



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 value 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

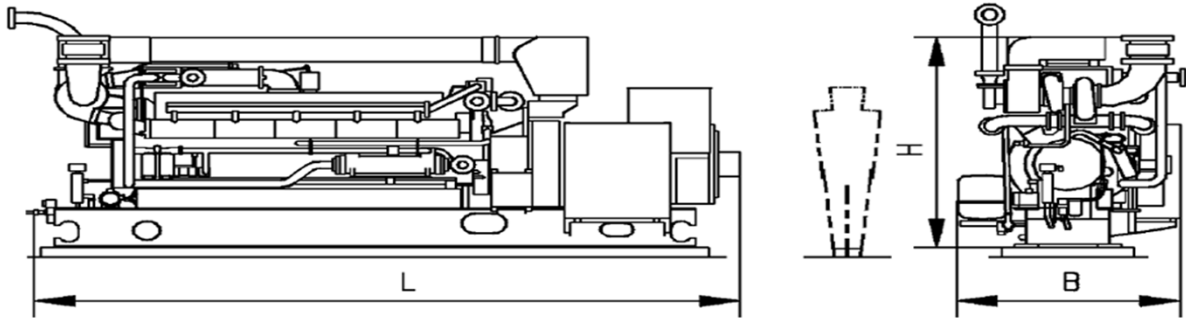
avus1000a
Erdgas MZ=70

Engine data			Engine utilities			
	Hz	400				
Mixture cooling to	°C	45	Lubricate consumption	kg/h	0,33	
RPM	1/min	1.500	Filling capacity lubricant min./max.	l	342	
ISO standard power (mech.)	kW	1.095				
Arrangement of cylinders		V 70°	Filling capacity cooling water	l	-	
Number of cylinders		20	Operating pressure (max.)	bar	2,5	
Bore	mm	135	Cooling water recirculated quantity (min. / max.)	m³/h	51,9	
Stroke	mm	170	Cooling water temperature (inflow)	°C	75,2	
Swept volume	l	48,67	Cooling water temperature (exit)	°C	81	
			Balance (inflow/exit, max.)	K	5,8	
direction of rotation (look on balance wheel)		links				
			Mixture inflow temperature after damper (max.)	°C	45	
compression ratio	ε	12,5	Mixture cooling water, inflow temperature low	°C	40	
average effective pressure	bar	17,9988	temperature circuit (max.)			
average piston speed	m/s	8,5	Mixture cooling water recirculated quantity low	m³/h	25	
			temperature circuit (max.)			
Power data			Efficiencies			
	Hz	50				
Load	%	100		%	100	75 50
Ignition timing	grad	variabel	Electrical	%	40,8	39,7 37,5
ISO standard power (mech.)	kW	1.095	Mechanical	%	42,0	- -
Electrical power	kW el	1.063	Thermal	%	46,4	47,5 49,4
			Total (el. + th.)	%	87,2	87,2 86,9
Cooling water heat	kW	352				
Low temperature mixture heat	kW	65	Power number		0,88	0,84 0,76
High temperature mixture heat	kW	196				
Waste gas heat up to 120°C	kW	542	Mass flows and volume flows			
useable thermal power at 120°C	kW	1.208				
radiant heat of module (max.)	kW	147	Combustion air mass flow	kg/h	5.487	
nominal power	kW	2.605	Combustion air volume flow	Nm³/h	4.245	
Fuel consumption (mech.)	kWh/kWh	2,38	Supply air volume flow	m³/h	26.482	
Fuel consumption (el.)	kWh/kWh el	2,45				
			Combustible mass flow	kg/h	219	
			Combustible volume flow	m³/h	274	
Temperatures and pressures						
Waste gas temperature after turbine	°C	427	Waste gas mass flow, wet	kg/h	5.675	
exhaus back pressure (max.)	mbar	60	Waste gas mass flow, dry	kg/h	5.254	
			Waste gas volume flow, wet	m³/h	4.487	
Heating water return temperature (max.)	°C	70	Waste gas volume flow, dry	m³/h	3.982	
Heating water flow temperature (max.)	°C	90				
Pressure decrease heating circuit (max.)	mbar	200	Heating water volume flow (max.)	m³/h	69,193	
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				

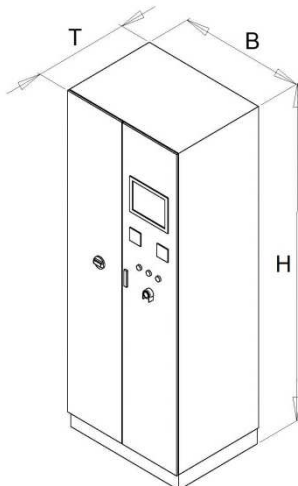
Generator data				Main dimensions and weights			
Manufacturer	Leroy Somer			Module:			
Type	LSAC 50.2 VL10			Length (L)	mm	5.700	
Power	kVA	1.329		Height (H)	mm	2.300	
Voltage	V	400		Width (B)	mm	1.900	
Frequency	Hz	50		Weight dry (approx.)	kg	16.300	
Rated Speed	1/min	1500		Control cabinet:			
Nominal current at Cos $\varphi = 0,8$	A	1.917,89		Height (H)	mm	2.200	
Cos φ		1		Width (B)	mm	1.000	
Efficiency (full load) at Cos $\varphi = 1$	%	97,1		Depth (T)	mm	600	
Efficiency (full load) at Cos $\varphi = 0,8$	%	96,1		Weight (approx.)	kg	240	
Reactance X _d	p.u.	2,42		Power switch cabinet:			
Reactance X' _d	p.u.	0,13		Height (H)	mm	2.200	
Reactance X'' _d	p.u.	0,11		Width (B)	mm	600	
Mass moment of inertia	kgm ²	25,67		Depth (T)	mm	600	
Stator circuit		Stern		Weight (approx.)	kg	120	
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. Only inductive power output permitted.

Modul:



Control cabinet:



Power switch cabinet:

