



**Compact CHP ready for connection, mainly consisting of**

- serially manufactured Industrial-Gas-Otto-engine
- air-cooled synchronous generator
- waste-gas heat exchanger integrated in primary cooling circuit
- 3-Way kat integrated in waste-gas heat exchanger
- oil reservoir with automatic oil feeding
- control cabinet with programmable controller and operating unit
- gas train

**Integrated heat exchanger basket, mainly consisting of**

- expansion tank in motor circuit
- relief valve in motor circuit and heater circuit
- filling valves, cleanout valves and exhaust valves
- plate heat exchanger
- pumps for motor circuit and heater circuit
- 3-way mixing valve for return temperature increase

Water and gas connections are executed with compensators. All water-side connections are directed upwards above the heat exchanger basket.

Motor and generator are connected through a pluggable elastic metal-plastics coupler to compensate radial offset, axial offset or angular offset. It is mounted on a framework vibration-cushionedly.

Furthermore the framework is uncoupled through oscillation decoupling elements.

The control cabinet is executed as a separate unit. All regulation and control functions as well as control elements are part of the control cabinet. Assisted by a menu-navigated touch-screen performance data and state data could be readed and adjusted easily.

The drive of the CHP is caused by a water-cooled Otto-Gas-Engine. It is a stationary engine designed for permanent operation. A microprocessor-controlled ignition ensures an optimal adaption of the ignition point and the ignition energy to the gas quality (methane number).

The oil level control is carried out by a sight glass with oil level deficit indication, which is connected with the oilpan.

<b>Engine data</b>			<b>Engine utilities</b>				
	<b>Hz</b>	<b>50</b>					
Mixture cooling to	°C	-	Lubricate consumption	g/kWh	0,9		
RPM	1/min	1500	Filling capacity lubricant min./max.	l	19/28		
ISO standard power (mech.)	kW	147					
Air ration (Lambda)	λ	1	Filling capacity cooling water	l	16		
Arrangement of cylinders		row	Operating pressure (max.)	bar	2		
Number of Cylinders		6	Cooling water recirculated quantity	l/min	346		
Bore	mm	128	Cooling water temperature min.	°C	80		
Stroke	mm	166	Cooling water temperature max.	°C	88		
Swept volume	l	12,82	Balance (inflow/exit, max.)	K	6		
Direction of rotation (look on balance wheel)			left	<b>Efficiencies</b>			
body of balance wheel			SAE 1				
tooth rim with number of teeth			Z	160	Electrical	%	36,5
compression ratio			ε	12,0 : 1	Mechanical	%	38,3
average effective pressure			bar	9,36	Thermal	%	53,9
average piston speed			m/s	8,3	Total (el. + th.)	%	90,4
					Power number		0,68
<b>Power data</b>			<b>Mass flows and volume flows</b>				
	<b>Hz</b>	<b>50</b>					
Load	%	100	Combustion air mass flow	kg/h	475		
Ignition timing	degree	18	Combustion air volume flow	m³/h	402		
ISO standard power (mech.)	kW	147	Supply air volume flow	m³/h	5.302		
Electrical Power	kW	140					
Cooling water heat	kW	127	Combustible mass flow	kg/h	30		
Waste gas heat up to 100 °C	kW	80	Combustible volume flow	m³/h	38		
useable thermal power at 100 °C	kW	207					
radiant heat of module (max.)	kW	32	Waste gas mass flow, wet	kg/h	505		
nominal power	kW	384	Waste gas mass flow, dry	kg/h	440		
Fuel consumption (mech.)	kWh/kWh	2,61	Waste gas volume flow, wet	m³/h	402		
Fuel consumption (el.)	kWh/kWh	2,74	Waste gas volume flow, dry	m³/h	331		
<b>temperatures and pressures</b>			Heating water volume flow (max.)				
			m³/h				
			12				
Waste gas temperatur			°C	590	<b>Technical basic conditions</b>		
exhaust back pressure			mbar	40			
Heating water return temperature (max)			°C	70	Power conditions acc. To DIN-ISO-3046		
Heating water flow temperature (max)			°C	90	Norm cond itions: air pressure: 1000 mbar		
Pressure decrease heating circuit (max)			mbar	150	Air tempera ture: 25 °C or 295 K, rel. Humidity: 30%		
maximum backpressure at the air intake			mbar	15	Gasquality accorcng "2G TA 04 Gas"		
			All data are related to full load engine running at denoted media temperatures and are subject to technical advancements.				
			Equipment as well as installation systems have to meet all technical instructions of 2G.				
<b>Emission value at 5% residual oxygen</b>							
NOx	mg/Nm³	< 250					
CO	mg/Nm³	< 300					

