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

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

Engine data	Hz	50
Mixture cooling to	℃	50
RPM	1/min	1500
ISO standard power (mech.)	kW	260
Air ration (Lambda)	λ	1,45
Arrangement of cylinders		V
Number of Cylinders		8
Bore	mm	128
Stroke	mm	142
Swept volume	l	14,62
Direction of rotation (look on		left
balance wheel)		
body of balance wheel		SAE 1
tooth rim with number of teeth	Z	160
compression ratio	ε	12,0 : 1
average effective pressure	bar	14,5
average piston speed	m/s	7,1

Power data	Hz	50
Load	%	100
Ignition timing	degree	18
ISO standard power (mech.)	kW	260
Electrical Power	kW	250
Cooling water heat	kW	150
Mixture heat (low temperature circuit)	kW	17
Mixture heat (high temperature circuit)	kW	21
Waste gas heat up to 180 ℃	kW	119
useable thermal power at 180 ℃	kW	290
radiant heat of module (max.)	kW	42
nominal power	kW	644
Fuel consumption (mech.)	kWh/kWh	2,48
Fuel consumption (el.)	kWh/kWh	2,58

Temperatures and pressures		
Waste gas temperatur after turbine	℃	470
exhaust back pressure	mbar	40
Heating water return temperature (max)	℃	70
Heating water flow temperature (max)	℃	90
Pressure decrease heating circuit (max)	mbar	150
maximum backpressure at the air intake	mbar	15

Emission value at 5% residual oxygen		
NOx	mg/Nm³	< 500
CO (without catalyst)	mg/Nm³	< 1000
CO (with catalyst)	mg/Nm³	< 300
HCHO (formaldehyde without catalyst)	mg/Nm³	< 60
HCHO (formaldehyde with catalyst)	mg/Nm³	< 40
NMHC	mg/Nm³	< 150

Engine utilities		
Lubricate consumption	g/kWh	0,7
Filling capacity lubricant min./max.	l	30/70
		0
Filling capacity cooling water	l	16
Operating pressure (max.)	bar	3
Cooling water recirculated quantity	l/min	403
Cooling water temperature min.	℃	80
Cooling water temperature max.	℃	88
Balance (inflow/exit, max.)	K	6
Mixture inflow temperature after damper max.	℃	5 0
Mixture cooling water, inflow temperature	℃	45
low temperature circuit (max.)		
Mixture cooling water recirculated quantity	l/min	82
low temperature circuit (max.)		
Mixture cooling water inflow termperature	℃	85
high temperature circuit (max.)		
Mixture cooling water recirculated quantity	l/min	117
high temperature circuit (max.)		

Efficiencies		
Electrical	%	38,8
Mechanical	%	40,4
Thermal	%	45,0
Total (el. + th.)	%	83,8
Power number		0,863

Mass flows and volume flows		
Combustion air mass flow	kg/h	1.159
Combustion air volume flow	m³/h	979
Supply air volume flow	m³/h	9.729
Combustible mass flow	kg/h	132
Combustible volume flow	m³/h	108
Waste gas mass flow, wet	kg/h	1.290
Waste gas mass flow, dry	kg/h	1.197
Waste gas volume flow, wet	m³/h	996
Waste gas v olume flow, dry	m³/h	874
Heating water volume flow (max.)	m³/h	18

Technical basic conditions

Power conditions acc. To DIN-ISO-3046
Norm conditions: air pressure: 1000 mbar
Air temperature: 25 ℃ or 295 K, rel. Humidity: 30%
Gasquality accorcing "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

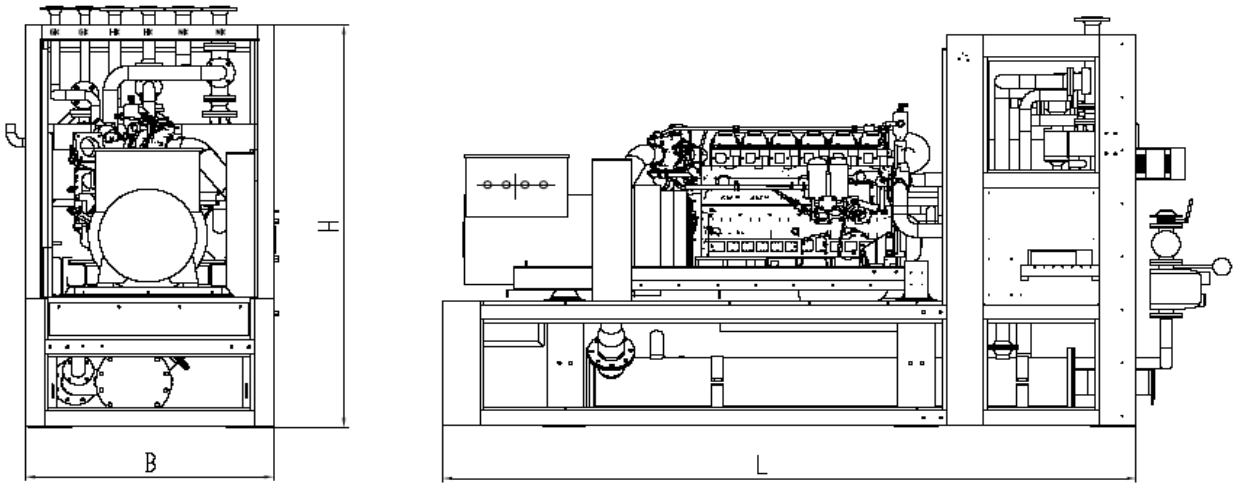
Manufacturer		Leroy Somer
Type		LSA 47.2 S4
Power at Cos φ = 0,8	kVA	312,5
Voltage	V	400
Frequency	Hz	50
Rated speed	1/min	1500
Nominal current at Cos φ = 0,8	A	451
Cos φ		0,8 - 1
Efficiency (full load) at Cos φ = 1	%	96,10
Efficiency (full load) at Cos φ = 0,8	%	94,60
Reactance X"d	%	13,00
Reactance Xi = X2	%	15,00
Mass moment of inertia	kg m²	6,70
Stator circuit		star
Ambient air temperature	℃	40
Protection class		IP 23

Cos φ has to be between 0,8 and 1,0 within the complete range of capacity.

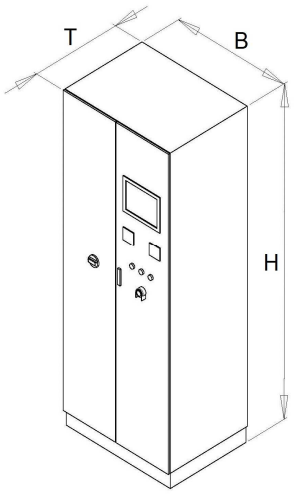
Main dimensions and weights

Module:		
Length (L):	mm	3.520
Height (H):	mm	2.208
Width (B):	mm	1.500
Weight (approx.)	kg	4.850
Control cabinet		
Height (H)	mm	2.000
Width (B)	mm	800
Depth (T)	mm	600
Weight (approx.)	kg	200
Power switch cabinet		
Height (H)	mm	2.000
Width (B)	mm	600
Depth (T)	mm	500
Weight (approx.)	kg	150

Modul:



Control cabinet:



Power cabinet: