

THE DACHS

The micro-CHP solution for heating,
domestic hot water and power generation

Technical Data

Type	Dachs ¹⁾	G 5.5 standard ⁴⁾	G 5.5 condensing ²⁾	G 5.0 Low NOx standard ⁴⁾	G 5.0 Low NOx condensing ²⁾	F 5.5 Low NOx standard ⁴⁾	F 5.5 Low NOx condensing ²⁾
Fuel		Natural gas		Natural gas		Propane	
Electrical output [kW] ³⁾		5,5		5,0		5,5	
Thermal output [kW] ⁴⁾		12,5	14,8	12,3	14,6	12,5	14,8
Fuel input [kW] ⁵⁾		20,5		19,6		20,5	
Auxiliary demand [kW _{el}] ⁶⁾				0,12			
Max. water flow temperature				83 °C			
Max. water return temperature				70 °C			
Voltage / frequency		3 ~ 230 V / 400 V 50 Hz					
Efficiency:							
- electrical		27%		26%		27%	
- thermal		61%	72%	63%	74%	61%	72%
- Fuel efficiency		88%	99%	89%	100%	88%	99%
Power performance coefficient		0,44		0,41		0,44	
Noise level acc. DIN 45635-04				52 - 56			
Flue emission < German TA-Luft		X		X		X	
Service intervals [running hours]		3.500		3.500		3.500	
Minimum methane number ⁷⁾		35		35		35	
Flue gases		Joint exhaust routing with boiler possible. Exhaust piping with or without addition of secondary air.					
Location		According to local fire regulations.					
Dimensions:		Width (without controller): 72 cm / Length: 107 cm / Height: 100 cm / Weight: 530 kg					
(Width/depth) [cm]:		Dachs: min. 192/182		Dachs Condensing: min. 192/202		Dachs SE Condensing: min. 290/202	

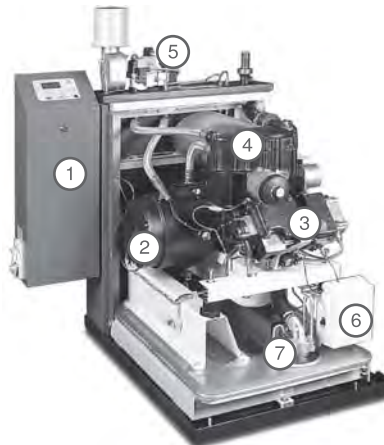
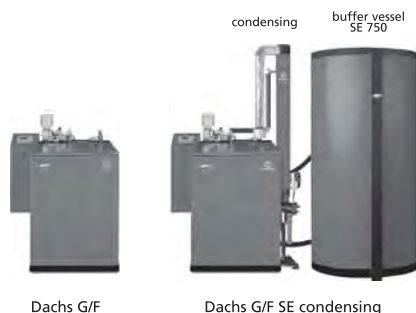
¹⁾The Dachs complies with the high efficiency criteria according CHP law;²⁾with external flue heat gas heat exchanger on a return temperature of 30°C;³⁾ Output to DIN ISO 3046, measured at the generator terminals. Precise values may differ according to altitude, environmental conditions and conditions of use ⁴⁾ Values from type / component test report for a return temperature of 60 °C; ⁵⁾ Values from type / component test report for a return temperature of 60 °C according to Hi, tolerance +/- 5%; ⁶⁾ tolerance +/- 10% at 230V~, calculated values for EnEV (Energy Conservation Ordinance); ⁷⁾with adjustment and jet calibration on site.

Typical applications

Multi-tenanted accommodation with centralised plant room, domestic dwellings, hotels, residential care homes, sheltered accommodation, extra care schemes, university accommodation, swimming pools, district heating schemes and light commercial applications.

Inspection marks

Type testing by TÜV Bavaria (with quality mark), DVGW quality mark. Conformity with the requirements for self-generation equipment connected to the low voltage grid, CE certification.



