Technical Datasheet

ENER-G 530M 250NOx Natural Gas CHP Unit

centrica Business Solutions

Energy Balance and Load Data at Power Factor 1		Units	100%	75%***	50%***
Electrical Output	(+/-3%)	kW	520	390	260
Electrical Efficiency (Net)	(+/-5%)	%	38.0%	37.3%	35.9%
Heat Output	(+/-10%)	kW	687	534	374
Thermal Efficiency (Net)	(+/-8%)	%	50.3%	51.1%	51.7%
Fuel Input (Net / Gross)*	(+/-5%)	kW	1367 / 1512	1045 / 1156	724 / 801
Total Efficiency (Net)	(+/-8%)	%	88.3%	88.4%	87.6%
Heat Output from Jacket Water	(+/-7%)	kW	358	267	181
Heat Output from Exhaust Gas @ Outlet Temp.	(+/-7%)	kW	329	267	193
Aftercooler Heat Output	(+/-7%)	kW	38	29	19
Radiated Heat Output	(+/-7%)	kW	55	32	20
Combustion Air Flow (30 °C, 100 kPa, 30% RH)**	(+/-5%)	m^3/h	2426	1833	1239
Fuel Mass Flow (ρ = 0.75kg/Nm³)	(+/-5%)	kg/h	102.5	78.4	54.3
Fuel Volume Flow (LHV = 10kWh/Nm³)	(+/-5%)	Nm3/h	136.7	104.5	72.4
Exhaust Mass Flow (Wet)	(+/-5%)	kg/h	2924	2210	1495
Exhaust Volume Flow @ Outlet Temp.	(+/-5%)	m^3/h	3257	2461	1665

*Natural gas Net and Gross fuel input figures are based on 36MJ/Nm3 and 39.8MJ/Nm3 respectively. The Gross figure is used when establishing UK fuel costs. Net figures are provided for ease of performance comparison with other technologies. Fuel must comply with engine manufacturer's fuel quality guide, supplied seperately.

**Engine technical data is based on Standard Conditions according to DIN ISO 3046-1 but engine de-rate applies when Combustion Air Temperature is >25°C.

*** If operating at part load for long periods of time, the unit should be run at full load for at least 5 hours in a given 24 hour period.

Engine Details

Manufacturer	MAN
Model	E 3262 LE 202
Fuel Type	Natural Gas
Min. Methane Number	80
Cylinders	12
Aspiration	Turbocharged
Speed rpm	1500
Aftercooler	Yes

Hot Water Details

Max. Water In/Out Temp.	°C	78/90°C
Max. Water Flow Rate*	l/s	14.09
Max. Glycol Content	%	30
Connection Size	mm	100
Flange Type		PN16
Pressure Loss**	kPa	28.9
Max. Test Pressure	Bar	9.75

* Assuming Cp = 4.2 kJ/kg·K and ρ = 968.55 kg/m³

** Pressure loss figures stated are at max. water flow rate. Internal unit only.

Exhaust Details

Connection Size	mm	250
Flange Type		PN10
Outlet Temp***.	°C	120
Allowable Backpressure	Pa	1300
Allowable Backpressure with Catalyst	Pa	TBC

*** For engines with exhaust bypass, please request exhaust bypass temp. from ECPL.

Ventilation Details

Connection Size	mm	710
Ventilation Rate****	m^3/s	5.39
Max. Air Inlet Temp.	°C	30
Max. Air Outlet Temp.	°C	45
Enclosure Pressure Drop	Pa	210

**** Vent rate is stated at max. air outlet temp, 100kPa

Aftercooler Details

Max. Water Inlet Temp.	°C	42
Water Flow Rate	l/s	1.85
Connection Size	mm	40
Flange Type		PN16
Pressure Loss	kPa	200
Max. Test Pressure	Bar	6
Ethylene Glycol Content	%	45

Generator Details

Manufacturer		Stamford
Model		HCI634H-311
Type		Synchronous
Rating	kVA	940
Voltage	V	400
Phase	Ph	3
Frequency	Hz	50
Protection Class		IP23
Rated Power Factor	PF	0.8
Xd Dir. Axis Synchronous		2.7
X'd Dir. Axis Transient		0.23
X"d Dir. Axis Sub-Transient		0.16
T" Sub-Transient Time Const.		0.025
T'do O.C Field Time Const.		2.44
CHP Protection Device	A/Ph	TBC
Indicative Client Protection Device	A/Ph	TBC
Current Per Phase @ 0.8PF	A	929
Current Per Phase @ 0.95PF	A	788
Efficiency @ 0.8PF	%	95.7%
Efficiency @ 0.95PF	%	96.5%
Indicative Main Cable Size [a] †	mm^2	TBC
Indicative Earth Cable Size [b] †	mm^2	TBC

[a] 4-Core XLPE/SWA/PVC to BS5467, Max 50 meters.

[b] 1-Core 6491B to BS7211, Max 50 meters.

† Sizes and lengths based on IET 17TH Edition BS7671, Installation method 31.

Fuel Details

Connection Size	mm	65
Flange Type		PN16
Min/Max. Supply Pressure	mbar	25/50

Emissions @ 5% O2

NOx	mg/Nm^3	250
CO	mg/Nm^3	700
NOx (With Catalyst)	mg/Nm^3	<N/A
CO (With Catalyst)	mg/Nm^3	<TBC

Weight Details

Enclosure (Dry) STD/PREM.	See Sales Drawing
Container (Dry) STD/PREM.	See Sales Drawing

Noise Data

Enclosure SPL @ 1m SN/LN	dB(A)	70/64.92
Container SPL @ 1m SN/LN	dB(A)	75/65

NB: Output figures are based on operation at DIN ISO 3046-1 conditions with the exception of exhaust output, which is quoted to 120°C/180°C for Natural Gas/Biogas respectively, figures are stated from manufacturer's declared performance figures subject to the manufacturer's tolerances and subject to change without notice. Values for de-rated units are estimates only. Energy balance data assumes perfect combustion. All information detailed is for guidance only and is subject to change without notice due to our commitment to continuous improvement - all values should be confirmed with Centrica Business Solutions on a project specific basis.

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