

Technical Datasheet

E160UL Natural Gas CHP Unit



Energy Balance and Part Load Data @ 0.95PF		Units	100%	75%	50%
Electrical Output	(+/-3%)	kW	158	119	79
Electrical Efficiency (LHV)	(+/-5%)	%	35.9%	34.0%	30.4%
Heat Output	(+/-10%)	BTU/min	13584	11054	8614
Thermal Efficiency (LHV)	(+/-8%)	%	54.2%	55.8%	58.2%
Fuel Input (LHV)	(+/-5%)	BTU/min	25044	19822	14800
Total Efficiency (LHV)	(+/-8%)	%	90.1%	89.8%	88.6%
Heat Output from Jacket Water	(+/-8%)	BTU/min	8154	6940	5800
Heat Output from Exhaust Gas (Cooled to 248°F)	(+/-8%)	BTU/min	5430	4114	2815
Aftercooler Heat Output	(+/-8%)	BTU/min	N/A	N/A	N/A
Radiated Heat Output	(+/-8%)	BTU/min	1001	759	537
Combustion Air Flow	(+/-5%)	SCFM	227	180	134
Fuel Mass Flow ($\rho = 0.0432\text{lb/SCFM}$)	(+/-5%)	lb/h	70	56	42
Fuel Volume Flow (LHV = 924 BTU/SCFM)	(+/-5%)	SCFM	27	21	16
Exhaust Mass Flow (Wet)	(+/-5%)	lb/h	1248	988	737
Exhaust Volume Flow (Cooled to 248°F)	(+/-5%)	ACFM	371	294	219

Engine Details

Manufacturer	MAN
Model	E 2876 E 312
Fuel Type	Natural Gas
Min. Methane Number	80
Cylinders	6
Aspiration	Natural
Speed	1800 rpm

Secondary Water Details

Max. Water In/Out Temp.	176/194°F
Max. Water Flow Rate*	101 GPM
Max. Glycol Content	50%
Connection Size	2.5 (65) in (mm)
Flange Type	ANSI B16.5 Class 150
Pressure Loss	1.5 PSIG
Max. Test Pressure	150 PSIG

* Assuming 50% Glycol, higher % available on request

Exhaust Details

Connection Size	5 (125) in (mm)
Flange Type	ANSI B16.5 Class 150
Outlet Temp	248 °F
Max. Allowable Backpressure	TBC inH2O

Ventilation Details

Connection Size	19.7 (500) in (mm)
Ventilation Rate	3892 ACFM
Max. Air Inlet Temp.	86 °F
Max. Air Outlet Temp.	113 °F

Generator Details

Manufacturer	Stamford
Model	UCI274H-311
Type	Synchronous
Voltage	480 V
Phase	3 Ph
Frequency	60 Hz
Ingress Protection	IP23
Insulation Class	H
Rated Power Factor	0.8 PF
Rated Apparent Power at 80°C Rise	204 kVA
X"d Dir. Axis Sub-Transient	0.9
T" Sub-Transient Time Const.	0.012

Electrical Details

CHP Breaker Size	250 A/Ph
Current Per Phase @ 0.8PF	238 A
Current Per Phase @ 0.95PF	200 A
Efficiency @ 0.8PF	94.0%
Efficiency @ 0.95PF	95.1%

Fuel Details

Connection Size	1.5 (40) in (mm)
Flange Type	ANSI B16.5 Class 150
Min/Max. Supply Pressure	0.3/0.8 PSIG

Emissions

NOx	10.60 g/BHP-h
CO	10.60 g/BHP-h
NMHC	TBC g/BHP-h
NOx ... 3-Way Catalyst	1.00 g/BHP-h
CO ... 3-Way Catalyst	2.00 g/BHP-h
NMHC ... 3-Way Catalyst	0.70 g/BHP-h

Noise

Enclosure SPL @ 3 ft	Standard/Low	70/65
Exhaust SPL @ 3 ft	Standard/Low	70/60

NB: Energy balance data is stated at ISO 3046-1 conditions. Values for part load are estimates only. Noise data stated at free-field conditions. 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 ER on a project specific basis.