Dachs G/F:

- 1: MSR2 (Controller)
- 2: Generator
- 3: Engine
- 4: Flue gas heat exchanger/Silencer
- 5: Gas multibloc
- 6: Ignition
- 7: Gas volume regulator

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The Dachs unit:

works on the principle of combined heat and power generation. An internal combustion engine drives a generator which, in turn, produces electrical energy. Around 100% of the heat that is produced by the engine and generator during this process is recovered and is fed directly into the building's centralised heating and hot water system. The electrical output of the different Dachs types ranges between 5,0 and 5,5 kW. The thermal output is up to 14,8 kW. The Dachs unit works in parallel with the mains electricity supply. Heat and power are produced at the same time.

The engine:

If serviced in accordance with the service schedule and maintenance instructions, the single-cylinder 4-stroke 580 cc special engine is designed for a very long service.

The generator:

The specially-developed water-cooled asynchronous generator is firmly bolted to the engine, which drives the generator via a single-stage gear. The nominal active power of 5,5 kW is achieved with up to 91% efficiency

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 between 52 and 58 dB(A) in accordance with DIN 45635 (low reflection measure room). To avoid structure-borne noise, all services are connected with flexible connections.

The controller (MSR2):

The unit is controlled according to the heat demand. The integral microprocessor controller maintains a constant electrical output, and regulates and monitors the Dachs unit, the heat generation and the heating, gas and electricity supply systems. With the additional SE ancillary board the controller takes care of controlling domestic hot water demands and heating circuits as well. The software can be updated via an infrared interface

Multi modules option:

Up to 10 modules may be networked and operated via an integrated master controller.

Servicing:

Servicing is to be carried out by an authorized SenerTec partner according to the maintenance plan, repairs as required.

Exhaust system:

The flue gases are generally routed unpressurised via a special inlet pipe into the boiler flue or into the chimney. The flue gas temperature is approx. 140-160°C. With the Dachs unit, the flue gas temperature can be further reduced with an additional condensing exhaust heat exchanger (condensing unit). The flue gases are then dissipated via a flue gas pipe. Fuel efficiency can rise to over 100% (in relation to LHV for the fuel used) depending on the environmental conditions and conditions of use.

Interface options:

Monitoring and controlling the MSR2 can either be realised onsite via a laptop or a internet connection. The integrated modem connects the controller to the SenerTec server.

The environment:

The engine concept for the Dachs G/F unit (lean-burn engine) allows low NOx values. An integral catalyser converts CO and HC. In the Dachs HR unit, a soot filter reduces the amount of soot produced. Producing power and heat at the same time utilises almost 100% of the primary energy. Considerable amounts of primary energy can be saved and CO₂ emissions avoided compared to conventional, separate power and heat generation.

The Dachs versions:

Dachs

The Ideal addition to the boiler

Dachs SE and

Dachs SE condensing

The total energy solution

Fuels:

Natural gas, LPG

Output:

5,0 - 5,5 kW electrical,
12,3 - 14,8 kW thermal.

Service life:

Up to 20 years, depending on the annual operating hours and providing the unit is serviced according to servicing schedule and maintenance instructions.



SENERTEC

THE DACHS

**The micro-CHP solution for heating,
domestic hot water and power generation**

Integrated solution with advanced features

The Dachs SE, an integrated solution for the supply of space heating, domestic hot water and electrical power. The system is modular in design and can be configured to suit many applications including domestic dwellings, apartment blocks, district heating leisure centres, offices, hotels, sheltered housing and healthcare buildings. The system can be configured to meet the heat and power demands required by different types of buildings.

Additional Modules

The basic system consists of the Dachs micro-CHP unit and a buffer vessel. A domestic hot water module is available which can deliver up to 30 litres per minute. For buildings with a larger energy demand, e.g. apartment blocks and hotels additional Dachs micro-CHP units can be installed to form a larger multimodule system. It is therefore possible to cater for a wide range of heating system requirements.

Smart Control

The Dachs SE system is controlled by an intelligent controller - the MSR2. The MSR2 integral system can be configured to control all components associated with the system including heating circuits, peak load boiler and the domestic hot water module. The configuration and the set-up of the system is simplified by selecting the 4-digit hydraulic code. An optional modem or LAN interface provides remote monitoring and control of the system, and transmits operation data and service information.



