



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
- Oxikat integrated in waste-gas heat exchanger (optional)
- control cabinet with programmable controller and operating unit
- gas train

Integrated heat exchanger basket, mainly consisting of

- expansion tank in motor circuit and mixture circuit
- relief valve in motor circuit and mixture circuit
- filling valves, cleanout valves and exhaust valves
- plate heat exchanger
- pumps for motor circuit and mixture 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, supercharged 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).

Besides an exceedingly high electrical efficiency, a double-staged mixture cooling, including a low temperature circuit and a high temperature circuit, leads to an ideal usage of thermal power from the mixture heat.

Engine data			Engine utilities		
	Hz	50			
Mixture cooling to	°C	50	Lubricate consumption	g/kWh	1,6
RPM	1/min	1500	Filling capacity lubricant min./max.	l	9 / 13
ISO standard power (mech.)	kW	68			0
Air ration (Lambda)	λ	1,42	Filling capacity cooling water	l	13
Arrangement of cylinders		line	Operating pressure (max.)	bar	2
Number of Cylinders		4	Cooling water recirculated quantity	l/min	149
Bore	mm	108	Cooling water temperature min.	°C	80
Stroke	mm	125	Cooling water temperature max.	°C	88
Swept volume	l	4,58	Balance (inflow/exit, max.)	K	6
Direction of rotation (look on balance wheel)		left	Mixture inflow temperature after damper max.	°C	50
body of balance wheel		SAE 2	Mixture cooling water, inflow temperature	°C	45
tooth rim with number of teeth	Z	143	low temperature circuit (max.)		
compression ratio	ε	11,0 : 1	Mixture cooling water recirculated quantity	l/min	17
average effective pressure	bar	11,9	low temperature circuit (max.)		
average piston speed	m/s	6,3	Mixture cooling water inflow temperature	°C	85
			high temperature circuit (max.)		
			Mixture cooling water recirculated quantity	l/min	32
			high temperature circuit (max.)		
Power data			Efficiencies		
	Hz	50			
Load	%	100	Electrical	%	36,1
Ignition timing	degree	22	Mechanical	%	38,3
ISO standard power (mech.)	kW	68	Thermal	%	48,0
Electrical Power	kW	64	Total (el. + th.)	%	84,1
Cooling water heat	kW	54			
Mixture heat (high temperature circuit)	kW	6	Power number		0,75
Mixture heat (low temperature circuit)	kW	3			
Waste gas heat up to 180 °C	kW	26			
useable thermal power at 180 °C	kW	85	Mass flows and volume flows		
radiant heat of module (max.)	kW	22	Combustion air mass flow	kg/h	312
nominal power	kW	177	Combustion air volume flow	m ³ /h	264
Fuel consumption (mech.)	kWh/kWh	2,61	Supply air volume flow	m ³ /h	2.510
Fuel consumption (el.)	kWh/kWh	2,77			
Temperatures and pressures			Combustible mass flow	kg/h	36
Waste gas temperatur after turbine	°C	412	Combustible volume flow	m ³ /h	30
exhaust back pressure	mbar	40	Waste gas mass flow, wet	kg/h	349
Heating water return temperature	°C	70	Waste gas mass flow, dry	kg/h	323
Heating water flow temperature (max)	°C	90	Waste gas volume flow, wet	m ³ /h	269
Pressure decrease heating circuit internally	mbar	50	Waste gas volume flow, dry	m ³ /h	235
maximum backpressure at the air intake	mbar	15	Heating water volume flow (max.)	m ³ /h	5
Emission value at 5% residual oxygen			Technical basic conditions		
NOx	mg/Nm ³	< 500	Power conditions acc. To DIN-ISO-3046		
CO	mg/Nm ³	< 1.000	Norm conditions: air pressure: 1000 mbar		
			Air temperature: 25 °C or 295 K, rel. Humidity: 30%		
			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.		

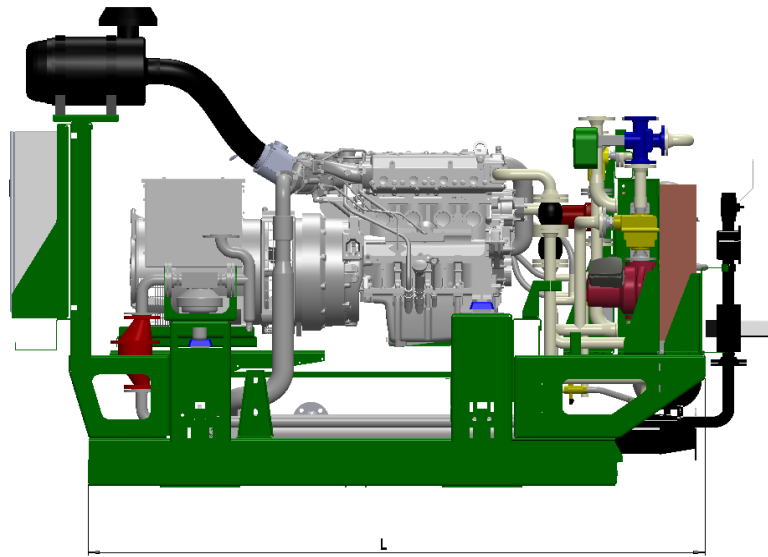
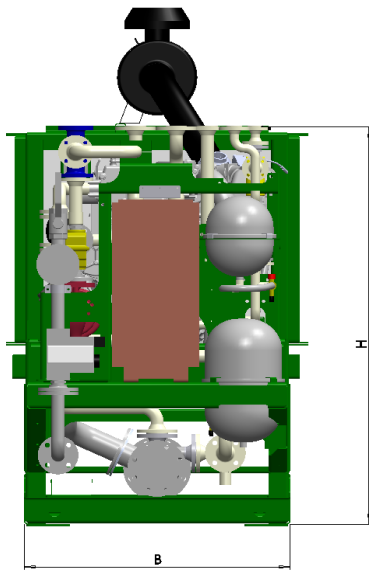
Generator data

Manufacturer	Leroy Somer	
Type	LSA 44.2 VS3	
Power at Cos φ = 0,8	kVA	80
Voltage	V	400
Frequency	Hz	50
Rated speed	1/min	1500
Nominal current at Cos φ = 0,8	A	115
Cos φ	0,8 - 1	
Efficiency (full load) at Cos φ = 1	%	94,30
Efficiency (full load) at Cos φ = 0,8	%	92,10
Reactance X"d	%	11,00
Reactance Xi = X2	%	12,00
Mass moment of inertia	kg m ²	0,83
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.		

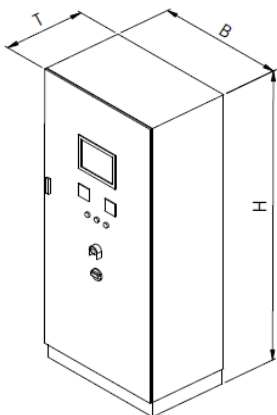
Main dimensions and weights

Module:			
Length (L):	mm	2.690	
Height (H):	mm	1.570	
Width (B):	mm	980	
Weight (approx.):	kg	2.230	
Control cabinet			
Height (H)	mm	1.900	
Width (B)	mm	800	
Depth (T)	mm	500	
Weight (approx.):	kg	200	
Power switch cabinet			
Height (H)	mm	1.900	
Width (B)	mm	600	
Depth (T)	mm	400	
Weight (approx.):	kg	150	

Modul:



Control cabinet:



Power cabinet:

