

Technical Datasheet

E150 (Low NOx) Natural Gas CHP Unit



Energy Balance and Load Data at Power Factor 1		Units	100%	75%	50%
Electrical Output	(+/-3%)	kW	150	113	75
Electrical Efficiency (Net)	(+/-5%)	%	35.1%	32.8%	29.3%
Heat Output	(+/-10%)	kW	234	192	142
Thermal Efficiency (Net)	(+/-8%)	%	54.6%	55.7%	55.4%
Fuel Input (Net / Gross)*	(+/-5%)	kW	429 / 475	345 / 381	257 / 285
Total Efficiency (Net)	(+/-8%)	%	89.8%	88.6%	84.8%
Heat Output from Jacket Water	(+/-8%)	kW	155	131	99
Heat Output from Exhaust Gas @ Outlet Temp.	(+/-8%)	kW	79	60	43
Aftercooler Heat Output	(+/-8%)	kW	N/A	N/A	N/A
Radiated Heat Output	(+/-8%)	kW	17	12	7
Combustion Air Flow (30 C, 100 kPa, 30% RH)	(+/-5%)	m ³ /h	452	363	271
Fuel Mass Flow ($\rho = 0.75\text{kg}/\text{Nm}^3$)	(+/-5%)	kg/h	32.2	25.9	19.3
Fuel Volume Flow (LHV = 10kWh/Nm ³)	(+/-5%)	Nm ³ /h	42.9	34.5	25.7
Exhaust Mass Flow (Wet)	(+/-5%)	kg/h	564	452	338
Exhaust Volume Flow @ Outlet Temp.	(+/-5%)	m ³ /h	628	504	376

*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.

Engine Details

Manufacturer	ENER-G
Model	EGE-08V
Fuel Type	Natural Gas
Min. Methane Number	70
Cylinders	8
Aspiration	Natural
Speed	1500 rpm
Aftercooler	No

Generator Details

Manufacturer	Stamford
Model	UCDI274K-311
Type	Synchronous
Rating	kVA 250
Voltage	V 400
Phase	Ph 3
Frequency	Hz 50
Protection Class	IP23
Rated Power Factor	PF 0.8
Xd Dir. Axis Synchronous	2.55
X'd Dir. Axis Transient	0.119
X''d Dir. Axis Sub-Transient	0.078
T'' Sub-Transient Time Const.	0.02
T'do O.C Field Time Const.	1.27
CHP Protection Device	A/Ph 280
Indicative Client Protection Device	A/Ph 315 (Adjustable)
Current Per Phase @ 0.8PF	A 268
Current Per Phase @ 0.95PF	A 229
Efficiency @ 0.8PF	% 93.5%
Efficiency @ 0.95PF	% 94.7%
Indicative Main Cable Size ^a †	mm ² 120
Indicative Earth Cable Size ^b †	mm ² 70

Hot Water Details

Max. Water In/Out Temp.	°C 80/90°C
Max. Water Flow Rate*	l/s 5.78
Max. Glycol Content	% 30
Connection Size	mm 65
Flange Type	PN16
Pressure Loss**	kPa 25.3
Max. Test Pressure	Bar 9.75

* Assuming Cp = 4.2 kJ/kg-K and $\rho = 968.55 \text{ kg}/\text{m}^3$

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

Exhaust Details

Connection Size	mm 150
Flange Type	PN16
Outlet Temp.	°C 120
Allowable Backpressure	Pa 3530
Allowable Backpressure with Catalyst	Pa TBC

Ventilation Details

Connection Size	mm 500
Ventilation Rate***	m ³ /s 1.75
Max. Air Inlet Temp.	°C 30
Max. Air Outlet Temp.	°C 45
Enclosure Pressure Drop	Pa 86

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

Fuel Details

Connection Size	mm 40
Flange Type	PN16
Min/Max. Supply Pressure	mbar 20/55

Emissions @ 5% O₂

NOx	mg/Nm ³ 3798
CO	mg/Nm ³ 2088
NOx (With Catalyst)	mg/Nm ³ 50
CO (With Catalyst)	mg/Nm ³ 150

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

NB: Output figures are based on operation at ISO 3046 conditions with the exception of exhaust output, which is quoted to 120°C, 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 ENER-G Combined Power Ltd on a project specific basis.

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