The Dachs

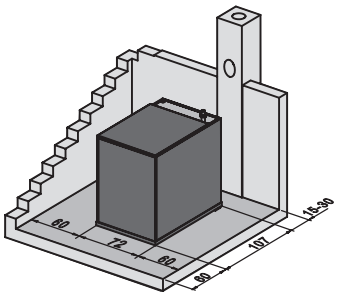
The boiler that really pays for itself

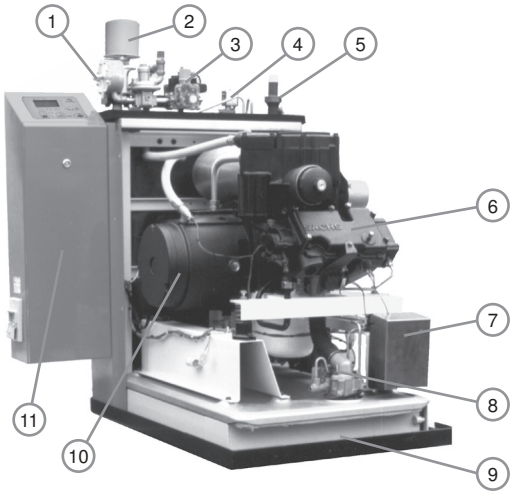
SENERTEC
KRAFT · WÄRME · ENERGIESYSTEME

Technical Data - Dachs

Type [1] Dachs	HKA G 5.5	HKA G 5.0 Low NOx	HKA F 5.5 Low NOx	HKA HR 5.3	
Fuel	Natural gas	Natural gas	LPG	Fuel oil EL [4]	Biodiesel (RME)
Electrical output [kW]*	5.5	5.0	5.5	5.3	5.3
Thermal output [kW]**	12.5	12.3	12.5	10.5	10.3
Fuel input [kW]**	20.5	19.6	20.5	17.9	17.6
Auxiliary demand [$kW_{el.}$]***	0.12			0.14	
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%	30%	30%
- thermal	61%	63%	61%	59%	59%
- Fuel efficiency [2]	88%	89%	88%	89%	89%
Noise level at 1 meter dB(A)	52 - 56			54 - 58	
Service intervals [running hours]	3,500	3,500	3,500	2,700	Recommended: 1,400
Minimum methane number [3]	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				

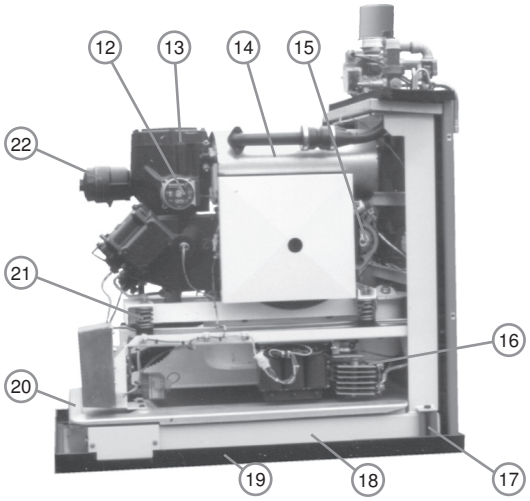
Dimensions:	
- Width (without controller) [cm]	72
- Lenght [cm]	107
- Height [cm]	100
- Weight [kg]	530





Dachs HKA G and F

1: Gas mixer
2: Air muffler connection
3: Gas-Multiblock
4: Start gas valve
5: Flue connection
6: Engine
7: Ignition
8: Gas volume regulator
9: Transport protection
10: Generator
11: Controller MSR2



12: Cooling water pump
13: Flue gas heat exchanger with oxidation catalyser
14: Flue gas silencer
15: 12V starter
16: 3-phase mains starter
17: Transport protection
18: Base frame with intake silencer
19: Floor sump with rubber bearings
20: Drip tray
21: Spring-mounted motor support
22: Lubricant oil filter

* Output to DIN ISO 3046, measured at the generator terminals. Precise values may differ according to altitude, environmental conditions and conditions of use. Tolerance +/- 3%

** Values from type / component test report for a return temperature of 60 °C, tolerance +/- 5%

*** Tolerance +/- 10%, calculated values for EnEV (Energy Conservation Ordinance)

**** For an inlet temperature of 60 °C and nominal output, tolerance +/- 3%

[1] For Dachs SE / Dachs SE Condensing / Dachs NE /Dachs WRA types, see separate data sheets (available upon request), [2] without external flue gas heat exchanger (Condensing unit), [3] with settings and jet adaption carried out on side, [4] without ash-forming additives, recommendation: low-sulphur

