

Grant Solar range

Solar thermal water heating systems



Lowers CO₂ emissions • Dramatically reduces annual fuel bills • Government cash incentives available • Solar Keymark approved
Premium manufacture for reliability and durability • On-roof, in-roof and flat-roof mounting options • Comprehensive product warranties



Grant profile

At Grant we have been designing and manufacturing reliable and easy to install heating products for over 35 years. From award winning oil-fired condensing boilers to the latest renewable technologies, our heating systems have a reputation for quality that is second to none.

We combine precision engineering, innovation, performance and value for money to produce sustainable heating solutions that are trusted by both installers and householders.



Quality design

There is never a compromise on quality. We design all of our products so that you can be sure that the durability and efficiency are sector leading. We continually develop new technologies and use only the best materials to ensure our products exceed all performance and environmental standards.

Our belief in simple solutions ensures that, while our technology is sophisticated, our products are low maintenance and easy to install. For a high quality, reliable and sustainable heating system, trust in Grant.

Heating responsibly

Grant manufacture heating systems that respond to the challenges of rising fuel costs whilst protecting our environment. Environmental responsibility is central to all we do and we continue to develop and innovate to produce even more efficient products that make best use of our natural resources.

We are passionate about developing sustainable, high-performance and affordable alternatives for heating homes into the future.

Our guarantee

The Grant label is a guarantee of reliability, quality and value. We put our customers first and our independence ensures that we can monitor our standards and processes to deliver the very best quality and service.

That's why, when you order your system from a Grant stockist, you can be sure of a tailored service and excellent aftersales support.



Fit for the future

Utilising the power of the sun is an excellent alternative to traditional energy sources.

With zero CO² emissions and an inexhaustible supply of sunshine (even in the UK!) solar technology is good for the environment and is an excellent way for homeowners to reduce their carbon footprint as part of a wider lifestyle choice.

Adding solar heating technology to a property also increases its value – houses with solar heating are less prone to the fluctuation in heating prices, making them an attractive option for potential buyers.

Why solar thermal?

Solar thermal is a clean and sustainable method of providing homes with hot water. As with all Grant products the technology is simple but highly efficient, providing an environmentally responsible and cost effective alternative to traditional energy sources.

The basic principle is easy to explain. If you leave a garden hose on the ground exposed to the sun, in a short time the water within will become hot. Solar thermal collectors work in very much the same way, only more efficiently. Roof-mounted solar collectors are connected to a coil containing a special glycol/ water solution. This heated fluid is circulated from the panel to a cylinder where the heat is transferred to produce hot water.

Typically, a solar thermal system can save you up to 70% on your annual hot water heating costs – so it's good for the planet and good for your wallet too!

The benefits of Grant Solar Thermal

Grant Solar provides an efficient and environmentally responsible solution to the use of fossil fuels.

All our products and components are rigorously tested to ensure the highest standards of quality and reliability and over time deliver significant cost savings.

Grant Solar collectors can be installed on sloping roofs using either an on-roof or in-roof mounting system or on flat roofs if required, and our self-cleaning glass means we keep maintenance to a minimum.



Solar Thermal overview

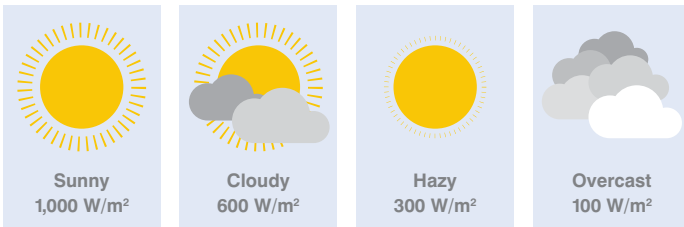
Introduction

The Grant Solar Thermal range encompasses many unique components, including: two alternative styles of flat plate collector, 'Sahara' and 'Aurora', multifunctional controllers with LCD displays, various mounting arrangements, including in-roof, on-roof and flat-roof options, and the unique Grant CombiSOL, which integrates solar thermal with combination boilers.

Free energy!

