



Solar Hot Water





Renewable, Reliable, Rewarding



Harness the Power of the Sun in Your Home

Renewable energy is fast becoming a necessity in many house holds through-out the UK. Rising fuel costs and disruption of supply, combined with a genuine desire by home-owners to reduce their carbon footprint, is resulting in Solar Thermal Energy becoming one of the fastest growing renewable energies available.

Already this technology is common place in many other European Countries such as Germany which is on the same latitude as the UK, where 60% of homes benefit from Solar Power.

Solar Hot Water systems have been available since 1970 in the UK, consistently improving year on year in technology to produce pay back periods that are proving attractive to many home-owners.

Each year the sun provides over 8000 times as much energy as we consume worldwide, and in the UK alone we receive solar radiation equivalent to the typical output of over 1,000 power stations.

*up to
70% "free"
hot water*



SOLAR KEYMARK



What is Solar Thermal Hot Water Heating?

Homesmart's Solar Hot Water System, in its simplest form, harnesses the sun's natural free energy via solar collectors located on your roof, transferring the abundant energy into your hot water cylinder for use in your home.

3 Step System

There are three main crucial components that make up a solar hot water system, these are - Solar Panels - a Heat Transfer System - and a Hot Water Cylinder, all of which are shown here.

Hassle Free Complete Solution

Homesmart provides a complete hassle free Solar Thermal Hot Water Kit, which is designed to give installers everything they need. All our Homesmart Solar panels require very little maintenance and come guaranteed for years. For more information about Homesmart's guarantee please see page 13.



Heat Transfer System



Solar Panel



Hot Water Cylinder

How Does It Work?

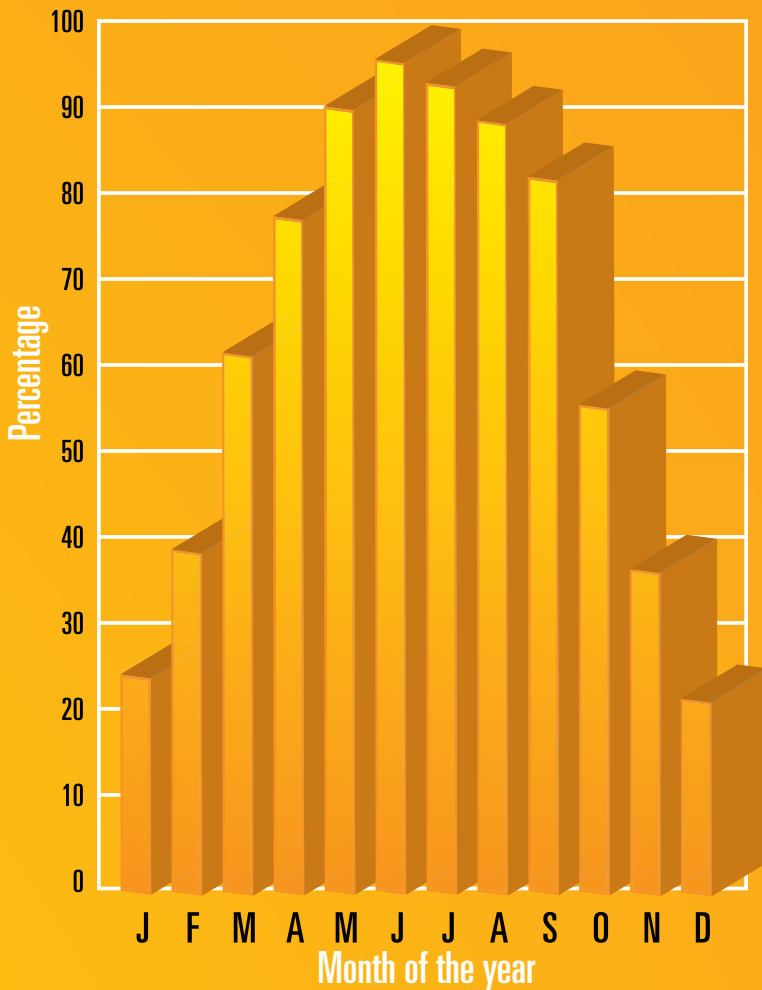
Solar energy is absorbed by solar collector tubes which are mounted on the roof of your building in a Southerly facing direction. When exposed to sunlight the solar collectors heat up to temperatures significantly above the ambient air temperature, and once it reaches 6°C warmer than the water in your hot water cylinder, heat will be transferred and pumped into a hot water cylinder via a one piece stainless tube from the roof.

During summer months a solar hot water system can usually provide all your hot water needs, and about half that during the rest of the year. For example, solar thermal can meet up to 70% of annual hot water needs for a gas heated three-bed semi-detached house, according to the Energy Saving Trust.

