

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
- 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.

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 display 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 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 regulation is carried out without a lambda sensor using a calculation program which sets the optimal lambda value for each operating mode using the actual output, charging pressure and mixture temperature values.

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.

# Technical specification



Kraft-Wärme-Kopplung

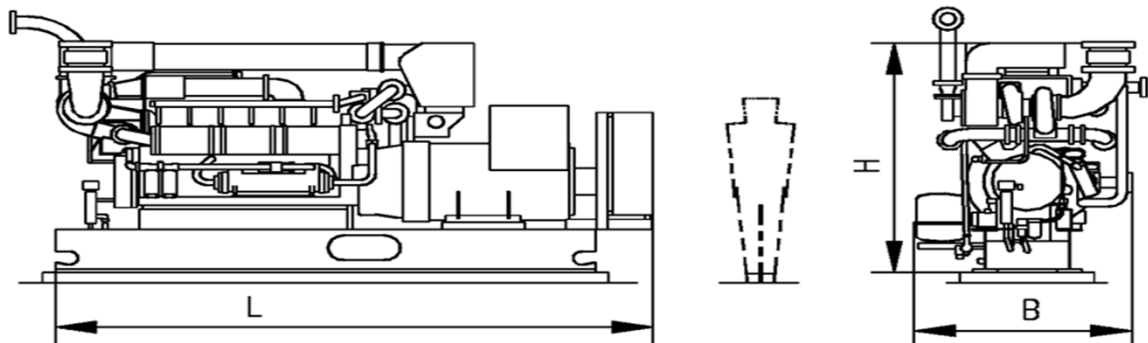
avus500a  
Erdgas MZ=70

Engine data			Hz	400	Engine utilities				
Mixture cooling to	°C	45			Lubricate consumption	kg/h	0,16		
RPM	1/min	1.500			Filling capacity lubricant min./max.	l	216		
ISO standard power (mech.)	kW	544							
Arrangement of cylinders		V70°			Filling capacity cooling water	l	-		
Number of cylinders		12			Operating pressure (max.)	bar	2,5		
Bore	mm	135			Cooling water recirculated quantity (min. / max.)	m³/h	26,9		
Stroke	mm	170			Cooling water temperature (inflow)	°C	74,4		
Swept volume	l	29,2			Cooling water temperature (exit)	°C	80,3		
					Balance (inflow/exit, max.)	K	5,9		
direction of rotation (look on balance wheel)		links							
					Mixture inflow temperature after damper (max.)	°C	45		
compression ratio	ε	12,5:1			Mixture cooling water, inflow temperature low	°C	40		
average effective pressure	bar	14,9041			temperature circuit (max.)				
average piston speed	m/s	8,5			Mixture cooling water recirculated quantity low	m³/h	15		
					temperature circuit (max.)				
Power data			Hz	50	Efficiencies				
Load	%	100				%	100	75	50
Ignition timing	grad	variabel			Electrical	%	39,9	38,5	36
ISO standard power (mech.)	kW	544			Mechanical	%	41,1	-	-
Electrical power	kW el	527			Thermal	%	47,4	48,6	51
					Total (el. + th.)	%	87,3	87,1	87
Cooling water heat	kW	247							
Low temperature mixture heat	kW	32			Power number		0,84	0,79	0,71
High temperature mixture heat	kW	74							
Waste gas heat up to 120°C	kW	305			Mass flows and volume flows				
useable thermal power at 120°C	kW	626							
radiant heat of module (max.)	kW	75			Combustion air mass flow	kg/h	2.767		
nominal power	kW	1.322			Combustion air volume flow	Nm³/h	2.141		
Fuel consumption (mech.)	kWh/kWh	2,43			Supply air volume flow	m³/h	13.486		
Fuel consumption (el.)	kWh/kWh el	2,51							
					Combustible mass flow	kg/h	111		
					Combustible volume flow	m³/h	139		
Temperatures and pressures									
Waste gas temperature after turbine	°C	461			Waste gas mass flow, wet	kg/h	2.862		
exhaus back pressure (max.)	mbar	60			Waste gas mass flow, dry	kg/h	2.649		
					Waste gas volume flow, wet	m³/h	2.263		
Heating water return temperature (max.)	°C	70			Waste gas volume flow, dry	m³/h	2.007		
Heating water flow temperature (max.)	°C	90							
Pressure decrease heating circuit (max.)	mbar	200			Heating water volume flow (max.)	m³/h	35,857		
maximum backpressure at the air intake	mbar	10			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 "TA 1100-0110"				
					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 Jenbacher technical instructions.				
					When installed > 500 m and/or with intake air temperatures > 30 °C, the power reduction must be determined on a project-specific basis.				
Emission value at 5% residual oxygen									
NOx	mg/Nm³	< 500							
CO	mg/Nm³	< 300							

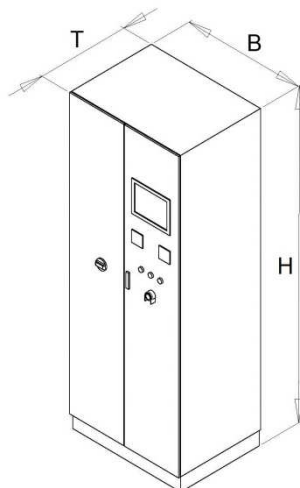
Generator data				Main dimensions and weights			
Manufacturer	Leroy-Somer			<b>Module:</b>			
Type	LSAC 49.1 L9			Length (L)	mm	4.700	
Power	kVA	659		Height (H)	mm	2.300	
Voltage	V	400		Width (B)	mm	2.300	
Frequency	Hz	50		Weight dry (approx.)	kg	10.800	
Rated Speed	1/min	1500		<b>Control cabinet:</b>			
Nominal current at $\text{Cos } \varphi = 0,8$	A	950,82		Height (H)	mm	2.200	
$\text{Cos } \varphi$	1			Width (B)	mm	1.000	
Efficiency (full load) at $\text{Cos } \varphi = 1$	%	96,9		Depth (T)	mm	600	
Efficiency (full load) at $\text{Cos } \varphi = 0,8$	%	95,7		Weight (approx.)	kg	-	
Reactance X <sub>d</sub>	p.u.	1,71		<b>Power switch cabinet:</b>			
Reactance X' <sub>d</sub>	p.u.	0,11		Height (H)	mm	-	
Reactance X'' <sub>d</sub>	p.u.	0,09		Width (B)	mm	-	
Mass moment of inertia	kgm <sup>2</sup>	11,31		Depth (T)	mm	-	
Stator circuit	Stern			Weight (approx.)	kg	-	
Ambient air temperature	°C	40					
Protection class	IP 23						

$\text{Cos } \varphi$  has to be between 0,8 and 1,0 within the complete range of capacity. Only inductive power output permitted.

### Modul:



### Control cabinet:



### Power switch cabinet:

