Image: Symbolic, might differ from-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
- oil reservoir with automatic oil feeding
- Control with powerful microcontrollers for automatic operation and remote monitoring
- gas pressure-regulator and control-system

Integrated heat exchanger basket, mainly consisting of:

- expansion tank in motor- and cooling circuit
- relief valves 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

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**
RPM	1/min	1.514
ISO standard power (mech.)	kW	54
Air ration (Lambda)	λ	1,0
Arrangement of cylinders		Reihe
Number of Cylinders		4
Bore	mm	108
Stroke	mm	125
Swept volume	l	4.580
Direction of rotation (look on balance wheel)		links
compression ratio	ε	13:1
average effective pressure	bar	9,43
average piston speed	m/s	6,3

Power data	**Hz**	**50**
Power Range, electrical	kW	25 - 49,5
Power Range, thermical	kW	50 - 100
Load	%	100
Ignition timing	degree	18
ISO standard power (mech.)	kW	54
Electrical power	kW	49,5
Cooling water heat	kW	48,0
Waste gas heat*	kW	50,3
Generator heat*	kW	2,3
Useable thermal power *	kW	100,6
Fuel performance	kW H_i	145,5
Fuel consumption (mech.)	kWh/kWh	2,70
Fuel consumption (el.)	kWh/kWh	2,94
Own consumption	kW	1 - 2
Initial current	A	< 60

Temperatures and pressures		
Waste gas temperature *	°C	620
Waste gas temp. after heat-exchanger (max.) ***	°C	85
exhaust back pressure	mbar	10
Heating water return temperature (max)	°C	70
Heating water flow temperature (max)	°C	85
Pressure decrease heating circuit (max)	mbar	300
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		
NOx **	mg/Nm³	< 125
CO **	mg/Nm³	< 150

Noise emission (in free field conditions at 1 m distance)		
Sound pressure level (SPL) ****	dB (A)	60,0

Engine utilities		
Lubricate consumption	l	42
Filling capacity lubricant min./max.	l	17 - 25
oil consumption	g/kWh	< 0,3
Filling capacity cooling water	l	50
Operating pressure (max.)	bar	2
Cooling water recirculated quantity min.	l/min	9,1
Cooling water temperature min.	°C	80
Cooling water temperature max.	°C	88
Balance (inflow/exit, max.)	K	6

Efficiencies			
performance	%	100	50
Electrical	%	34,0	26,5
Mechanical	%	35,9	28,0
Thermal	%	69,1	71,6
Total (el. + th.)	%	103,1	98,1
Power number*		0,492	0,370

Mass flows and volume flows			
Combustion air mass flow	kg/h	177	115
Combustion air volume flow	m³/h	149	97
Combustible mass flow	kg/h	11,0	7,0
Combustible volume flow	m³/h	5,8	3,8
Waste gas mass flow, wet	kg/h	188	122
Waste gas mass flow, dry	kg/h	170	110
Waste gas volume flow, wet	m³/h	147	95
Waste gas volume flow, dry	m³/h	125	81
Heating water volume flow (max.)		m³/h	3 - 10

Technical basic conditions

Power conditions acc. To DIN-ISO-3046
Norm conditions: air pressure: 1000 mbar,
air temperature: 25 °C or 298,15 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. In case of installing at > 400m and / or intake air temperature are > 25 ° C, the project-specific performanc reduction has to be determined .

* Based on a heating return temperature of about 50°C
** 1/2 TA Luft
*** Safety cut-out set at 120°C
****Free field conditions at 1 m distance

Generator data

Manufacturer		Weier
Type		DASGM 250 / 4L
Power at Cos φ = 0,8	kVA	65
Voltage	V	400
Frequency	Hz	50
Rated speed	1/min	1.514
Nominal current at Cos φ = 0,8	A	94,0
Cos φ		0,86
Efficiency (full load)	%	94,7
Stator circuit		Dreieck
Protection class		IP 54

Interfaces

Exhaust outlet	mm	80
Gas connection	Zoll	1"
Heating circuit flow	DN	40
Heating circuit return	DN	40

Main dimensions and weights

Module:		
Length (L):	mm	2.427
Height (H):	mm	1.625
Width (B):	mm	994
Weight (approx.)	kg	1.800
Control cabinet		
Height (H)	mm	2.300
Width (B)	mm	1.400
Depth (T)	mm	750
Weight (approx.)	kg	1.350
Power switch cabinet		
Height (H)	mm	1.800
Width (B)	mm	800
Depth (T)	mm	500
Weight (approx.)	kg	150

Dimensions