

Technical Datasheet

ER1700F Natural Gas CHP Unit



Energy Balance and Part Load Data @ 1.0PF		Units	100%	75%	50%
Electrical Output	(+/-3%)	kW	1697	1273	849
Electrical Efficiency (LHV)	(+/-5%)	%	42.1%	41.0%	38.7%
Heat Output (LTHW)	(+/-10%)	BTU/min	103816	82534	59884
Thermal Efficiency (LHV)	(+/-8%)	%	45.2%	46.6%	47.9%
Fuel Input (LHV)	(+/-5%)	BTU/min	229500	176900	124883
Total Efficiency (LHV)	(+/-8%)	%	87.3%	87.6%	86.6%
Heat Output from Jacket Water	(+/-8%)	BTU/min	56633	42867	29767
Heat Output from Exhaust Gas (Cooled to 248°F)	(+/-8%)	BTU/min	47183	39667	30117
Intercooler Heat Output (2nd Stage)	(+/-8%)	BTU/min	6550	4500	3250
Radiated Heat Output	(+/-8%)	BTU/min	6800	5100	3400
Combustion Air Flow	(+/-5%)	SCFM ¹	3982	2986	2054
Fuel Volume Flow (LHV = 924 BTU/SCFM)	(+/-5%)	SCFM ¹	248	191	135
Exhaust Mass Flow, Wet	(+/-5%)	lb/h	19914	14945	10291
Exhaust Volume Flow, Wet (32° F)	(+/-5%)	SCFM ¹	4114	3087	2127
Exhaust Temperature	(+/-5%)	°F	799	857	907
Steam Option**: Steam boiler output @ 15 psig	(+/-5%)	lb/h	2363	2006	1519
Chiller Option**: Absorption chiller output	(+/-5%)	Tons	335 - 490	TBC	TBC

Engine Details

Manufacturer	MTU
Model	GB1697N6
Fuel Type	Natural gas
Min. Methane Number	80
Cylinders	16
Aspiration	Turbocharged/IC/2 Stage
Speed at Engine	1500 rpm
Gearbox Speed	1500/1800 rpm

Secondary Water Details (Client Side)*

Max. Water In/Out Temp.	°F	170/192
Max. Water Flow Rate	GPM	643
Max. Glycol Content	%	50
Connection Size	in (mm)	5 (125)
Connection Type	ANSI B16.5 Class 150	
Pressure Loss	PSIG	On Request
Max. Test Pressure	PSIG	150

Exhaust Details*

Connection Size	in (mm)	18 (450)
Outlet Temp†	°F	248
Max. Backpressure at Exhaust Outlet...	inH2O	8.0

Ventilation Details

Maximum Supply Air Volume Flow Rate	CFM	21000
Minimum Supply Air Volume Flow Rate	CFM	14000
Max. Air Inlet Temp.	°F	85
Max. Air Outlet Temp.	°F	115

Second Stage Intercooler Details

Max. Coolant Inlet Temp at Engine.	°F	104
Coolant Flow Rate	GPM	130
Connection Size	in (mm)	2.5 (65)
Max. Glycol Content	%	50

Generator Details

Manufacturer	Leroy Somer	
Model	LSA 51.2 L70	
Type	Synchronous	
Voltage	V	480
Phase	Ph	3
Frequency/Speed	Hz/RPM	60/1800
Ingress Protection		IP23
Insulation Class		H
Rated Power Factor	PF	0.8
Rated Apparent Power at 105°C Rise	kVA	2121
X"d Dir. Axis Sub-Transient		0.11
T" Sub-Transient Time Const.		0.24

Electrical Details*

CHP Breaker Size	A/Ph	3100
Current Per Phase @ 0.8PF	A	2551
Current Per Phase @ 0.95PF	A	2148
Current Per Phase @ 1.0PF	A	2041
Efficiency @ 0.8PF...	%	96.0%
Efficiency @ 0.95PF...	%	96.7%
Efficiency @ 0.95PF...	%	97.1%

Engine Emissions at 100% Load (Dry)*

NOx	g/BHP-h	1.00
CO	g/BHP-h	2.00
NMHC	g/BHP-h	0.70

Low NOx Engine Emissions†

NOx	g/BHP-h	On Request
CO	g/BHP-h	On Request
NMHC	g/BHP-h	On Request

Noise (dBA)*

Enclosure (free field)...	@ 3 ft ... Standard/Low	78/68
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Fuel Details*

Main Supply Connection Size	in (mm)	4/100
Main Supply Connection Type	ANSI B16.5 Class 150	
Min. Main Supply Pressure	PSIG	2.95

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.