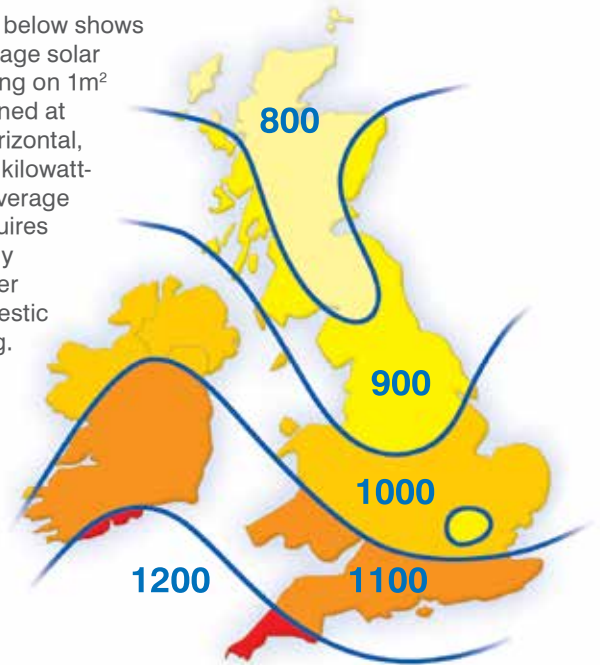
Many people believe that solar panels only work in the summer, however this type of free energy is available throughout the year. From May to September, solar thermal can produce 100% of the energy required for heating your domestic water (see below). Both the Grant Aurora and Sahara collectors operate not just with direct sunlight, but also diffused sunlight, so they even work on cloudy days.

On average Grant Solar can provide up to 70% of your hot water needs per year, for free!



Solar irradiation in the UK and Ireland

The diagram below shows the total average solar radiation falling on 1m² surface, inclined at 30° to the horizontal, measured in kilowatt-hours. The average property requires approximately 3,000 kWh per year for domestic water heating.



Collector

Dimensions (L x W x D)	2043 x 1143 x 80mm
Collector gross area	2.34m ²
Weight	40kg
Degree of efficiency no	79.1%
Heat loss coefficient	3.307W/m ² K
Effective thermal capacity	8.111KJ/m ² K
Maximum power output per collector	1.7kW
Stagnation temperature	177°C
Maximum operating pressure	6 bar
Fluid content	1.6 litre

Absorber

Absorption	95%
Emission	5.0%
Absorber net area	2.14m ²
Material/coating	copper/sunselect
Minimum efficiency	525kWh/m ² a

Solar Thermal collectors

Collector overview

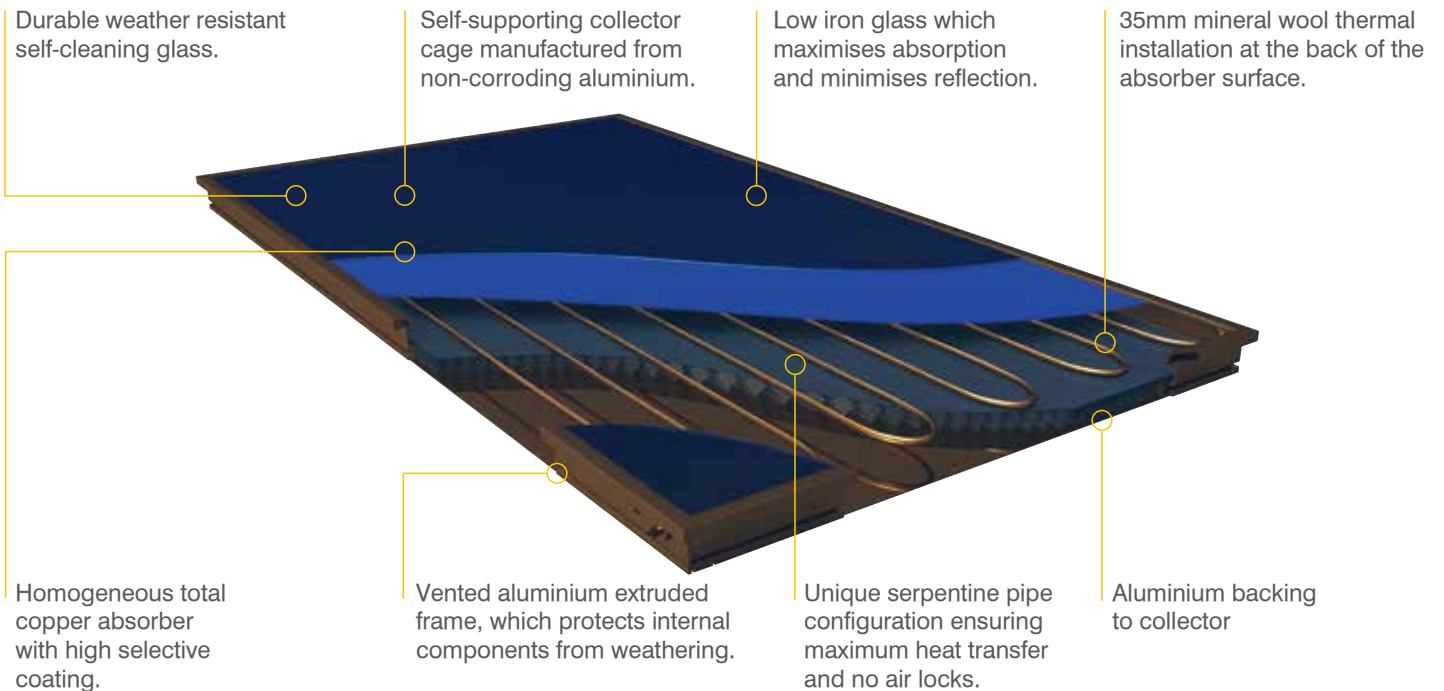
The Sahara collector has a durable aluminium frame with a dark bronze finish. It has been designed to blend with most roof types.

