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ecoGEN-12SD



COGENERATION UNIT

Fuel	DIESEL, heating oil
Operation	Mains parallel operation
Electric output	12 kW
Heat rating	24 kW
Fuel consumption	4,4 ltr/hr (according to ISO 3046-1 tol. of 5%)
Overall efficiency	85,9%
Elec. & Therm. efficiency	28,6% & 57,2%
Voltage	3 x 400 VAC
Cos φ	1
Emissions (NOx/CO)	1400/300 mg/Nm ³ (at 5% O ₂)
Sound level	62 dB(A) at 1m
Flow temperature	max 85 °C
Return temperature	max 70 °C

ENGINE

Type	Kubota V 2203 BG
Cylinder arrangement	In line
Number of cylinders	4
Cycle	4-stroke diesel
Capacity	2,20 ltr
Rated speed	1500 rpm
Rated power	19 kW at 1500 rpm

GENERATOR

Type	Synchronous
Cooling	Air cooled
Power rating	17 kVA
Voltage	400 V (3-phase)
Frequency	50 Hz
Rated current	29 A
Winding	Star

DIMENSIONS, WEIGHT, AND HYDRAULIC CONNECTIONS

Length	1750 mm	Outflow connection	R 1"
Width	770 mm	Return connection	R 1"
Height	1200 mm	Exhaust	R 1 1/2"
Weight	850 kg	Connection	D8

Construction

Steel section bottom frame with watertight drip-tray.
 Engine and generator mounted on the base frame with vibration dampers.
 Three integrated heat exchangers: cooling circuit, exhaust collector and exhaust gases.
 Integrated electric control cabinet.

Engine start-up

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

Fuelling

The unit is fuelled by means of an electric pump outside the gear units. The fuel filter is incorporated in the unit.

Heating circuit

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

Acoustic and thermal insulation

The acoustic and thermal insulation consists of a perforated galvanised steel sheet, a sound absorber, and 80 mm of rock wool. This is all reinforced by an external housing of 1.5 mm thick painted steel sheet. The cover and two faces are removable for easy maintenance of the unit.

Load modulation.

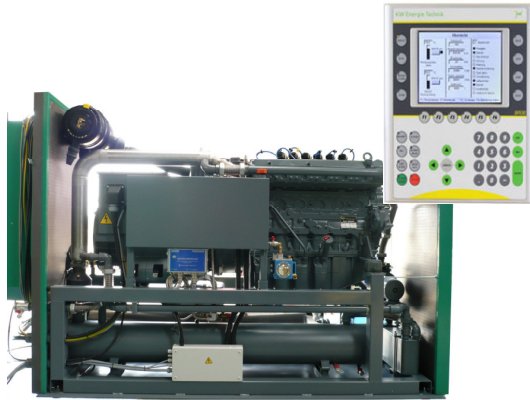
The electric output can be modulated from 50% to 100% of the rated output. Partial-load operation is controlled by the return temperature or by an optional module that limits power generation in order to follow the electricity demand curve.

Exhaust system

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

Heat recovery condenser (optional).

The unit is available with an optional condenser to recover heat through condensation. 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
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Protective features, engine & generator

- 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
- Generator overheating detection
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Grid protection/cos Φ compensation

- Management of 3-phase mains protection according to SYNERGRID or VDE0126 standard.
- Synchronisation and cos Φ 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)
- Boiler 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
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Options

- Controls for auxiliary boiler, 3-way valves, preparation of domestic hot water
- Remote control via Internet
- Demand-dependent electricity generation
- Emergency power supply mode
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Remark: The reference measuring conditions are: Temperature: 20°C, elevation: 100 m.
 The tolerances given are $\pm 5\%$ for the thermal output and $\pm 1\%$ for the electric output values.
 The output values are reduced by 1% for every 100 m above sea level and by 2% for every 5°C above the reference values.
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