



# Biogas Combined Heat and Power Unit

## ENERGIN® M06 GEN+ B250

### Datasheet, 500 mg NO<sub>x</sub>

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	M06 GEN+ B250	
Electrical power <sup>1</sup>	kW	250
Thermal power <sup>2</sup>	kW	120
Gas consumption <sup>3</sup> (LHV)	kW	587
Self consumption <sup>4</sup>	kW	4,3

#### DESIGN

Fuel type	Biogas	
Lower heating value LHV	kWh/Nm <sup>3</sup>	5,0
Gas flow pressure <sup>5</sup>	kPa	3,5 - 5,0
Inlet air temperature	°C	20
Exhaust temperature	°C	487
Hot water temperature <sup>6</sup>	°C	70 / 85
Hot water flow rate	m <sup>3</sup> /h	7,1

#### EXHAUST EMISSIONS<sup>7</sup> WITHOUT CATALYST

NO <sub>x</sub> <sup>8</sup>	mg/Nm <sup>3</sup>	500
CO	mg/Nm <sup>3</sup>	1000
Formaldehyde	mg/Nm <sup>3</sup>	100

#### ENGINE

Manufacturer	R Schmitt Enertec	
ENERGIN® Type	M06-BT2D41	
Working principle	4-stroke	
Cylinder configuration	6 in V / 90°	
Valves per cylinder	4	
Aspiration	turbocharged	
Mixture cooling	2-staged	
Displacement	ltr	11,3

#### LUBE OIL

Lube oil volume	ltr	255
Consumption	ltr/OH	0,07

#### ALTERNATOR

Manufacturer	Leroy Somer	
Type	LSA 46.3 L11	
Voltage	V / Hz	400 / 50
Speed	1/min	1.500
Efficiency	%	95,8



#### PERFORMANCE<sup>9</sup>

Load		100 %	75 %	50 %
Electrical power	kW	250	188	125
Thermal power	kW	120	93	73
Fuel consumption	kW	587	450	322
Gas flow at LHV	Nm <sup>3</sup> /h	118	90	65
Electrical efficiency	%	42,6	41,8	38,8
Thermal efficiency	%	20,4	20,7	22,7
Total efficiency	%	63,0	62,5	61,5
Exhaust gas flow <sup>10</sup>	m <sup>3</sup> /h	2.474	1.871	1.318
Air requirement	m <sup>3</sup> /h	6.049	4.797	3.804
Exhaust air <sup>11</sup>	m <sup>3</sup> /h	5.098	4.102	3.330

#### DIMENSIONS AND WEIGHTS WITH SOUND ENCLOSURE

Length <sup>12</sup>	mm	3.200
Height	mm	2.250
Height with 90° elbow	mm	3.250
Width	mm	1.340
Dry weight	kg	3.350
Operational weight	kg	3.650

#### CONNECTIONS

Exhaust	DN / PN	150 / 10
Fuel gas	DN / PN	50 / 16
Exhaust air	mm	720 x 720
Mixture	DN / PN	40 / 16
Process water	DN / PN	50 / 16
Exhaust condensate	DN / PN	Rp 1/2"

<sup>1</sup> +0 % tolerance on electrical power output

<sup>2</sup> - 3/+ 8 % tolerance for thermal power @ 487 °C

<sup>3</sup> +5 % tolerance on fuel consumption

<sup>4</sup> average self consumption without emergency cooling

<sup>5</sup> maximum variation of 10 % for set value

<sup>6</sup> Return/flow temperature

<sup>7</sup> Exhaust emissions related to 5 % oxygen in dry exhaust

<sup>8</sup> Setup for 250 mg/Nm<sup>3</sup> NO<sub>x</sub> possible (changed performance data)

<sup>9</sup> at standard conditions according to ISO 3046-1; cos φ = 1

<sup>10</sup> wet exhaust gas at 487 °C

<sup>11</sup> ΔT = 15 K

<sup>12</sup> without optional heating water pump group



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