Biogas Combined Heat and Power Unit

ENERGIN® M08 GEN+ B333

Datasheet, 250 mg NO_x

The ENERGIN® GEN+ combined heat and power unit simultaneously generates electricity and uses the heat from the engine jacket water to heat water. It can be operated in parallel with the public network or with an isolated load. As an option, automatic emergency operation and/or island-parallel operation with other generators is possible.

The unit is supplied as a compact, fully functional unit, with or without a sound attenuating enclosure. The engine, generator, heat exchangers for oil and jacket water as well as the control and power panel are mounted, ready for operation on the vibration-decoupled base frame. A lubrication oil system, which allows operation of up to 2000 hours without manual lube oil refilling, is integrated on the unit.

The electrical control system provides protection and control functions for automatic or manual operation. A 12″ touch panel informs about operating conditions and allows the operation and parameterization of the system. Various interfaces are available for communication with other power generators and an overhead control system. An Ethernet interface allows connection to the Internet for remote monitoring and remote maintenance.

The entire system is certified according to the BDEW medium voltage directive (Grid code).

TECHNICAL DATA

Manufacturer		R Schmitt Enertec
ENERGIN® Type		M08 GEN+ B333
Electrical power[1]	kW	333
Thermal power[2]	kW	167
Gas consumption[3] (LHV)	kW	802
Self consumption[4]	kW	5,6

DESIGN

Fuel type		Biogas
Lower heating value LHV	kWh/Nm³	5,0
Gas flow pressure[5]	kPa	2,2 - 5,0
Inlet air temperature	°C	20
Exhaust temperature	°C	488
Hot water temperature[6]	°C	70 / 85
Hot water flow rate	m³/h	9,9

EXHAUST EMISSIONS[7] WITHOUT CATALYST

NO_x	mg/Nm³	250
CO	mg/Nm³	1500
Formaldehyde	mg/Nm³	100

ENGINE

Manufacturer		R Schmitt Enertec
ENERGIN® Type		M08-BT2D41
Working principle		4-stroke
Cylinder configuration		8 in V / 90°
Valves per cylinder		4
Aspiration		turbocharged
Mixture cooling		2-staged
Displacement	ltr	15,1

LUBE OIL

Lube oil volume	ltr	162
Make up tank volume	ltr	170
Consumption	ltr/OH	0,10

ALTERNATOR

Manufacturer		Leroy Somer
Type		LSA 47.2 M8
Voltage	V / Hz	400 / 50
Speed	1/min	1.500
Efficiency	%	96,3

PERFORMANCE[8]

Load		100 %	75 %	50 %
Electrical power	kW	333	250	167
Thermal power	kW	167	130	101
Fuel consumption	kW	802	615	440
Gas flow at LHV	Nm³/h	161	123	88
Electrical efficiency	%	41,5	40,7	38,0
Thermal efficiency	%	20,8	21,1	23,0
Total efficiency	%	62,3	61,8	61,0
Exhaust gas flow[9]	m³/h	3.517	2.661	1.875
Air requirement	m³/h	7.340	5.891	4.735
Exhaust air[10]	m³/h	5.987	4.903	4.062

DIMENSIONS AND WEIGHTS WITH SOUND ENCLOSURE

Length[11]	mm	4.040
Height	mm	2.030
Height with 90° elbow	mm	2.990
Width	mm	1.440
Dry weight	kg	4.210
Operational weight	kg	4.580

CONNECTIONS

Exhaust	DN / PN	150 / 10
Fuel gas	DN / PN	65 / 16
Exhaust air	mm	850 x 850
Emergency cooling	DN / PN	65 / 16
Mixture	DN / PN	40 / 16
Process water	DN / PN	65 / 16
Exhaust condensate	DN / PN	Rp 1/2”

[1] +0 % tolerance on electrical power output
[2] - 3/+ 8 % tolerance for thermal power @ 488 °C
[3] +5 % tolerance on fuel consumption
[4] average self consumption without emergency cooling
[5] maximum variation of 10 % for set value
[6] Return/flow temperature
[7] Exhaust emissions related to 5 % oxygen in dry exhaust
[8] at standard conditions according to ISO 3046-1; cos φ = 1
[9] wet exhaust gas at 488 °C
[10] ΔT = 15 K
[11] without optional heating water pump group

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