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 circuitv and mixture circuit
- filling valves, cleanout valves and exhaust valves
- plate heat exchanger
- pumps for motor circuit und 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	Hz	50
Mixture cooling to	°C	50
RPM	1/min	1500
ISO standard power (mech.)	kW	158
Air ration (Lambda)	λ	1,4
Arrangement of cylinders		line
Number of Cylinders		6
Bore	mm	128
Stroke	mm	166
Swept volume	l	12,82
Direction of rotation (look on balance wheel)		left
body of balance wheel		SAE 1
tooth rim with number of teeth	Z	160
compression ratio	ε	14,8 : 1
average effective pressure	bar	9,8
average piston speed	m/s	8,3

Power data	Hz	50
Load	%	100
Ignition timing	degree	22
ISO standard power (mech.)	kW	158
Electrical Power	kW	150
Cooling water heat	kW	89
Mixture heat (high temperature circuit)	kW	7
Mixture heat (low temperature circuit)	kW	12
Waste gas heat up to 180 °C	kW	83
useable thermal power at 180 °C	kW	179
radiant heat of module (max.)	kW	31
nominal power	kW	393
Fuel consumption (mech.)	kWh/kWh	2,49
Fuel consumption (el.)	kWh/kWh	2,62

Temperatures and pressures		
Waste gas temperatur after turbine	°C	524
exhaust back pressure	mbar	30
Heating water return temperature	°C	70
Heating water flow temperature (max)	°C	90
Pressure decrease heating circuit internally	mbar	100
maximum backpressure at the air intake	mbar	15

Emission value at 5% residual oxygen		
NOx	mg/Nm³	< 500
CO	mg/Nm³	< 1.000

Engine utilities		
Lubricate consumption	g/kWh	1,0
Filling capacity lubricant min./max.	l	30 / 40
		0
Filling capacity cooling water	l	16
Operating pressure (max.)	bar	2
Cooling water recirculated quantity	l/min	247
Cooling water temperature min.	°C	80
Cooling water temperature max.	°C	88
Balance (inflow/exit, max.)	K	6
Mixture inflow temperature after damper max.	°C	50
Mixture cooling water, inflow temperature low temperature circuit (max.)	°C	45
Mixture cooling water recirculated quantity low temperature circuit (max.)	l/min	67
Mixture cooling water inflow termperature high temperature circuit (max.)	°C	85
Mixture cooling water recirculated quantity high temperature circuit (max.)	l/min	39

Efficiencies		
Electrical	%	38,2
Mechanical	%	40,1
Thermal	%	45,6
Total (el. + th.)	%	83,8
Power number		0,84

Mass flows and volume flows		
Combustion air mass flow	kg/h	682
Combustion air volume flow	m³/h	576
Supply air volume flow	m³/h	5.830
Combustible mass flow	kg/h	80
Combustible volume flow	m³/h	66
Waste gas mass flow, wet	kg/h	763
Waste gas mass flow, dry	kg/h	705
Waste gas volume flow, wet	m³/h	589
Waste gas volume flow, dry	m³/h	514
Heating water volume flow (max.)	m³/h	10

Technical basic conditions

Power conditions acc. To DIN-ISO-3046
Norm conditions: air pressure: 1000 mbar
Air temperature: 25 °C 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

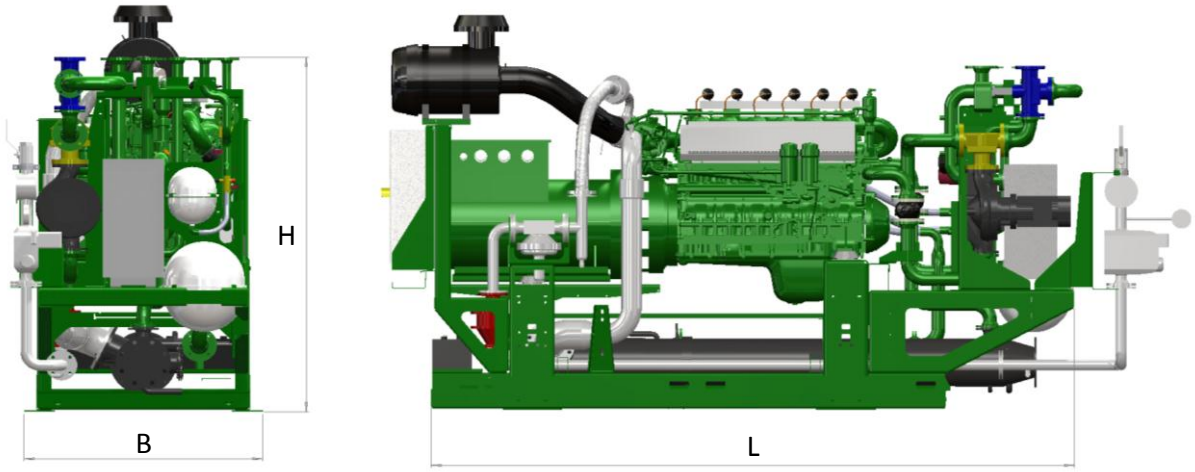
Manufacturer		Leroy Somer
Type		LSA 46.2 L6
Power at Cos φ = 0,8	kVA	188
Voltage	V	400
Frequency	Hz	50
Rated speed	1/min	1500
Nominal current at Cos φ = 0,8	A	271
Cos φ		0,8 - 1
Efficiency (full load) at Cos φ = 1	%	95,20
Efficiency (full load) at Cos φ = 0,8	%	93,10
Reactance X"d	%	11,60
Reactance Xi = X2	%	13,00
Mass moment of inertia	kg m²	2,11
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.

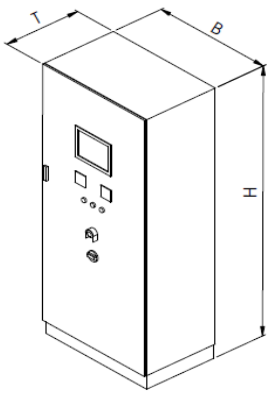
Main dimensions and weights

Module:		
Length (L):	mm	3.575
Height (H):	mm	1.950
Width (B):	mm	1.110
Weight (approx.)	kg	3.200
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: