



Dachs G/F Gen2

Technical Data

Manufacturer		SenerTec Kraft-Wärme-Energiesysteme GmbH Carl-Zeiss-Str. 18, 97424 Schweinfurt, Germany					
Type Dachs Gen2 ¹⁾		G5.5 ²⁾			F5.5 ²⁾		
Seasonal space heating energy efficiency class		A ⁺			A ⁺		
Rated heat output (P_{rated}) with power level I / II / III		kW		7.5 / 10.6 / 14.8		7.4 / 10.2 / 13.8	
Seasonal space heating energy efficiency		%		186		199	
Annual energy consumption		kWh / GJ		6366 / 23		5548 / 20	
Sound power level L_{WA} indoors		dB		63		62	
Electrical efficiency with power level I / II / III		%		26.5 / 26.5 / 25.6		27.6 / 27.4 / 26.8	
Fuel		Natural gas			LPG		
Power level		I	II	III	I	II	III
Rotations per minute		min ⁻¹	1200-1250	1700-1850	2200-2350	1200-1250	1650-1800
Electrical output ³⁾		kW	2.9	4.1	5.5	3.0	4.1
Thermal output ⁴⁾		kW	7.5	10.6	14.8	7.4	10.2
Fuel input ⁵⁾		kW	9.7	14.1	19.5	10.1	14.0
Voltage / frequency		3 ~ 230 V / 400 V; 50 Hz			3 ~ 230 V / 400 V; 50 Hz		
Electrical auxiliary demand ⁴⁾		kW	0.065	0.070	0.080	0.065	0.070
Efficiency							
electrical (H_s / H_i)		%	26.5 / 29.4	26.5 / 29.4	25.6 / 28.4	27.6 / 30.0	27.4 / 29.7
thermal (H_s / H_i)		%	68.9 / 76.4	68.1 / 75.5	68.4 / 75.9	67.7 / 73.5	67.2 / 73.0
overall efficiency (H_s / H_i)		%	95.3 / 105.7	94.6 / 104.9	93.9 / 104.2	95.3 / 103.5	94.6 / 102.7
Primary energy factors $f_{\text{PE,WV}}$ ⁶⁾		0.417			0.416		
Power coefficient			0.39	0.39	0.37	0.41	0.41
Sound pressure level ⁷⁾		dB(A)	48			47	
Service intervals		oh	7000			7000	
Flue gas evacuation		Moisture-resistant flue gas pipe ⁸⁾					
Dimensions (width without controller/depth/height)		mm	720 / 1070 / 1270				
Weight		kg	ca. 580				
Space requirements (width/depth)		mm	at least 1920 / 2020				
Efficiency class ⁹⁾		A ⁺⁺⁺			A ⁺⁺⁺		
Type		MSR3 controller					
Class		II					
Contribution to space heating energy efficiency		2 %					

¹⁾ The Dachs complies with the high efficiency criteria according to German CHP law;
Values measured with standard gas G20 and/or G31 under standard conditions.

²⁾ Minimum methane number: 35; including setting and nozzle adjustment on site

³⁾ According to ISO 30461, measured at the frequency converter outlet, tolerance $\pm 3\%$; values may differ depending on altitude, ambient and operating conditions

⁴⁾ Values from type/component test report for a return temperature of 30 °C with integrated condensing heat exchanger;
maximum supply flow temperature 83 °C, maximum return flow temperature 70 °C

⁵⁾ Values for a return temperature of 30 °C referred to H_i , tolerance $\pm 5\%$

⁶⁾ Calculation with the following power level percentages of the annual system uptimes: I = 30 %, II = 15 %, III = 55 %

⁷⁾ Sound power level at a distance of 1 m according to DIN EN ISO 3744, ambient conditions according to DIN EN 15036-1

⁸⁾ No common flue gas evacuation with boiler

⁹⁾ Calculation according to EN 50465 for Dachs Gen2 packages with MSR3 temperature controller



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Typical applications:

Single and multi-family houses, handicraft businesses, bakeries, butcher's shops, repair shops, car dealers, hotels, guesthouses, retirement homes, residential care homes, school buildings, kindergartens, sports centres, community centres, indoor pools, agricultural businesses and ecclesiastical institutions.

Inspection marks:

EU type examination for a ready-to-connect μ CHP plant according to EU regulation 2016/426 and DIN EN 50465:2015-06.

The Dachs...

works on the principle of combined heat and power generation. A combustion engine drives a generator, which produces electrical energy. About 100% of the heat produced during co-generation is utilised and fed into the building's heating network (heating/domestic hot water generation).

Three power levels allow for operation at an operating point respectively optimised for the generation of electricity and heat. They furthermore increase efficiency at a low sound pressure level of the CHP unit.

The Dachs works in parallel with the mains electricity supply. Heat and power are produced simultaneously.

The engine:

The single-cylinder four-stroke special engine with a cylinder capacity of about 580 cm³ is designed for a long service life provided that maintenance is conducted at the intervals specified in the maintenance plan.



The generator:

The permanent magnet generator, which is shrink-fitted to the crank shaft without clutch, is driven by the engine at a low noise level and without gear losses. The generator has a high electrical efficiency; it is both brushless and maintenance-free and designed to act as an engine starter during the starting procedure. For power output as well as for the current-limited starting procedure the generator is operated with an upstream frequency inverter.

The enclosure:

The unit is housed in a sound-proofed and thermally insulated enclosure.

The sound pressure level at a distance of 1 m is 48 dB(A) with natural gas and 47 dB(A) with LPG. To avoid structure-borne noise, all services are connected with flexible (heating water, fuel) or decoupled (flue gas) connections.

The control unit:

The integrated control unit is based on a micro controller designed to intelligently control the Dachs on the basis of heat and electricity demand. Furthermore, three power levels are available. The monitoring functions for gas flow, flue gas temperature and heating net connection are controlled by two redundant micro controllers, which mutually check each others' functionality. A 7-inch touch display allows for intuitive operation of the control programmes and entry of the operating and system data.

Scalability:

Up to six modules can be networked and operated via an integrated master controller.

Maintenance:

Maintenance is conducted according to the maintenance plan. Servicing is carried out by an authorised SenerTec partner as needed.

Flue gas evacuation:

The flue gas is generally conducted through a flue pipe approved for CHP units.

The flue gas temperature is below 120 °C.

Interface options:

Integrated Ethernet interface for the exchange of data with the SenerTec-server via an on-site router. The CHP system can be externally released via electrical inputs. Operating and maintenance messages as well as error messages can be output via interface, digital outputs and relay outputs.

The environment:

The engine concept for the Dachs G/F (lean-burn engine) allows for low NO_x-values. An integrated catalytic converter converts CO and HC.

Thanks to combined heat and power generation, up to 100% of the primary energy can be utilised. Compared to conventional, separate heat and power generation, considerable amounts of primary energy can be saved and CO₂-emissions can be avoided.

The Dachs family:

Dachs

The ideal complement to the boiler

Dachs SE

The complete power house

Fuels:

Natural gas, LPG

Output:

2,9 - 5,5 kW electrical

7,5 - 14,8 kW thermal