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# ecoGEN-50SG

## High efficiency COGENERATION Unit



|                                 |   |
|---------------------------------|---|
| Fuel                            | Natural Gas, LPG  |
| Operation mode                  | Mains parallel operation                                  |
| Electrical Output               | <b>50 kW</b> (50% modulation range)                       |
| Thermal Output                  | <b>84 kW</b> (95,7kW T <sub>return</sub> < 40 °C & cond.) |
| Fuel consumption                | 147 kW (according ISO 3046-1 tol. 5%)                     |
| Total efficiency                | 91,2% (95,7kW T <sub>return</sub> < 40 °C & cond.)        |
| Electrical & Thermal efficiency | 34% & 57,1%   |
| Voltage                         | 3x 400 VAC  |
| Cos φ                           | 1   |
| Exhaust gas emissions (NOx/CO)  | 125/150 mg/Nm3 (at 5% remainingO <sub>2</sub> )           |
| Sound pressure level            | 66 dB/A (at 1m distance)                                  |
| Exhaust gas temperature         | max 90 °C   |
| Return temperature              | max 70 °C   |

| ENGINE              |                |
|---------------------|----------------|
| Brand & type        | MAN E0834 E302 |
| Cilinders           | In line        |
| Number of cilinders | 4              |
| Operation           | 4 stroke       |
| Displacement        | 4,85 liters    |
| Nominal eng speed   | 1500 rpm       |
| Nominal power       | 54 kW          |

| GENERATOR       |             |
|-----------------|-------------|
| Type            | Synchronous |
| Cooling         | Air cooled  |
| Power           | 78 kW       |
| Voltage         | 3x400 VAC   |
| Frequency       | 50 Hz       |
| Nominal current | 115 A       |
| Operating mode  | Star        |

| DIMENSIONS, WEIGHT & HYDRAULIC CONNECTIONS |         |                        |        |
|--|---------|------------------------|--------|
| Length                                     | 2900 mm | Flow connection        | R 1" ½ |
| Width                                      | 1000 mm | Return connection      | R 1" ½ |
| Height                                     | 1850 mm | Exhaust gas connection | DN80   |
| Weight                                     | 1850 kg | Gas connection         | R 1"   |

### Construction

Folded steel bottom frame with watertight drip-tray. Engine and generator mounted on a base frame with vibration dampers. Three integrated heat exchangers: cooling circuit, exhaust collector and exhaust gases, (and optional condenser). Separate electric control cabinet.

### Engine start-up

Electrical starter with batteries. The CHP-unit can start with grid power (ie as emergency power supply system)

### Gas supply

Fuelling system including a pressure switch, pressure reducing valve, and 2 solenoid valves.

### Heating circuit

Integrated hot water exit temperature regulation. Taking return temperature readings via a three-way valve is not necessary.

### Acoustic and thermal insulation

The acoustic and thermal insulation is made of a perforated galvanised steel sheet, a sound absorber, and 50 mm of rock wool. This all reinforced by an external housing of 1.5 mm thick painted steel sheet. The cover and two face panels are removable for ease of maintenance.

### Load modulation.

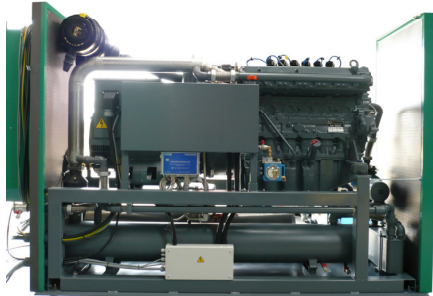
The electric output can be modulated from 100% to 50% of the rated output. Partial-load operation is controlled by the return temperature or by an optional module that limits power generation in order to follow the electricity demand curve (ie to prevent grid injection)

### Exhaust system

Stainless steel two-stage exhaust gas exchanger mounted on the engine. Integrated catalytic converter and Lambda regulation. External silencer with standard connection kit.

### Optional Heat recovery condenser.

An optional heat recovery condenser can be ordered. Maximum heat recovery is achieved with return temperatures below 40 °C.



### Control cabinet

Integrated relay and control box integrated in the module's cowling. External control and monitoring display unit for vertical mounting.

### Programmable regulation unit

Multifunction programmable unit for displaying data, recording parameters, performing diagnostics, measuring output, and metering electric energy.

### Functions

- Automatic start/stop function
- Operating safety functions
- Diagnostics
- Room thermostat function
- Programmable timer
- Constant output regulation
- Possibility of additional regulation of two external three-way valves
- Primary circuit temperature regulation by an external sensor
- .....

### Protective features, engine & alternator:

- Engine overspeed detection
- Engine underspeed detection
- Oil pressure detection
- Engine overheating detection
- Exhaust overheating detection
- Water flow temperature monitoring
- Water return temperature monitoring
- Primary circuit leak detection
- Alternator overheating detection
- .....

### Grid protection/cos $\Phi$ compensation

- Management of 3-phase mains protection according to SYNERGRID or VDE0126 standard.
- Synchronisation and cos  $\Phi$  regulation are included in the control box.

### Outputs

- Fault signal
- Operating signal
- Secondary circuit circulation pump
- Gas EV charge control

### Inputs

- External control (4-20 mA)
- External enable (dry contact)
- Accumulator temperature

### Control switches

- Main power switch
- Programmable unit's keypad
- On switch

### Display panel (backlit LCD graphic screen)

- Real-time electric output
- Generated electric energy
- Alternator current
- Operating hours counter
- Maintenance counter
- Engine temperature
- Exhaust gas temperature.
- Water flow temperature
- Water return temperature
- Boilers maximum temperature
- Faults and diagnostics
- .....

### Options

- Controls for auxiliary boiler, 3-way valves, preparation of domestic hot water
- Remote control via Internet
- Demand-dependent electricity generation
- Emergency power supply
- .....