

# Dachs



Mini-CHP

Carbon Saving Microgeneration Technology



**BAXI** -SENERTEC UK

**What is micro-CHP?**

Our grid electricity is generated by large, remote power stations which every year waste enough energy to heat most of our buildings. This huge waste of energy results in very inefficient and very expensive grid supplied electricity.



Micro-Combined Heat and Power is the simultaneous generation of principally electricity, and also of heat, close to the point of use. By locating micro-CHP equipment in or close to a building, the electricity generated and the heat produced can be used in the building with no energy wastage.

**Carbon saving technology**

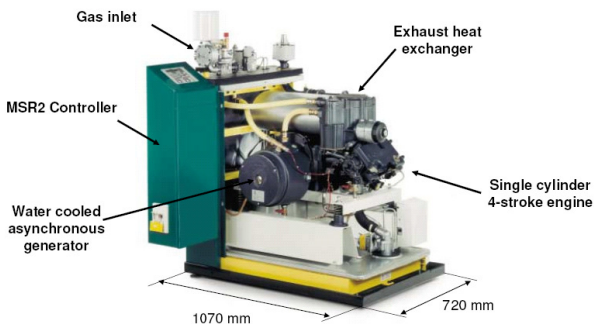
Micro-CHP is a key microgeneration technology which can deliver carbon savings of 20%-30%. It is a mature, reliable technology which delivers very attractive financial benefits and can play a big part in gaining compliance with planning and Building Regulations.

**Dachs mini-CHP**

The Dachs is manufactured by SenerTec GmbH, a Baxi Group company, and is Europe's biggest selling CHP unit. More than 20,000 Dachs installations have saved more than one million tonnes of CO<sub>2</sub> and generated over 2 GWh of low cost electricity.



The Dachs is designed for continuous running with a design life of 80,000 running hours. The reliable internal combustion engine drives a maintenance-free 3-phase electrical generator, and the

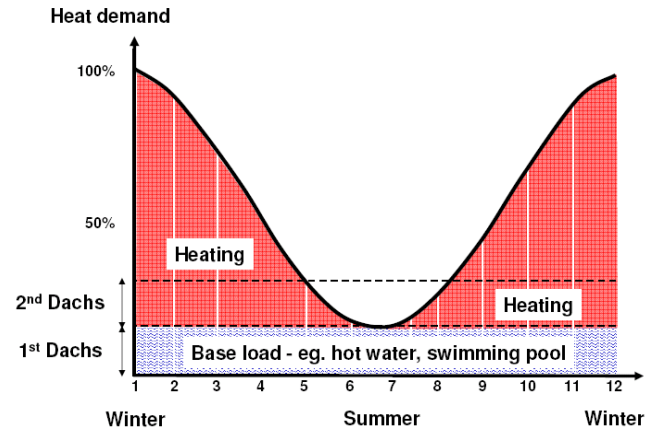


heat generated by the engine is captured and transferred to the building's heating system.

**Selecting a Dachs**

The key to a successful CHP installation is to make sure that the engine runs for as long as possible to generate valuable, low cost electricity.

Therefore, it is essential to know that the heat produced by the engine can be used in the building at all times. If the building's heat, or hot water, demand falls below the minimum heat output of the CHP, it will switch off until the heat demand is re-established. This will mean loss of electricity generation.



It is important to calculate the minimum, or base, heat demand of the building and select the number of Dachs modules to meet this requirement. If there is a fairly constant base demand, eg. for domestic hot water generation or for a swimming pool, the CHP will operate for long periods. If sufficient additional heat demand exists, it might be considered suitable to increase the number of CHP modules above the base demand requirements, but make sure that there is sufficient demand for most of the electricity generated.

**Key design points**

- keep it small - if there's no demand for its heat, it won't run.
- schedule CHP as the lead 'boiler' – this extends running time.

