

Consolar Thermal Heat Stores

for solar hot water and heating



Calculating System Size

To estimate the area of solar collector and volume of Thermal Store required, several factors need to be taken into account:

- Daily hot water requirement
- Annual heating load – if heating support is required
- Proposed orientation of collector
- Proposed pitch of collector

If the system is required to provide hot water only

The map and table below show how many collector panels are required for various parts of the UK

- Allow for 40 litres/person/day
- Allow a minimum of 80 and preferably 100 litres storage per m² of collector.

Orientation W SW S SE E

<1000kWh/m²/a (region I)

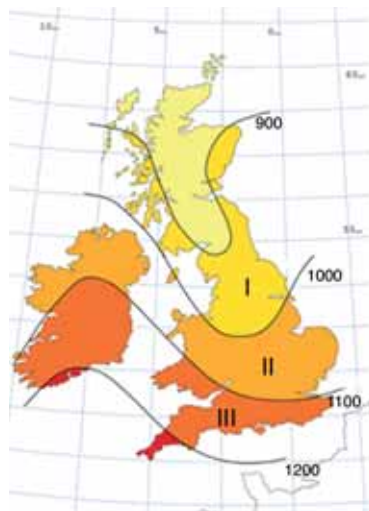
3 People	4	3	3	3	4
4 People	6	5	5	5	6
5 People	7	6	6	6	7
6 People	9	8	7	8	9

1000 - 1100kWh/m²/a (region II)

3 People	3	3	3	3	3
4 People	5	5	4	5	5
5 People	7	6	5	6	7
6 People	8	7	6	7	8

>1100kWh/m²/a (region III)

3 People	3	3	3	3	3
4 People	5	4	4	4	5
5 People	6	5	5	5	6
6 People	7	6	6	6	7



If the system is required to provide heating support

The solar system will contribute to the space heating mostly during the late autumn and early spring with some saving of energy during the winter on cold but sunny days.

Although it will operate with a radiator based system we recommend that an under-floor or other low temperature system is used. This is because the energy saving will be less in a radiator system due to the higher operating temperature employed.

The less heat your home requires to be kept warm the greater will be the contribution a solar system can make. It is always going to be best environmentally and economically to spend as much as you can to keep the heat in, rather than on a heating system to compensate for the heat that is leaking out.

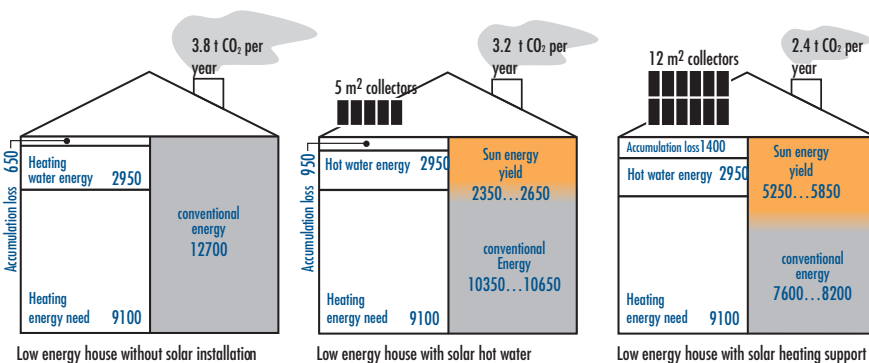
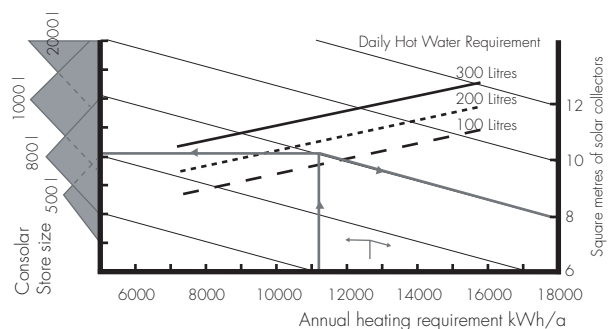
To maximise space-heating contribution, collector angles greater than 45 degrees should be employed. This will maximise the winter output and reduce the risk of overheating in the summer.

Example calculation for hot water and space heating support

The living area is 130m² and annual heating requirement of about 85kWh/m² giving a total of 11050kWh/a.

The grey line on the chart to the right shows 8m² of collector is needed with a storage volume of about 800 litres. This will also provide and about 150 litres of DHW per day.

The angle of the south-facing roof is 45°–60°.



This diagram of three houses shows the influence of different sizes of solar collector.

In addition to collector size the total solar input over the year depends on a range of other factors:

- whether you wish to assist space heating as well as providing hot water
- the angle and orientation of the roof
- whether there is any shading
- the location of the building.

Consolar Thermal Stores



Conus 502

Type: Vented thermal store

Use: Domestic, single house, multiple flats

Heating source: Solar, oil and gas boilers, wood pellet stoves, any controlled or regulated heat source

Capacity: 500 litre

Size: 940 x 1865 (+ 80mm)

Construction: Polypropylene tank

Solus range

Type: Sealed and pressurised thermal store (accumulator)

Use: Domestic, multiple housing units, commercial

Heating source: Solar, oil and gas boilers, wood pellet stoves, batch burning wood stoves.

Capacities: 550, 850, 1600, 2200 litres

Size: Varies with capacity

Construction: Steel

Solar Pur

Similar to the Conus but a "drain-back" system without a solar heat exchanger. The water from the store circulates through the roof mounted solar collectors and drains back when there is no sunshine or the store can take no more heat. This avoids the use of an antifreeze solution and eliminates the possibility of overheating. It also increases the operational efficiency of the flat plate collectors.

Type: Vented thermal store

Use: Domestic, single house, multiple flats

Heating source: Solar, oil and gas boilers, wood pellet stoves, any controlled or regulated heat source

Capacity: 500 litres

Size: 940 x 1865 (+ 80mm)

Construction: Polypropylene tank

Coax range

Type: Un-vented storage cylinder

Use: Domestic, single house, multiple flats

Heating source: Solar, oil and gas boilers, wood pellet stoves, any controlled or regulated heat source

Capacity: 390 litres

Size: 860 x 1870mm

Construction: Enamelled steel

Collectors and Controllers

Greenshop Solar Ltd offer a range of collector options including Consolar vacuum tubes and Consolar flat panel collectors. It is possible to use the solar thermal stores with third party collectors and controllers.

We are UK distributors for Consolar vacuum tubes and flat panel collectors. The vacuum tubes are supplied as 1m² assemblies and are

compact, good looking and quick to install. They have a very low embodied energy from manufacture with a payback as low as 18 months.

We can supply a range of solar controllers and Consolar integrated heating management controllers to the UK market. The advantage of the Consolar controllers is that a single unit can be used to manage the thermal store, the boiler and the building heating system.



GREENSHOP · SOLAR



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