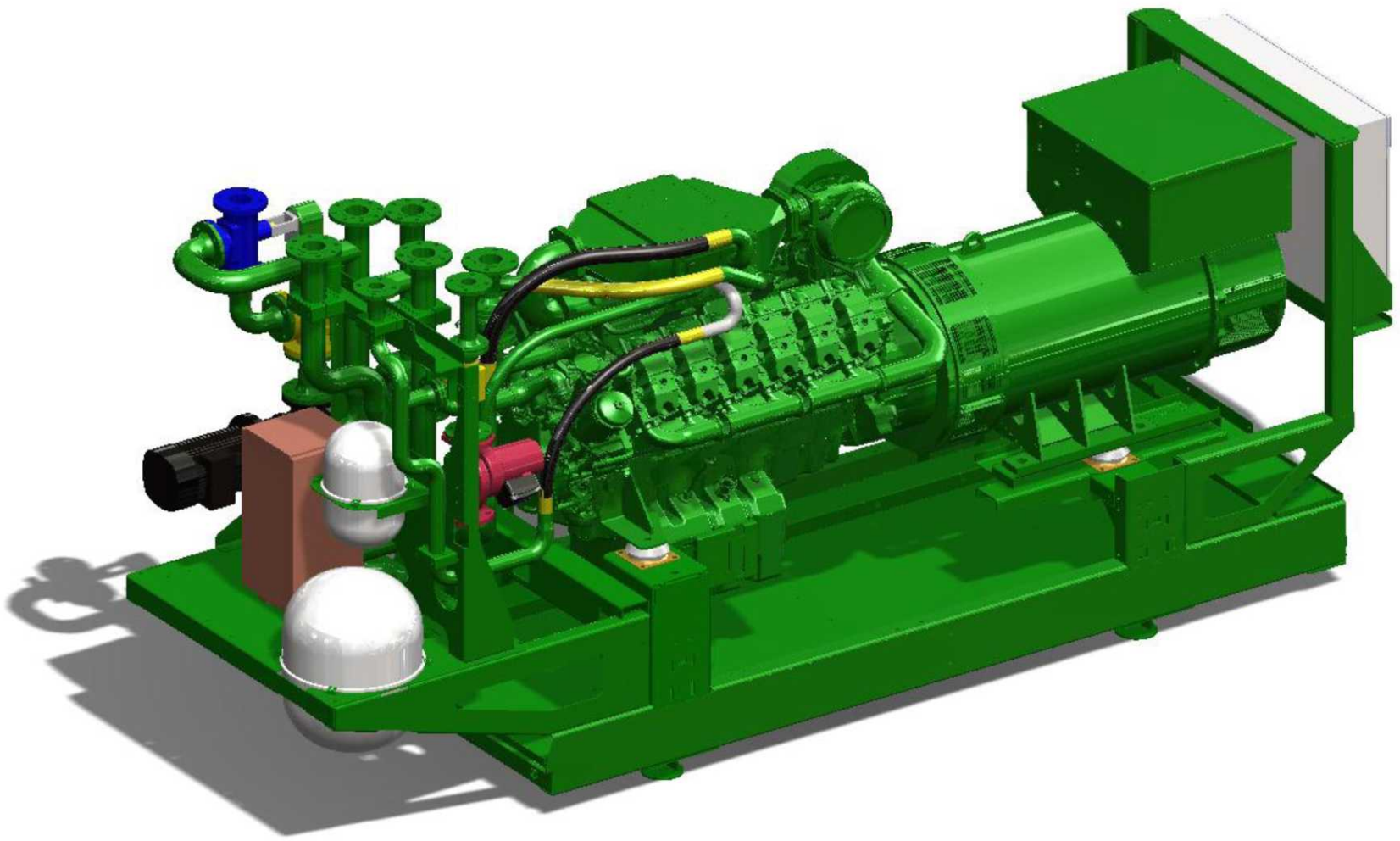


Illustration: may differ from specified module

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 value in motor circuit, mixture circuit and heater 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.

Motor and generator are connected through a pluggable elastic metal plastics coupler to compensate radial offest, axial offset or angular offset. It is mounted on a framework vibration-cushionedly. Furthermor the framework is uncoupled through oscillation decoupling elements.
The control cabinet ist 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 display performace 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 stationary engine designed for permanent operation. A micorprocessor-controlled ignition ensures an optimal adaption of the ignition point and the ignition energy to the gas quality (methane number).

