



# Wood Gas Combined Heat and Power Unit

## ENERGIN® M08 GEN+ H166

### Datasheet, 250 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		M08 GEN+ H166
Electrical power <sup>1</sup>	kW	166
Thermal power <sup>2</sup>	kW	118
Gas consumption <sup>3</sup> (LHV)	kW	492
Self consumption <sup>4</sup>	kW	5,6

#### DESIGN

Fuel type		Wood Gas
Lower heating value LHV	kWh/Nm <sup>3</sup>	1,4
Gas flow pressure <sup>5</sup>	kPa	3,5 - 5,0
Inlet air temperature	°C	20
Exhaust temperature	°C	496
Hot water temperature <sup>6</sup>	°C	70 / 85
Hot water flow rate	m <sup>3</sup> /h	6,9

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

NO <sub>x</sub>	mg/Nm <sup>3</sup>	250
CO	mg/Nm <sup>3</sup>	3000
Formaldehyde	mg/Nm <sup>3</sup>	100

#### ENGINE

Manufacturer		R Schmitt Enertec
ENERGIN® Type		M08-HT2D41
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	0,05

#### ALTERNATOR

Manufacturer		Leroy Somer
Type		LSA 46.3 L11
Voltage	V / Hz	400 / 50
Speed	1/min	1.500
Efficiency	%	95,7



#### PERFORMANCE<sup>8</sup>

Load		100 %	75 %	50 %
Electrical power	kW	166	125	83
Thermal power	kW	118	87	63
Fuel consumption	kW	492	377	270
Gas flow at LHV	Nm <sup>3</sup> /h	342	262	188
Electrical efficiency	%	33,7	33,2	30,7
Thermal efficiency	%	24,0	23,1	23,3
Total efficiency	%	57,7	56,3	54,0
Exhaust gas flow <sup>9</sup>	m <sup>3</sup> /h	2.489	1.924	1.387
Air requirement	m <sup>3</sup> /h	5.135	4.439	3.702
Exhaust air <sup>10</sup>	m <sup>3</sup> /h	4.380	3.882	3.319

#### DIMENSIONS AND WEIGHTS WITH SOUND ENCLOSURE

Length	mm	4.040
Height	mm	2.030
Height with 90° elbow	mm	2.990
Width	mm	1.440
Dry weight	kg	3.730
Operational weight	kg	4.090

#### CONNECTIONS

Exhaust	DN / PN	150 / 10
Fuel gas	DN / PN	125 / 16
Exhaust air	mm	850 x 850
Emergency cooling	DN / PN	65 / 16
Mixture	DN / PN	40 / 16
Process water	DN / PN	65 / 16

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

<sup>2</sup> - 3/+ 8 % tolerance for thermal power @ 496 °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> at standard conditions according to ISO 3046-1; cos φ = 1

<sup>9</sup> wet exhaust gas at 496 °C

<sup>10</sup> ΔT = 15 K



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