

Basic Data		
Fuel	natural gas	
Minimum heating value Hu	kWh/m <sup>3</sup>	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 <sup>-1</sup>	1.500
Intercooler version	°C	50
Electrical nominal power at cos $\phi$ =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 <sub>2</sub> )		
Formaldehyde (CH <sub>2</sub> O)	mg/Nm <sup>3</sup>	< 20
NOx measured as NO <sub>2</sub>	mg/Nm <sup>3</sup>	< 250
CO	mg/Nm <sup>3</sup>	< 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 cos $\phi$ =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 <sub>2</sub> (0°C, 1013 mbar)	Nm <sup>3</sup> /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  $\pm 1.0$  dB(A)

\*\*\* Measurement of noise in free field, tolerance  $\pm 2.5$  dB(A)

\* Dimensions with ventilator and feet. Length without stillage for return riser.

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

All further data are valid for grid parallel operation. Derating through adjustment of reactive power factor cos $\phi$  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 cos $\phi$ = 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.