Lambda control is done *without* a lambda probe (oxygen sensor), by means of a calculation program. Using the values Actual Power, Charge Pressure, and Mixture Temperature, the program sets the optimum lambda value for every operating condition.

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.

2G Energietechnik

Technical specification (preliminary*)
natural gas

avus 500plus

Engine data	Hz	50
Mixture cooling to	°C	50
RPM	1/min	1500
ISO standard power (mech.)	kW	569
Arrangement of cylinders		V
Number of cylinders		12
Bore	mm	130
Stroke	mm	157
Swept volume	l	25
direction of rotation (look on balance wheel)		left
compression ratio	ε	13 : 1
average effective pressure	bar	18,2
average piston speed	m/s	7,85

Power data	Hz	50
Load	%	100
Ignition timing	grad	18
ISO standard power (mech.)	kW	569
Electrical power	kW el	550
Cooling water heat	kW	211
Mixture heat (high temperature circuit)	kW	59
Mixture heat (low temperature circuit)	kW	47
Waste gas heat up to 180°C	kW	315
useable thermal power at 180°C	kW	585
radiant heat of module (max.)	kW	67
nominal power	kW	1291
Fuel consumption (mech.)	kWh/kWh	2,27
Fuel consumption (el.)	kWh/kWh	2,35

Temperatures and pressures		
Waste gas temperature after turbine	°C	454
exhaus back pressure (max.)	mbar	30
Heating water return temperature (max.)	°C	70
Heating water flow temperature (max.)	°C	90
Pressure decrease heating circuit (max.)	mbar	200
maximum backpressure at the air intake	mbar	15

Emission value at 5% residual oxygen		
NOx	mg/Nm³	< 500
CO	mg/Nm³	< 300

Engine utilities		
Lubricate consumption	kg/h	0,2
Filling capacity lubricant	l	96
Cooling water recirculated quantity (min.)	m³/h	55
Operating pressure (max.)	bar	2,5
Cooling water temperature (inflow)	°C	82
Cooling water temperature (exit)	°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.)	m³/h	16

Efficiencies				
Load	%	100	75	50
Electrical	%	42,6	41,2	39,6
Mechanical	%	44,1	42,6	41,4
Thermal	%	45,3	48,4	54,4
Total (el. + th.)	%	87,9	89,6	94,0
Power number		0,94	0,85	0,73

Mass flows and volume flows		
Combustion air mass flow	kg/h	2.880
Combustion air volume flow	Nm³/h	2.433
Supply air volume flow	m³/h	12.568
Combustible mass flow	kg/h	101
Combustible volume flow	m³/h	126
Waste gas mass flow, wet	kg/h	2.981
Waste gas mass flow, dry	kg/h	2.832
Waste gas volume flow, wet	Nm³/h	2.344
Waste gas volume flow, dry	Nm³/h	2.105
Heating water volume flow (max.)	m³/h	34

Technical basic conditions

Power conditions acc. to DIN-ISO-3046
Norm conditions: air pressure: 1000mbar,
air temperature: 25°C or 295 K, rel. humidity: 30%
Gasquality according "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.
When installed > 400 m and/or with intake air temperatures > 30 °C, the power reduction must be determined on a project-specific basis.