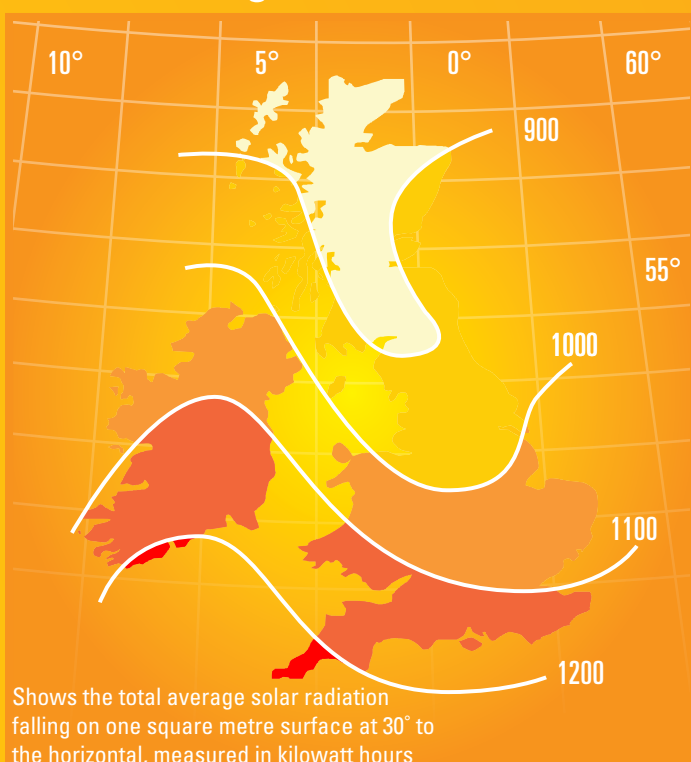
solar thermal can meet up to 70% of annual hot water needs

Solar water heating systems use heat from the sun to work alongside your conventional water heater. The technology is well developed with a large choice of equipment to suit many applications.

Annual Solar Contribution



Average Solar Radiation



Environmental Benefits of Choosing Solar Panels

Reducing your carbon footprint has become much more important to home-owners across the UK in recent years. Unless action is taken to reduce our impact on the environment, the consequence will be severe for all of us.

Whilst we have little influence in the carbon footprint of the likes of China and America, we can have a dramatic influence on our own personal impact on the environment.



Making a Difference

Recognised as one of the best way to reduce CO² emissions in the home, is the installation of Solar Hot Water Systems. An average of 18 tonnes of CO² can be saved over the life cycle of a Homesmart Solar Hot Water System.

Conventional heating of homes using gas or electric will also become more difficult in the future under government proposals to make homes Part L compliant.

On-Site Generation

With Solar Hot Water, your home can be described as your own clean green power company. You will be generating power right at the point of use, reducing energy demand on the utility-grids when they need it most.

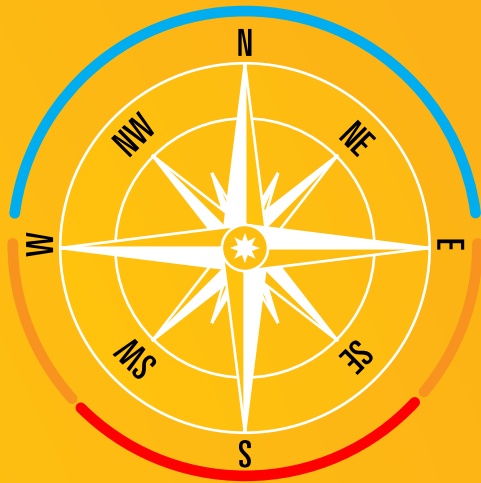
A Clean, Versatile Source of Power

Solar Hot Water produces no emissions and no noise. As a result, it can be easily sited in densely populated communities, or in rural retreats.

Is My Property Suitable?

Over 90% of properties in the UK are suitable for Solar Hot Water Systems, but the following simple guidelines will need to be followed to ensure you reap the rewards that solar can provide.

Whether your property is suitable depends on the following factors. Most important is the direction or orientation of your roof where the panels will be located, and whether or not the roof is in the shade. Nearly all properties are suitable, you just might have to have an extra collector to maximise the systems output.



- Not Suitable
- Good
- Very Good



External

For maximum efficiency, solar panel collectors should be mounted on a south facing roof at a 30° angle with the horizontal and away from any shadows from trees, surrounding buildings or chimneys. Approximately 3-5m² will be required to mount the panels. If your roof faces southeast or southwest you'll still get good coverage, but you may need to add one extra collector for maximum efficiency. The vacuum tubes can withstand temperatures of minus 18°C.

Internal

Solar installations don't just stop at the roof, the hot water that is provided by the collectors needs pumping back through the house into a hot water cylinder ready for use. Therefore you will need to ensure that your property has the facilities to cater for a new hot water cylinder. This can be where ever you have the space, whether it's in your loft, or an old cupboard in the kitchen.

