

COGENCO DATA SHEET

CGC-0190MA-080-DG-50

Low Temperature

Digester Gas



ENERGY BALANCE AND PART LOAD DATA

			100%		75%		50%	
Fuel input (LHV)	(+/-5%)	kW	493	%	375	%	270	%
Electrical output	(+/-3%)	kW	190	38.5%	143	38.1%	95	35.2%
Total usable heat output	(+/-7%)	kW	215	43.6%	172	45.9%	133	49.3%
Total usable energy	(+/-7%)	kW	405	82.2%	315	84.0%	228	84.4%
Heat output from jacket water and oil cooler	(+/-7%)	kW	98	19.9%	82	21.9%	68	25.2%
Heat output from exhaust gases (120°C)	(+/-7%)	kW	117	23.7%	90	24.0%	65	24.1%
Mechanical shaft power	(+/-3%)	kW	200	40.6%	150	40.0%	100	37.0%
Radiated and unaccounted for heat	(+/-7%)	kW	13	2.6%	12	3.2%	11	4.1%
Intercooler heat output*	(+/-7%)	kW	33	6.7%	17	3.4%	6	1.2%
Fuel mass flow		kg/hr	100		76		55	
Fuel volume flow		nm3/hr	82		63		45	
Combustion air mass flow		kg/hr	858		652		470	
Combustion air volume flow		nm3/hr	662		504		363	
Ventilation air volume flow (incl. comb. air)		nm3/hr	4,800		4,800		4,800	
Exhaust gas mass flow (wet)		kg/hr	958		729		525	
Exhaust gas volume flow (wet)		nm3/hr	745		567		408	
Exhaust gas volume flow (wet) @ 120°C		m3/hr	1,066		811		584	
Jacket water flow		m3/hr	16		16		16	
Intercooler water flow - minimum		m3/hr	8		8		8	
Secondary water flow - minimum		m3/hr	19		19		19	
Maximum return water inlet temperature		°C	80.0		80.0		80.0	
Secondary water outlet temperature		°C	90.0		88.0		86.0	
Exhaust gas temperature before cooler		°C	520		525		530	
Intercooler water inlet temperature		°C	45.0		45.0		45.0	
Intercooler water outlet temperature		°C	49.0		47.0		46.0	

ENGINE DATA

Manufacturer	MAN	
Model	E2876 LE302	
ISO Power	200	
Cylinder configuration	In line 6	
Exhaust manifold	Water Cooled	
Piston Speed	m/s	8.30
Bore	mm	128
Stroke	mm	166
Swept volume	litres	12.82
Mean effective pressure	bar	12.48
Compression ratio	11.0:1	
Engine speed	rpm	1500
Engine weight	kg	970
Sump oil content	litres	41
Engine cooling water content	litres	16
Starter motor voltage	v	24
Air fuel ratio	1.40	
Oil Consumption	g/kWhM	0.2 - 0.5
Gas heating value (LHV)	kJ/nm3	21500
Minimum methane index / content	>60% CH4	
Standard NOx emissions (@ 5% O2)	mg/nm3	<500
Standard CO emissions	mg/nm3	<650

GENERATOR DATA

Type (Synchronous)	ECO38-3LN/4 50	
Stator configuration	Star	
Rating	kVA	350
Frequency	Hz	50
Voltage	V	400
Rating at PF 0.8	kW	280
Current per phase PF 0.8 (@ CHP duty)	A	343
Current per phase PF 1.0 (@ CHP duty)	A	274
Efficiency at PF 1.0	%	95.6
Efficiency at PF 0.8	%	93.6
Power factor lagging	0.8	
Generator speed	rpm	1500
Permissible overspeed	rpm	2250
Generator weight	kg	905
Generator moment of inertia	kgm2	3.4747
Radio interference level to VDE 0875	VDE0875K	
Protection class	IP21	
Insulation class	H	
Xd direct axis synchronous reactance	p.u.	2.15
X'd direct axis transient reactance	p.u.	0.172
X''d direct axis sub transient reactance	p.u.	0.094
T'd sub transient reactance time constant	seconds	0.0127
T'do open circuit field time constant	seconds	1.5

EXHAUST GAS HEAT EXCHANGER

Capacity	kW	117
Fouling factor	10%	
Shell and inlet material	Mild Steel	
Tube and outlet material	AISI 316, 304	

PLATE HEAT EXCHANGER

Capacity	kW	215
Fouling factor	10%	
Materials	AISI 316	
Pressure drop (secondary side)	kPa	-

MISCELLANEOUS DATA

Glycol content intercooler circuit and engine circuit	30%	
Minimum gas pressure (dynamic)	mbar	20
Maximum gas pressure fluctuation	10%	
Ventilation fan available pressure drop	Pa	25
Maximum exhaust back pressure at unit	mbar	25
Intercooler circuit pressure drop	kPa	30 - 60
Maximum pressure of secondary system	bar	8
Ambient test barometric pressure	kPa	100
Ambient test atmospheric temperature	°C	25
Definition of ratings	ISO 3046	

CONNECTIONS AND DIMENSIONS**

Gas train diameter	DN/PN	50/screw
Secondary water connections	DN/PN	65/16
Exhaust pipe diameter	DN/PN	125/10
Intercooler connections	DN/PN	40/16
Condensate drain connection	1" BSP (ABS)	
Attenuator connection size	mm	950x950
Weight dry	kg	7,775
Weight wet	kg	8,319
Length - canopy only	mm	3,657
Length - canopy and control panel	mm	4,057
Width	mm	1,507
Height - canopy only	mm	1,960
Height - canopy and 75 dBA attenuators	mm	2,860

** Check production GA for confirmation

All information provided for guidance only, specifications may change without notice.

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