder liners
- Gas supply via venturi mixer and lambda control valve
- Computer-controlled high-voltage capacitor ignition system with one ignition coil per cylinder
- Speed and power control with electronic speed controller with electric actuator acting on mixture throttle valve
- Gear pump for force-fed oil lubrication, oil cooler and oil filter
- Dry filter cartridge with maintenance indicator

4 Generator and Coupling

The torque generated by the engine is transferred to the generator by means of a highly flexible disc coupling. This drives the (magnetically excited) rotor of the generator and induces an alternating voltage in the coils of the stator.

Before the generator can be connected to the mains, the frequency, voltage and phase angle between the generator and mains must be synchronised.

The generator is designed as synchronous generator with power factor and voltage regulator. This keeps the power factor ($\cos\phi$) to the preset setpoint independent from system voltage fluctuations or load changes.

5 Gas System

Gas control unit is supplied loose with the following components:

- Gas filter
- Deflagration safety (only for bio / landfill and sewer gas)
- Double solenoid valve
- Valve tightness check
- Pressure regulator (zero pressure regulator)
- Gas control valve for lambda control
- Flexible stainless steel line to the engine

6 Colour Scheme

Engine, generator	RAL 9006
Frame	RAL 5002
EIP / MIP control cabinet	RAL 7035
Sound insulating enclosure	RAL 7035

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