During the manufacturing process, the use of premium materials guarantees the collectors' reliability and durability. Independent assessments verify that the panels and their components conform to the most stern European quality standards.

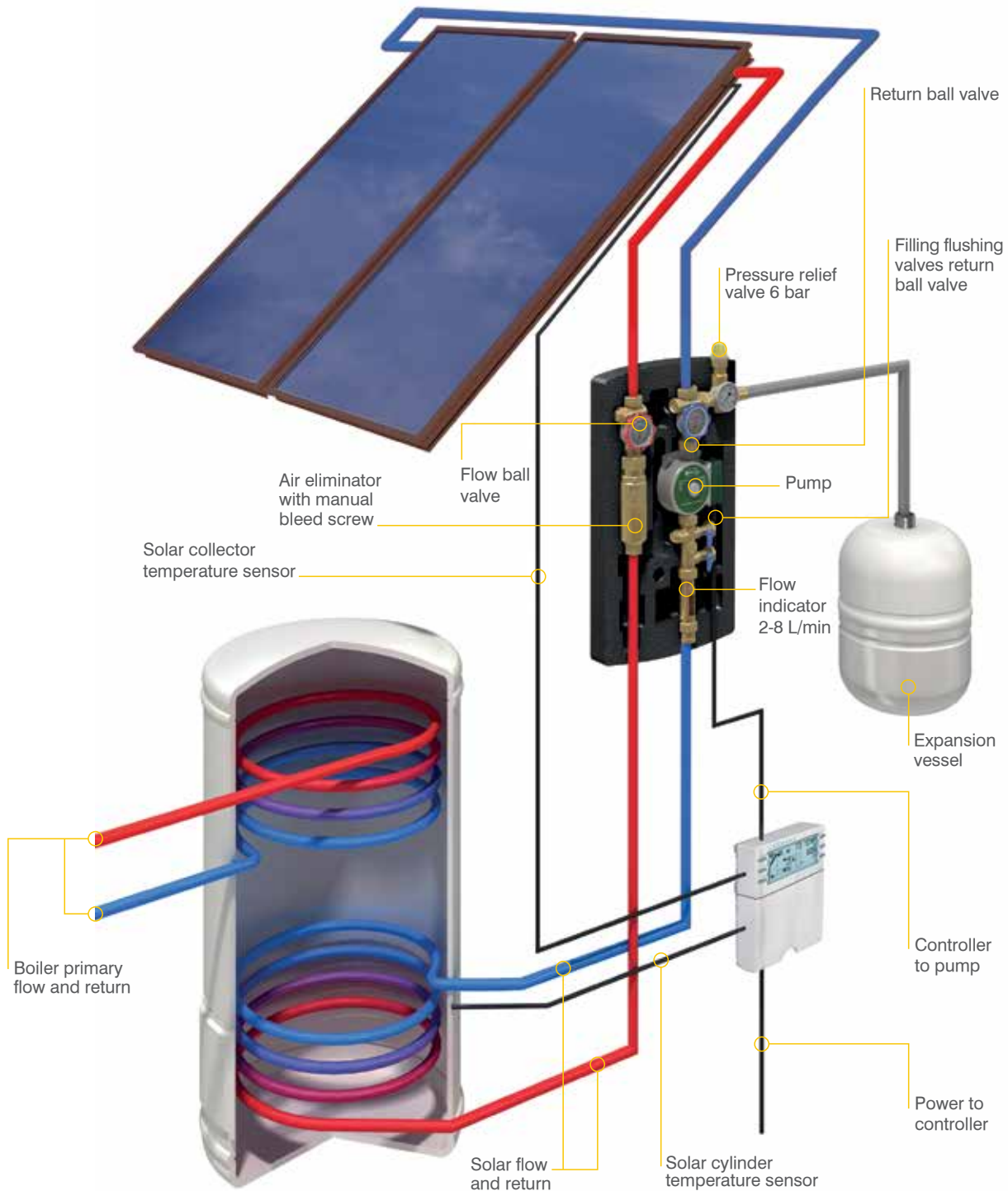


Sahara

Design



Solar Thermal system



Grant Solar Thermal has unique installation features. The pump station incorporates an air eliminator that allows the system to be both filled and purged of air in a single operation.

Unlike other arrangements there is no need to install an air vent on the roof and also no need for regular maintenance.

Grant Solar integrates easily with conventional water heating systems.

Solar Thermal design

Ease of ordering

To make life as straight forward as possible, Grant have introduced a series of individually numbered kits that meet most installation requirements.

These simply consist of either Aurora or Sahara collectors, a roof mounting system, expansion vessel, pump station, control panel, pipe connections and solar fluid - all of which can be installed in approximately two or three days.



Designing your system

Grant Solar collectors have a total area of 2.32m². As a rule of thumb, when sizing a system, you should allow 1.0-1.3m² of collector area, per person.

Cylinder requirements are 50-60 litres capacity per m² of collector area. To simplify this, for a 2-collector system of 4.64m², you would require a cylinder of approximately 200 litres. This would be sufficient for 4 people and satisfy up to 70% of your hot water demand per annum.

Things to consider:

- Location of building
- Orientation of building
- Angle of inclination (roof)
- % of solar contribution
- Hot water requirements
- Volume of system
- Shade
- Collector array in m²
- Size of cylinder
- Pipework requirements

How to calculate the number of collectors required

Direction of roof	Solar radiation (see map on page 04) kWh/Year	Number of people per household			
		<3	4	5	6
South	900 - 1000	2	2	2	3
	1000 - 1100	2	2	2	2
	1100 - 1200	2	2	2	2
South west / South east	900 - 1000	2	2	3	3