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The micro-CHP solution for heating, domestic hot water and power generation

Modular heat supply with SE technology

- Can be integrated into all existing heating systems
- Suitable for all purposes due to multi-modular capability
- Buffer vessel prepared for the connection of DHW cylinder, heating circuits and additional peak load boilers
- Plug-and-play style installation

MSR2 system controller for straightforward controlling and monitoring

- Easy to use display
- Easy to set up with a 4-digit hydraulic code
- 30 pre-set hydraulic schemes ensure quick configuration
- Adjustable parameters for individual system set-up
- Optional modem or LAN connection for transfer of Dachs operation data

Advantages for consultants and installers

- Reduction of time required for design, installation and commissioning
- Modular components combined with comprehensive control and hydraulic connections reduce design and installation time
- On-site connection to laptop via an infrared interface
- Remote monitoring and configuration of the Dachs system to optimise the plant operation

More benefits and better service for the end-user

- Integrated solution for electricity, heat and hot water
- Modular technology to meet all heat requirements
- Low installation costs allows additional mini-CHP modules to be added when required

Technical Data - Dachs SE

Dachs

Electrical output	5,0 – 5,5 kW
Thermal output	10,3 – 12,5 kW
With condenser	11,7 – 14,8 kW
With immersion heater	15,8 – 18,0 kW
With condenser and immersion heater	17,2 – 20,3 kW
Fuel type*	natural gas, LPG, fuel oil EL, biodiesel (RME)

Buffer Vessel - SE 750

Capacity	750 l
Max. operation pressure	3 bar
Max. flow temperature	95 °C
Insulation	100 mm
Dimensions	without (with) insulation
Diameter	750 (950) mm
Height	1760 (1920) mm
Connections	immersion heater, heating circuits, peak load boiler, DHW cylinder, hot water module

Hot Water Module fi SE 30

Domestic hot water module	stainless steel plate heat exchanger with re-circulation feature
Nominal heat output	approx. 70 kW
Peak output @ approx. 45°C	30 l/min

SenerTec Micro CHP The Dachs

What is the Dachs?

SenerTec's Dachs is a micro Combined Heat and Power system that suits the smaller energy consumer, but which can be used to meet larger sites' requirements in multi-module arrangements. The Dachs is the most widely used CHP system in Europe, with over 30,000 units installed, and is the most popular micro CHP in Ireland, now installed in numerous applications throughout the country

Applications

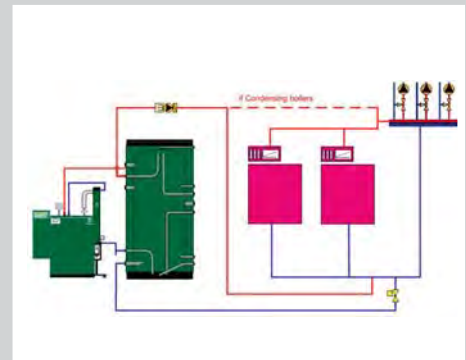
Due to its size, the Dachs is suitable for a wide range of applications where there is a continuous demand for heat and electricity. In residential applications, the Dachs is particularly suited to multi-occupancy accommodations served by centralised heating and hot water systems i.e. District Heating Systems.

- Nursing Homes
- Leisure Centres
- Sheltered Housing
- Hospitals
- Fire Stations
- Hotels
- District Heating
- Office Blocks

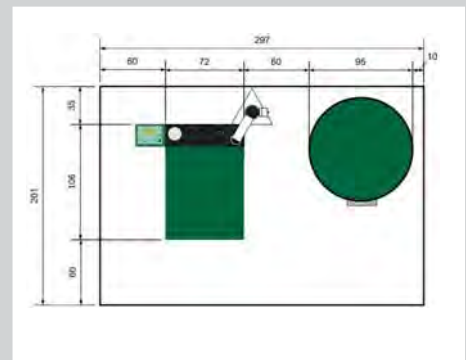
Fuel Input	20.5KW
Electrical Output	5.5KW _e
Heat Output	12.5KW _t
Heat Output Condensing	Up to 14.8KW _t
Overall Efficiency	88% to 99%
Weight	530KG
Noise	52dBA
Service Interval	3,500 Hrs
Buffer Tank Volume	750L



The Dachs SE Condensing Packaged System



Standard Arrangement



Space Requirements

