



Image: Symbolic, might differ from the described module

Compact CHP ready for connection, mainly consisting of

- serially manufactured Industrial-Gas-Otto-engine
- water-cooled asynchronous generator
- waste-gas heat exchanger integrated in cooling water circuit with energy use
- Control with powerful microcontrollers for automatic operation and remote monitoring
- gas train with safety unit

Integrated heat exchanger basket, mainly consisting of

- expansion tank in motor- and cooling circuit
- relief valven in motor- and cooling circuit
- filling valves, cleanout valves and exhaust valves
- plate heat exchanger
- pumps for motor- and cooling circuit

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 d

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	Engine utilities		
RPM	1/min	1.527			Total amount of oil	l	42
ISO standard power (mech.)	kW	21,5			Engine oil	l	12
Air ration (Lambda)	λ	1,0					
Arrangement of cylinders		row			Filling capacity cooling water	l	4,8
Number of Cylinders		4			Operating pressure (max.)	bar	1,5
Bore	mm	91			Cooling water recirculated quantity	l/min	3,7
Stroke	mm	86			Cooling water temperature min.	°C	80
Swept volume	l	2,237			Cooling water temperature max.	°C	88
					Difference (In-Outlet, max.)	K	6,0
Direction of rotation (look on compression ratio)		links			Efficiencies		
average effective pressure	bar	7,87					
average piston speed	m/s	4,3			Load	%	100 50
Power data			Hz	50	Electrical	%	33,1 28,1
power range, thermal	kW	10 - 20			Mechanical	%	35,9 30,4
power range, electrical	kW	29 - 46			Thermal *	%	73,2 81,6
					Total (el. + th.) *	%	106,3 109,7
Load	%	100			Power number *		0,452 0,344
Ignition timing	degree	20			Mass flows and volume flows		
ISO standard power (mech.)	kW	21,5			Combustion air mass flow	kg/h	75 44
Electrical Power	kW	20,0			Combustion air volume flow	m³/h	63 37
Cooling water heat	kW	26,0			Combustible mass flow	kg/h	5 3,0
Waste gas heat *	kW	18,2			Combustible volume flow	m³/h	5,86 3,5
useable thermal power *	kW	44,2			Waste gas mass flow, wet	kg/h	80 47
fuel performance	kW H _i	60,4			Waste gas mass flow, dry	kg/h	70 41
Fuel consumption (mech.)	kWh/kWh	2,81			Waste gas volume flow, wet	m³/h	63 37
Fuel consumption (el.)	kWh/kWh	3,02			Waste gas volume flow, dry	m³/h	52 31
Own consumption	kW	< 0,6					
Start-up current	A	< 150			Heating water volume flow (max.)	m³/h	2,2
Temperatures and pressures					Technical basic conditions		
Waste gas temperatur	°C	622,4			Power conditions acc. To DIN-ISO-3046		
Waste gas temperatur after heat Exch. (max.) ***	°C	90			Norm conditions: air pressure: 1000 mbar		
exhaust back pressure (max.)	mbar	15			Air temperature: 25 °C or 295 K, rel. Humidity: 30%		
Heating water return temperature (max) *****	°C	70			Gasquality accoring "2G TA 04 Gas"		
Heating water flow temperature (max)	°C	80			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 all have to meet technical instructions of 2G. When installing > 400m and / or intake air temperature is > 25 ° C then the derating must be specifically indentified.		
Pressure decrease heating circuit (max)	mbar	150					
maximum backpressure at the air intake	mbar	15					
gas flow pressure	mbar	≥ 20					
gas connection pressure	mbar	20-100					
Emission value at 5% residual oxygen							
NO _x **	mg/Nm ³	< 125			* Based on a Heating water return temperature of about 30°C		
CO **	mg/Nm ³	< 150			** 1/2 TA Luft		
Noise emissions (free field conditions)					*** Set safety temperature to 100 ° C		
SPL (Sound pressure Level)	dB (A)	≤ 52,0			**** based on 1 meter distance		
					*****with a flow temperature of 85 ° C, return temperature maximum is 50°C - Modulation from 65°C		

Generator data

Manufacturer	Weier	
Type	DASGM 225 / 4S	
Power at Cos φ = 0,8	kVA	26,0
Voltage	V	400
Frequency	Hz	50
Rated speed	1/min	1527
Nominal (uncompensated)	A	37,5
Nominal (compensated)	A	30,5
Cos φ (uncompensated)		0,77
Cos φ (compensated)		0,95
Efficiency (full load) Cos φ=0,77	%	92,30
Starting current (with frequ.conv)	A	< 40
Starting current (DOL)	A	< 150
Stator Circuit	triangle	
DOP (Degree of Protection)	IP 54	

Main dimensions and weights

Module with sound capsule			
Length (L):	mm		1.577
Height (H):	mm		1.220
Width (B):	mm		929
Weight (approx.):	kg		730
Module without sound capsule			
Length (L):	mm		1.203
Height (H):	mm		902
Width (B):	mm		760
Weight (approx.):	kg		550
Power switch cabinet			
Height (H)	mm		760
Width (B)	mm		600
Depth (T)	mm		210
Weight (approx.):	kg		45

Interfaces

Exhaust outlet	mm	80
Gas connection	inch	3/4"
Heating water return	inch	1"
Heating water flow	inch	1"

Dimensions