	1000 - 1100	2	2	2	3
	1100 - 1200	2	2	2	2
West	900 - 1000	2	3	3	4
	1000 - 1100	2	2	3	3
	1100 - 1200	2	2	2	3
East	900 - 1000	2	3	3	4
	1000 - 1100	2	3	3	3
	1100 - 1200	2	2	2	3

Solar Thermal components

Solar controllers

The Grant GSD1 and GSD3 differential solar controllers automatically manage the operation of the solar thermal system.

Monitoring the temperature in both collector and cylinder, they operate the circulating pump only when the difference in temperature will provide efficient heating of the hot water. They will also stop the circulating pump if the temperature in the collector exceeds the maximum set or, if the cylinder has reached the required temperature.



The Grant GSD1 controller is used where the collectors are located on the same side of a roof - such as with a south facing installation, whereas the Grant GSD3 is used where the collectors are located on either side of a roof - such as with an east/west facing installation.

Both solar controllers monitor and display the amount of solar power produced by the system on a daily and cumulative basis. Amongst other features

the GSD3 controller can display the collector and cylinder temperatures and also incorporates a pump kick facility which activates the pump for a short period each day to prevent the possibility of seizure if not operated for more than 24 hours.

Expansion vessel

Available in 18 and 25 litres, the expansion vessel connects to the solar pump station by a flexible hose. It incorporates a special membrane selected to withstand the higher temperatures found in solar thermal systems.



Solar pump station

The new Grant Solar pump station has been redesigned to make it more compact. The latest version has a black cover, housing the 3-speed circulating pump, along with all other control components and is designed for vertical wall mounting.

The flow and return ball valves incorporate temperature gauges to monitor return and flow temperatures and have integral anti-gravity brakes to prevent gravity circulation around the circuit when the pump is stopped.