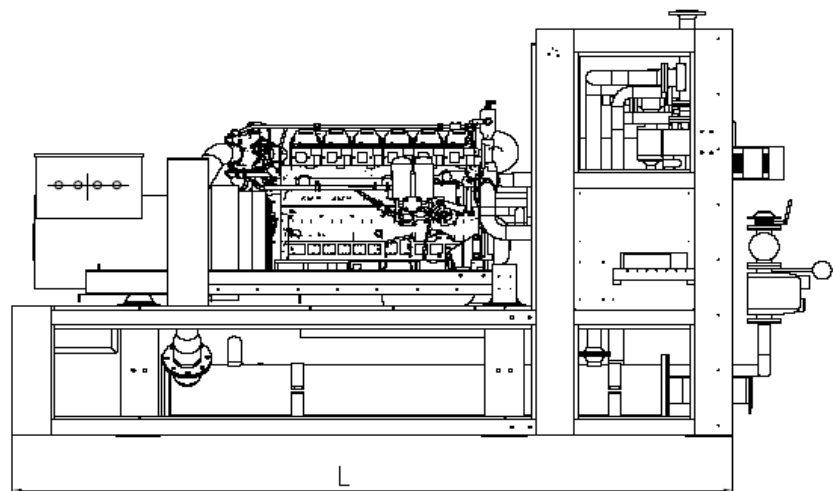
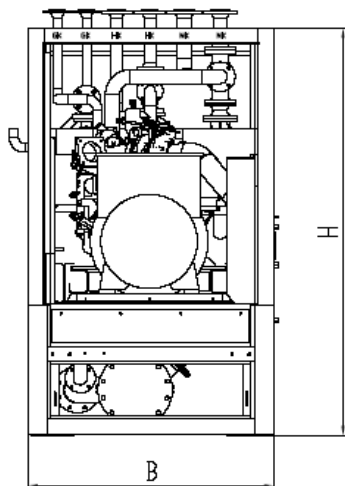
**Generator data**

Manufacturer		Leroy Somer
Type		LSA 46.2 M5
Power at Cos φ = 0,8	kVA	175
Voltage	V	400
Frequency	Hz	50
Rated speed	1/min	1500
Nominal current at Cos φ = 0,8	A	253
Cos φ		0,8 - 1
Efficiency (full load) at Cos φ = 1	%	95,10
Efficiency (full load) at Cos φ = 0,8	%	92,70
Reactance X"d	%	12,90
Reactance Xi = X2	%	14,50
Mass moment of inertia	kg m <sup>2</sup>	1,74
Stator circuit		star
Ambient air temperature	°C	40
Protection class		IP 23
Cos φ has to be between 0,8 and 1,0 within the complete range of capacity.		

**Main dimensions and weights**

<b>Module:</b>		
Length (L):	mm	3.440
Height (H):	mm	1.933
Width (B):	mm	1.180
Weight (approx.):	kg	3.800
<b>Control cabinet</b>		
Height (H)	mm	2.000
Width (B)	mm	800
Depth (T)	mm	600
Weight (approx.):	kg	200
<b>Power switch cabinet</b>		
Height (H)	mm	2.000
Width (B)	mm	600
Depth (T)	mm	500
Weight (approx.):	kg	200

**Modul:**



**Control cabinet:**

**Power cabinet:**