2G Energietechnik

Technical specification (preliminary*)
natural gas

avus 500plus

Generator data

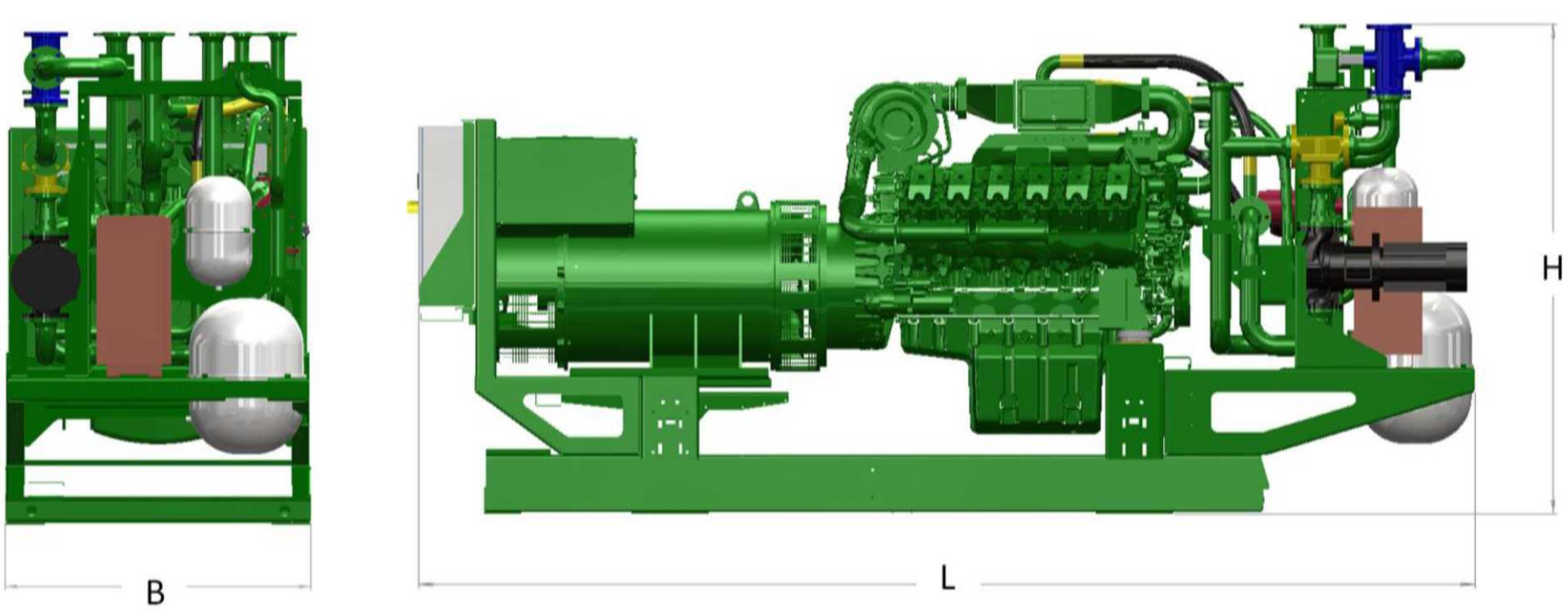
Manufacturer		Leroy Somer
Type		LSA 49.1 L9
Power	kVA	792
Voltage	V	400
Frequency	Hz	50
Rated Speed	1/min	1500
Nominal current at Cos φ = 0,8	A	980
Cos φ		1
Efficiency (full load) at Cos φ = 1	%	96,7
Efficiency (full load) at Cos φ = 0,8	%	95,5
Reactance Xd	p.u.	238
Reactance X'd	p.u.	14,1
Reactance X"d	p.u.	11,2
Mass moment of inertia	kgm²	11,31
Stator circuit		Stern
Ambient air temperature	°C	40
Protection class		IP 23

Between 0.8 inductive and 0.95 capacitive the Cos Phi is adjustable.
The exact setting is generally given by the utility company.

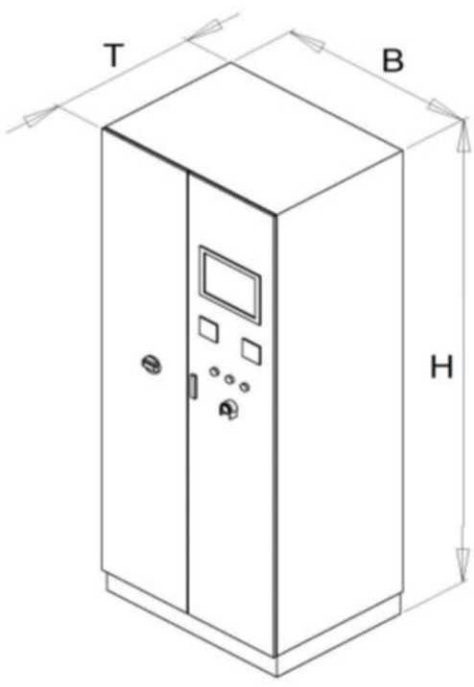
Main dimensions and weights

Module:		
Length (L)	mm	4.560
Height (H)	mm	2.150
Width (B)	mm	1.310
Weight dry (approx.)	kg	5.500
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 switch cabinet: