

CT - M 450 N

Engine data version 07.2017

Basic Data		
Fuel		natural gas
Minimum heating value Hu	kWh/m ³	10
Methane number	Mz	≥ 80
Heating water system temperature	°C	70 / 90
CHP coefficient		0,86
Frequency	Hz	50
Nominal voltage Un	V	400
Speed	min ⁻¹	1.500
Intercooler version	°C	50
Electrical nominal power at cosφ=1	kW	432
Thermal power utile *	kW	505
Fuel power input	kW	1.090
Efficiency electrical	%	39,6
Efficiency thermal	%	46,3
Efficiency total	%	86,0
After-treatment of exhaust gases	Lean operation and oxidat	
Pollutant emissions		
(dry exhaust gas with 5% O ₂)		
Formaldehyde (CH ₂ O)	mg/Nm ³	< 20
NO _x measured as NO ₂	mg/Nm ³	< 250
CO	mg/Nm ³	< 300

Engine		
Engine Type	MAN E 3262 LE232	
Combustion type	gas engine	
Operating principle	4-stroke	
Cylinder No./ configuration	V 12	
Displacement	l	25,8
Engine power according ISO 3046/1	kW_mech	450
Specific fuel consumption	MJ/kWh	8,72

Generator		
Type of Generator	Leroy Somer 49.3 S4	
Apparent power	kVA	660
Voltage	V	400
Stator connection	Y	
Ambient temperature max.	°C	40
Protection class	IP23	
Radio interference class acc. VDE 0875	N	
Heating class	H	

Heat exchanger unit		
Engine cooling water heat output	kW	220
Intercooler HT heat output	kW	42
Intercooler LT heat output	kW	32
Exhaust heat (cooling up to 120°C)	kW	242
Total thermal power output via plate heat exchanger	kW	505
Heating water temp. inlet max.	°C	70
Heating water temp. outlet max.	°C	90

Design and operation		
Lubricant oil content engine min./max.	l	42/90
Lubricant oil storage tank	l	
Generator efficiency cosφ=1, 400V	%	96,1
COGEN current rated	A	779
Radiation heat module	kW	45
Intake air mass flow	kg/h	13.124
Outlet air mass flow	kg/h	10.844
Combustion air mass flow at 25°C and 1013 mbar	kg/h	2.280
Intake air temp. ISO 3046 dimensioning	°C	25
Exhaust mass flow wet	kg/h	2.364
Exhaust volume flow, dry 0% O ₂ (0°C, 1013 mbar)	Nm ³ /h	1.887
Permissible exhaust gas back pressure downstream of module for piping	mBar	5
Externe Pressung des Lüfters	Pa	108
Airborne noise (sound pressure level) encaapsulated modul at 1 m distance **	dB(A)	75
Exhaust noise (sound pressure level) with primary exhaust silencer at 1 m distance ***	dB(A)	75

Connections and interfaces		
Gas inlet	Rp 2"	
Exhaust gas outlet (flange)	DN250 / PN10	
Condensate drain	R 1"	
Heating water inlet/outlet (flange)	DN80 / PN16	
Intercooling system LT inlet/outlet (flange)	DN50 / PN10	
Flanges conform to DIN EN 1092-1		

Module dimensions and weigh *		
Length	mm	4.595
Width	mm	1.800
Height	mm	2.298
Operating weight approx.	kg	6.307

* Possibility of increasing thermal power by using a calorific value waste-gas heat exchanger.

** Measurement of noise in free field, tolerance ± 1.0 dB(A)

*** Measurement of noise in free field, tolerance ± 2.5 dB(A)

* Dimensions with ventilator and feet. Lenght whitout stillage for return riser.

Tolerance for preceding heat output ±7% and energy input +5% according full duty.

All further data are valid for grid parallel operation. Derating through adjustment of reactive power factor cosφ by energy supplier possible.

Features of our scope of supply are only warranted, when SES expressly stated the warranty. Power and efficiencies according ISO 3046/1 and DIN 6271, at 25°C air temperature, 100 kPa air pressure (at 100 m above sea level), 30% rel. humidity, methane number see basic data, as well as cosφ= 1. As fuel natural gas according German DVGW Worksheet G260, category 2, group L/H is valid. Furthermore following documents are valid: MAN Operating Materials and Operating Instructions for MAN Industrial Gas Engines in latest edition. These documents are available on request. A gas flow pressure before module of 20 - 50 mbar is necessary (other gas flow pressures are available on request). A temperature of intake air of 10 °C to 25 °C has to be ensured. Data for other operating conditions or gas qualities are available on request.