The air eliminator with manual bleed screw allows for rapid air removal from the sealed system. The 6 bar pressure relief valve is mounted on a manifold with the system pressure gauge and expansion vessel connection.

Filling and flushing of the system is made easy by the combined fill and flush valve assembly and the adjustment of fluid flow rate is simple using the integral flow indicator.



Solar fluid

The solar fluid is an odour-free, non-toxic 40/60 glycol/water solution, developed specifically for solar thermal applications to protect systems from freezing.

The nitrate, phosphate and ammonia free fluid has been formulated to remain stable over long periods of time and is also a good corrosion inhibitor. It is available ready mixed in 10 or 20 litre packs.



Integrating renewables with combi boilers

With solar thermal systems increasing in popularity in the UK and many new and existing heating installations involving mains pressure combination boilers, a simple, cost effective solution to integrate these two technologies is a must.

The Grant CombiSOL is designed to do just that, and is uniquely compatible with most combi boilers and fuel types.

It works by accurately controlling the outlet temperature of stored secondary hot water produced by a solar thermal system, directing the flow either straight to the hot water outlet, or via the combi boiler to the same outlet with a seamless changeover. There are additionally minimal temperature fluctuations at the taps.

Compatibility

The Grant CombiSOL also accurately regulates the inlet water temperature to the combination boiler, therefore installing this unit with any combi boiler should not pose a problem, as the mixed water into the appliance is limited to a maximum of 24°C.

Technical information

The unique thermostatic change-over valves provide a safe and simple solution for adding renewable energies to the home without having the added expense of changing your central heating appliance.

It is important to ensure that the combination boiler can accept an incoming cold mains water temperature of up to 24°C. If in doubt, contact the boiler manufacturer. Grant's extensive research and development programme has refined the use of each valve (marked clearly on the white cap) to give optimum control of hot water delivery to your taps.



A fully heated cylinder in times of low solar gain

The Grant WinterSOL has been designed to provide homeowners with a fully heated cylinder of hot water during times when there may not be sufficient solar (or heat pump) gain, therefore ensuring hot water demand is satisfied.

During the winter months, for example, 150 litres of hot water from a 300 litre cylinder may be insufficient. By fitting the Grant WinterSOL, a simple summer/winter switch can be operated by the customer, allowing the central heating boiler to heat the full contents of the cylinder. When solar gain is restored, the switch is set back to summer mode for maximum efficiency. This unit does not directly prevent solar thermal or heat pump systems from operating as it only energised during the customers normal programmed hot water period.



Solar Thermal mounting options

Roof inclination and direction

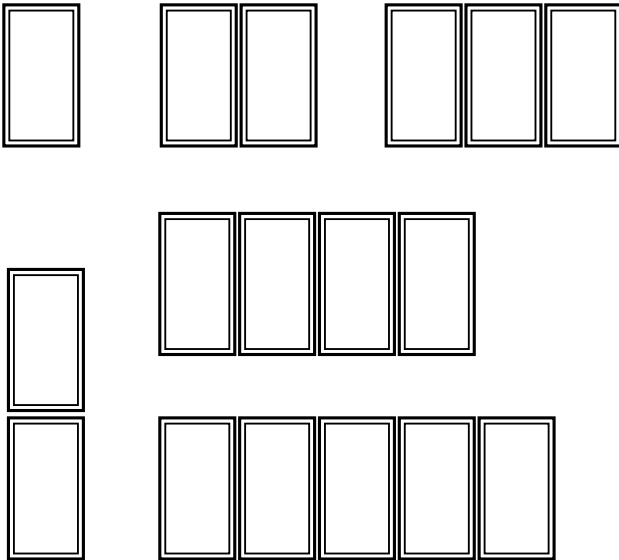
When choosing a system there are a number of factors to consider.

Almost any roof type is suitable, however a south facing arrangement could gain 100% of the light available during the day. If the roof was to face south-east or south-west there will be a reduction in yield by 5-10%.

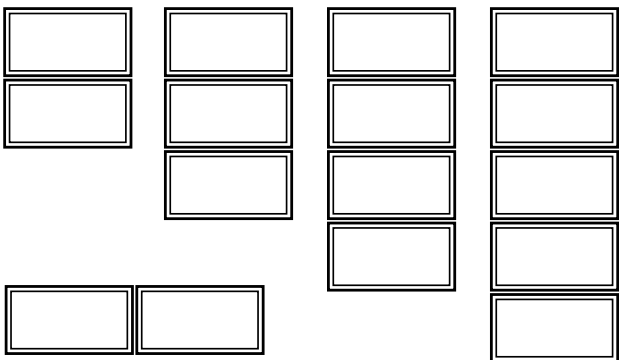
Positioning

Collectors can be positioned on the roof either in a portrait or landscape arrangement, as shown below.