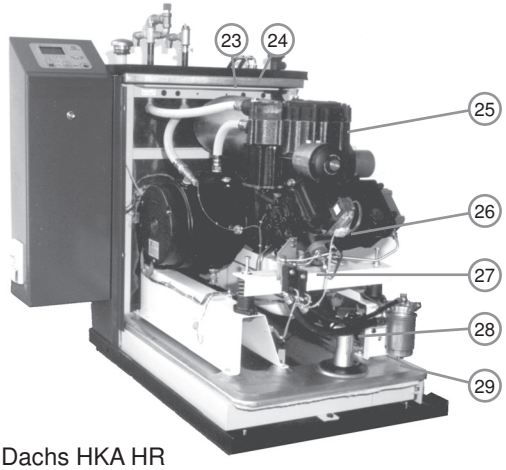
Typical applications

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

Inspection marks

Type testing by TÜV Bavaria, DVGW quality mark. The important characteristics conform to the VDEW directive for self-generation equipment operated in parallel with the mains supply, CE certification, BG - clearance certificate

We reserve the right to make technical changes and corrections



Dachs HKA HR

23: Fuel oil outlet
24: Fuel oil inlet
25: Exhaust heat exchanger with soot filter
26: Fuel injection pump controller
27: Fuel injection pump
28: Fuel oil pump
29: Fuel oil filter (internal)

SENERTEC KRAFT-WÄRME-ENERGIESYSTEME GMBH · Carl-Zeiss-Straße 18 · 97424 Schweinfurt · GERMANY · phone +49(0)9721.651-0 · fax +49(0)9721.651-203 · e-mail info@senertec.de

The Dachs

The boiler that really pays for itself

SENERTEC
KRAFT · WÄRME · ENERGIESYSTEME

The DACHS CHP 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 90% of the heat that is produced at the motor and generator during this process is utilised and is fed directly into the building's centralised heating and hot water system.
The electrical outputs of the various versions of the combined heat and power (CHP) unit range between 5.0 and 5.5 kW, with a heat output of 10.3 to 12.5 kW. The CHP unit works in parallel with the mains supply. Heat and power are produced at the same time.

The engine:

If serviced in accordance with the service plan and maintenance instructions, the single-cylinder 4-stroke special engine with approx. 580 cm^3 swept volume is designed for a extraordinary lifetime.

The generator:

The specially-developed water-cooled asynchronous generator is firmly bolted to the motor, which drives the generator via a single-stage gear. The nominal active power of 5.5 kW is achieved with up to 91% efficiency and a cos φ of up to 0.9.

The enclosure:

The unit is housed in a sound-proofed and heat-proof enclosure. The sound pressure level at a distance of 1 m is approx. 56 dB(A) to DIN 45635 (enveloping surface method). To avoid structure-borne noise, all connections are either flexible (water, gas) or decoupled (exhaust).

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 CHP unit, the heat generation and the heating, gas and electricity supply systems. The power supply system is monitored by the integrated grid protection. With the additional ancillary board SE 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 module option: [1)]

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 gase are generally routed unpressurised via a special inlet pipe into the boiler flue or into the chimney. The flue gas temperature is approx. 150°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.[1)] The integrated modem connects the controller to the SenerTec server.

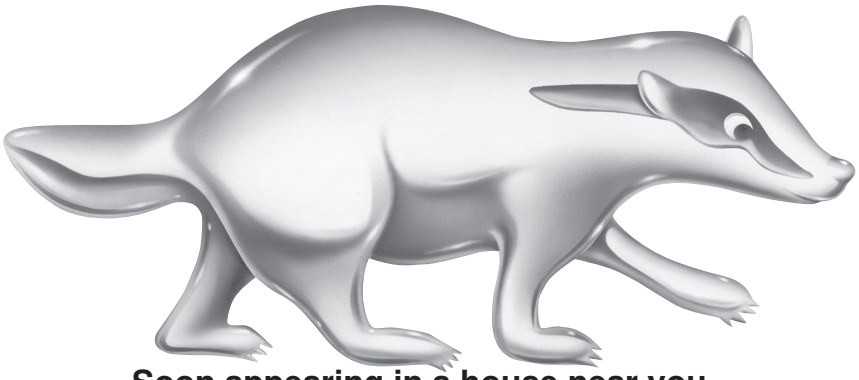
The environment:

The engine concept for the GAS CHP unit (lean-burn engine) allows low NOx values. An integral catalyser converts CO and HC. In the fuel oil CHP 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 CO_2 emissions avoided compared to conventional, separate power and heat generation.

The Dachs versions:

Dachs SE and
Dachs SE condensing:
The total energy solution
Dachs HKA:
The ideal addition to the boiler
Dachs NE (with MSR1):
A reliable supply in the event of a power failure (back up unit)
Dachs WRA (with MSR1):
The stand-alone power supply

Fuels:
Natural gas, LPG, fuel oil, biodiesel
Output:
5.0 - 5.5 kW electrical,
10.3 - 12.5 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.



Soon appearing in a house near you...

[1)] available in the fourth quarter of 2005

Art. No.: 06.05/4798.092.107 © changes and errors excepted

SENERTEC KRAFT-WÄRME-ENERGIESYSTEME GMBH · Carl-Zeiss-Straße 18 · 97424 Schweinfurt · GERMANY · phone +49(0)9721.651-0 · fax +49(0)9721.651-203 · e-mail info@senertec.de