



# Propane Combined Heat and Power Unit

## ENERGIN® M12 GEN+ P350

### 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		M12 GEN+ P350
Electrical power <sup>1</sup>	kW	350
Thermal power <sup>2</sup>	kW	360
Gas consumption <sup>3</sup> (LHV)	kW	1.029
Self consumption <sup>4</sup>	kW	5,7

#### DESIGN

Fuel type		Propane
Lower heating value LHV	kWh/Nm <sup>3</sup>	26,2
Gas flow pressure <sup>5</sup>	kPa	2,2 - 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	21,3

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

NO <sub>x</sub>	mg/Nm <sup>3</sup>	250
CO	mg/Nm <sup>3</sup>	1500
Formaldehyde	mg/Nm <sup>3</sup>	100

#### ENGINE

Manufacturer		R Schmitt Enertec
ENERGIN® Type		M12-PTID41
Working principle		4-stroke
Cylinder configuration		12 in V / 90°
Valves per cylinder		4
Aspiration		turbocharged
Mixture cooling		internal
Displacement	ltr	22,6

#### LUBE OIL

Lube oil volume	ltr	205
Make up tank volume	ltr	170
Consumption	ltr/OH	0,11

#### ALTERNATOR

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



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

Load		100 %	75 %	50 %
Electrical power	kW	350	263	175
Thermal power	kW	360	276	205
Fuel consumption	kW	1.029	789	565
Gas flow at LHV	Nm <sup>3</sup> /h	39	30	22
Electrical efficiency	%	34,0	33,3	31,0
Thermal efficiency	%	35,0	35,0	36,3
Total efficiency	%	69,0	68,3	67,3
Exhaust gas flow <sup>9</sup>	m <sup>3</sup> /h	4.110	3.100	2.176
Air requirement	m <sup>3</sup> /h	9.088	7.383	5.971
Exhaust air <sup>10</sup>	m <sup>3</sup> /h	7.437	6.177	5.149

#### DIMENSIONS AND WEIGHTS WITH SOUND ENCLOSURE

Length <sup>11</sup>	mm	4.380
Height	mm	2.030
Height with 90° elbow	mm	3.190
Width	mm	1.440
Dry weight	kg	4.860
Operational weight	kg	5.270

#### CONNECTIONS

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

<sup>11</sup> without optional heating water pump group



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