Portrait



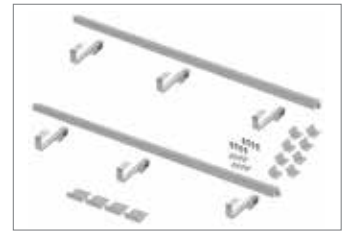
Landscape



Up to 5 collectors can be used in series

On-roof

Grant Solar collectors can be quickly and easily located above the roof tiles or slates using brackets and a mounting rail attached directly to the roof trusses. This system is available with fixing brackets suitable for all roof tile types including slates, on roof pitches ranging from 20° to 60°. The on-roof mounting system is supplied as standard with any Grant Solar kit.



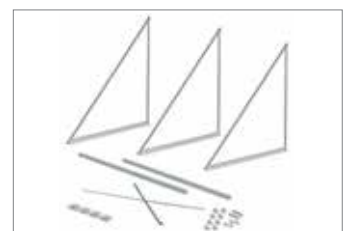
In-roof

Installation of Grant Solar collectors set into the roof tiles or slates ensures a low-profile appearance. The roof surface beneath is closed within an aluminium weathering cassette incorporating flashings and drainage channels etc. In new build applications this mounting option reduces roofing costs, as tiles are not required beneath the installation. (Note: for a roof tiled with reclaimed slate, the flashing may appear uneven. Please contact Grant for an alternative solution).



Flat-roof

The flat-roof system is based upon the on-roof design. The mounting rails are fitted to a rigid inclined frame structure. This method allows the collectors to be positioned quickly and easily on a flat roof.



Solar Thermal technical data

Installation

The installation of the Grant Solar Thermal system must be carried out by a competent trained person in accordance with the relevant requirements for health and safety, local building regulations, building standards in Scotland and regulations and bylaws of the local water company.

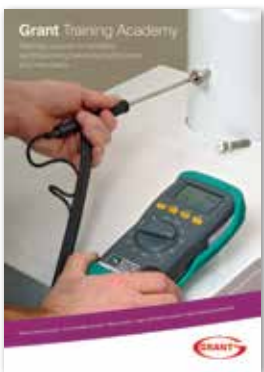
Comprehensive technical information can be found in the installation manual, which is supplied with every solar product. Recent changes to legislation mean that planning permission is not required on most domestic houses, unless the property is listed, or in an area of outstanding natural beauty (Regulations subject to change).

Training Academy

At our purpose built Training Academy in Devizes we offer a wide range of training courses, including Grant product training courses, OFTEC training and assessment and Logic Certification courses. Our facilities include air-conditioned lecture rooms and extensive oil burner and 'renewables' training and assessment workshops. Here our trainees can hone their skills on a full size training roof, working solar thermal and wood pellet boilers, air source heat pumps, thermal store installations, solar thermal training/assessment rigs and unvented hot water training and assessment rigs.

The training covers all aspects of the Grant Solar Thermal range including designing and planning a system, installation, operation and key features and benefits.

For further information call: 01380 736943



Aftersales service

For peace of mind, all Grant Solar products are backed by a national network of service engineers. In the unlikely event of a problem occurring, your installer should telephone our Customer Service Department on: 01380 736920

Guarantees

Grant Solar Thermal systems are covered by a unique five-year manufacturer's guarantee, subject to the system and its components e.g. collectors, fixings, etc. being supplied by Grant as a kit.

Please note that Grant do not warranty mixed systems i.e. those which include parts or collectors that have not been supplied by Grant.

All guarantees are from date of purchase and subject to being installed in accordance with the manufacturer's instructions.

On completion of the installation, the system should be commissioned and registered online at: www.grantuk.com

Website downloads

For further information about the Grant product range or to download our brochures please visit our website at: www.grantuk.com



This leaflet is accurate at the time of printing but as Grant has a policy of continual improvement it may be superseded. We reserve the right to amend specifications without prior notice. The statutory rights of the consumer are not affected.

All products manufactured under I.S. EN ISO 9001 and ISO 14001.

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