**Applications**

- Sheltered housing
- Apartment blocks
- Leisure centres
- Luxury houses
- Fire stations
- Hospitals
- Schools
- Hotels



Museum



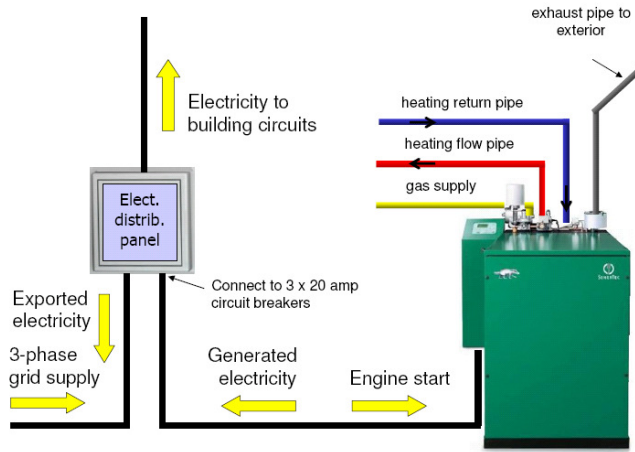
Fire station



Sheltered housing

## Installing a Dachs

Installation of a Dachs into a new or existing heating system is very straightforward, requiring a fuel supply, flow & return connections to a primary heating circuit, and an exhaust or flue gas pipe to outside.



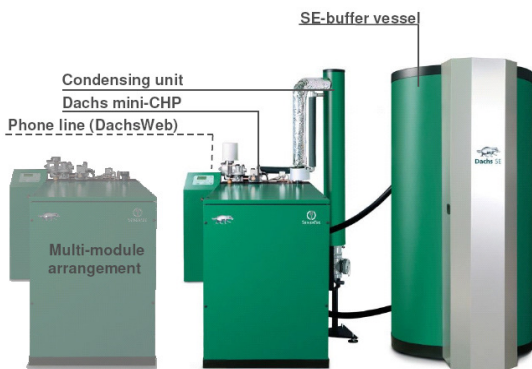
The Dachs electrical interface complies with the G83/1 Engineering Recommendation which permits direct connection of the generator to the building's circuits, and hence parallel connection with the public grid network. The grid will make up any power shortfall from the CHP, and any excess power generated by the CHP will be automatically exported to the grid.

## Dachs SE Condensing

The SE buffer vessel keeps the Dachs running when temporary heat demand reductions might otherwise switch it off for short periods. By avoiding unnecessary stop/start cycling, the engine stays in peak condition with no loss of efficiency.

The condenser recovers heat from the engine exhaust, increasing the overall efficiency of the Dachs to over 90%. The condenser should always be included when condensing boilers are installed.

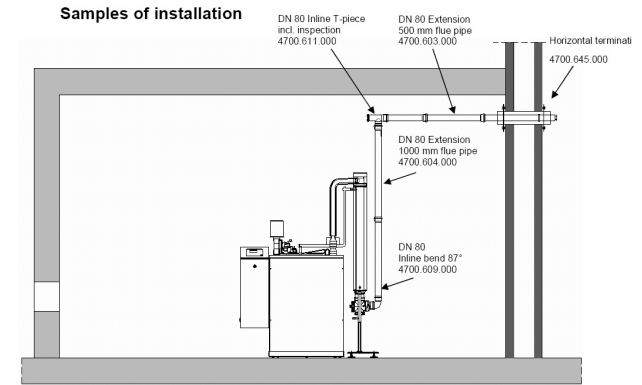
After passing through the condenser, the low temperature exhaust gas can be transported outside the building with plastic pipe.



The Dachs SE Condensing package includes a Dachs with a buffer and condenser and all interconnecting hydraulic and exhaust gas pipes.

## Condenser exhaust flue

The condenser plastic flue can terminate through the wall of the building (see example below), through the roof, or can be installed vertically on the external wall in accordance with flueing regulations and the requirements of the building.



## Multi-module Dachs

For larger buildings, or buildings with higher heat and electrical demands, the Dachs can be installed in systems of up to 10 modules. The operational software sequence controls the multi-modules to ensure optimum operational efficiency and to minimise servicing requirements.



This approach avoids the inefficiencies that can occur when larger units modulate to meet lower output requirements, and consequently delivers greater flexibility to meet changing load patterns.

Up to 3 multi-modules can be connected to one buffer vessel offering a totally flexible solution to meet future expansion needs.

## DachsWeb

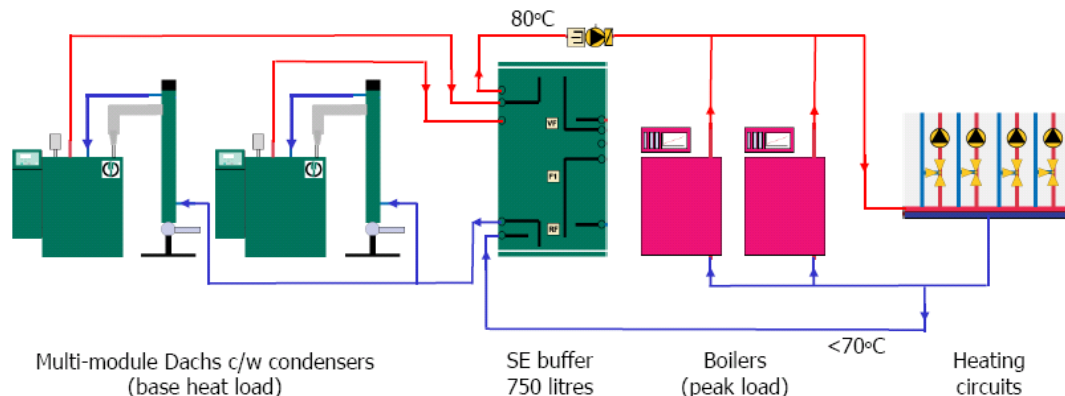
Every Dachs is equipped with a modem, and when an analogue telephone line is connected, full communication via a portal on our website is available. The Dachs can be monitored to ensure correct operation, operational data can be viewed and downloaded, and fault and service signals will be automatically transmitted.



short manual

Dachs communication system

## Typical hydraulic arrangement



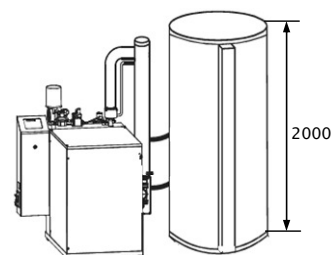
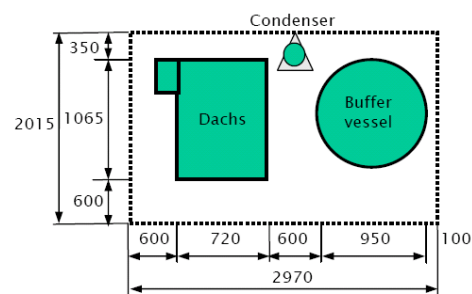
## Technical data

DACHS G 5.5	
Electrical output (3-ph)	5.5 kW
Thermal output (min.)	12.5 kW
With condenser (max.)	15.5 kW
Efficiency gross (nett)	79% (88%)
Max. with condenser	92% (102%)
Height	1000 mm.
Width (excl. controller)	720 mm.
Depth	1060 mm.
Weight	530 kg
Standard SV setting	2.5 bar
Max. WP (4.5 bar SV reqd.)	5.0 bar
Fuel gas supply pressure	20-50 mbar
Nat. gas input (22.8 kW)	2.13 m <sup>3</sup> /h
Noise emission (at 1 m)	52-56 dBA
Service intervals	3,500 hrs
Designed service life	80,000 hrs
Heating F&R conns. (flex.)	1"
Fuel gas connection (flex.)	½"
Non-cond. exhaust (steel)	1"
Cond. exhaust (plastic)	DN80
Heating flow temperature	80°C
Max. heating return temp.	70°C
Electrical connections:	
- 3-ph (3xL,N+E) onto 20A type 'C' circuit breakers	2.5 mm.
- equipotential bonding to main earth	10 mm
Optional BMS interface:	
- VF enable	
- fault indication	
- service due indication	

SE buffer vessel	
Capacity	750 litres
Height (with insulation)	1920 mm.
Diameter (excl. insulation)	750 mm.
Diameter (with insulation)	950 mm.
Insulation	100 mm.
Weight (excl. insulation)	140 kg
Max. hydraulic W.P.	3.0 bar
Htg. F&R conns. to Dachs	1"
F&R conns. to htg. system	1½"
Heating flow temperature	80°C
Max. heating return temp.	70°C

Condenser	
Additional heat output:	
- at 60°C return temp.	0.8 kW
- at 50°C return temp.	0.9 kW
- at 35°C return temp.	2.3 kW
- at 20°C return temp.	3.0 kW
Height	1750 mm.
Width	400 mm.
Depth	300 mm.
Top clearance required	1000 mm.
Weight	25 kg
Max. hydraulic W.P.	5.0 bar
Heating F&R connections	½"
Exhaust gas outlet (plastic)	DN80
Condensate drain	25 mm.
High limit safety 'stat (STL)	110°C
Htg. inlet temp. (return)	10°C-70°C

## Space requirements



## Dachs Maintenance Contract

The comprehensive Dachs Maintenance Contract provides full on-site and technical support. With a telephone line connection, remote monitoring is available so that fault and service signals can be automatically transmitted and attended to, thereby avoiding unnecessary delay time and shut-downs.