Home-owners who have recently had a Combi-boiler installed to their property can still utilise Solar Hot Water, as Homesmart provide a valve that allows the two systems to work together.



How many collectors would I need?

Your Homesmart installer will carry out a detailed site survey before advising you on the number of panels that would be required for your property. Typically, the following rules apply, homes with 2-4 occupants would need 2 panels, homes with 4-6 occupants would need 3 panels, and homes with 6-8 occupants would need 4 panels.

Should the orientation of your roof face true East or West, your installer may recommend that an extra panel be installed to maximise the systems efficiency.

*typical
pay-back
periods range
between
6 & 10 years*



Best of Both Worlds

By installing a Homesmart Solar Hot Water system in your home, you not only help to improve the environment, you're also saving money too!

Typical pay-back periods obviously vary dependent upon your circumstances, (i.e. number and orientation of collectors, water consumption etc) but estimates can range from 6 -10 years. As the collectors function non stop for 12 months a year, you can rest assured it won't be long until 70% off your yearly hot water requirements are free!





Fixing Your Costs

Solar Panels provide the fantastic benefit of being able to fix your hot water costs for the foreseeable future. Like a fixed rate mortgage, knowing, budgeting and fixing your costs, enables you to plan for the future rather than riding the roller coaster that interest rate fluctuations often provide. Fuel costs are no different, with prices rocketing in recent years.

Installing Solar Panels can take all these worries away. Once you have noticed a return on your investment within approximately 3-5 years, you then have almost complete control of your hot water bills.

protect against rising energy prices

Selling Your Home?

Energy performance in the home is crucial in more ways than one, especially if you're looking at selling up and moving on at some stage down the line. Kitchens, bathrooms and walk-in wardrobes for example are simply cosmetic, and will more than likely be changed by the prospective buyer. What will not get changed is any solar hot water system you have in operation, making the property more attractive to the buyer.

Knowing that a property generates up to 70% of hot water requirements throughout the year may be fundamental in making a sale. It may also help to improve the value of your home. Surveys show that buyers are attracted to properties with solar installed and can add up to 6% to the value of the property.

If you're building a new home, changes to legislation in 2016 will make it virtually impossible for you not to utilise Solar Hot Water for the property.



Will I Need Planning Permission

Planning permission rules and regulations for solar panels were relaxed in 2008, to encourage more home-owners into renewable forms of energy. Therefore most homes in the UK can benefit from Solar Energy. The basic rules for the installation of Homesmart Solar Panels are as follows –



All solar installations should follow the recommendations below –

- Panels on a building should be sited to minimise the effect on the appearance of the building and to minimise the effect on the amenity of the area.
- Panels should not be installed above the ridgeline and should project no more than 200mm from the roof or wall surface.
- If your property is a listed building, installation is likely to require an application for listed building consent, even where planning permission is not needed.
- If your property is in a conservation area, or in a World Heritage Site planning consent is required when panels are to be fitted on the principal or side elevation walls and they are visible from the highway. If panels are to be fitted to a building in your garden or grounds they should not be visible from the highway.

For a more detailed overview please ask your installer, or visit - <http://www.planningportal.gov.uk/uploads/hhg/houseguide.html>

***solar keymark
accredited***



Evacuated Tubes or Flat Plate Collectors

Evacuated Tubes (the glass tubes used in Solar Thermal Hot Water) are commonly considered between 15% – 20% more efficient than PV Flat Plate Collectors. They work by storing heat within a vacuum and reach temperature quicker with a better retention rate. Crucially PV Flat Plate collectors fail to work in winter months.

Replacement tubes can be fitted relatively easily taking about 10 minutes on the Homesmart System. You do not require any plumbing and the system does not need to be drained. Any problems with a flat plate collector means a replacement, increasing costs and disrupting customers.



*solar hot water
up to 20%
more efficient*



What to Expect From Solar Installation

Although Homesmart do not carry out installations, we would expect our retailers to provide a hassle free, minimum fuss installation that gets you up and running as quick as possible. Your installer should first of all hold the BPEC qualification, which ensures they have been tested to the highest industry standards.

Installing a Homesmart system should take between 1 & 2 days depending on the size of your home, though some installations may take a little longer if access to your roof space or loft is difficult for example. Once the system is up and running your installer will run through the operating system to ensure you know how it works. Whilst the system comes with detailed instructions, a quick run through will come in handy.

Useful Reference Websites

More information and practical impartial advice on Solar Power can be found by visiting www.energysavingtrust.org.uk.



***hassle free,
minimum fuss
installation***



Maintenance & Servicing

The Homesmart Solar Hot Water System requires minimal maintenance, but in order to maintain the effectiveness of the solar collector, it is recommended that the anti freeze that circulates the system is changed every 5 years (for 2 collectors) or 3 years (for 3 or more collectors). This is quite a straight forward process, and most installers will provide the option of a maintenance package to give you peace of mind.

10 year guarantee & 30 year life expectancy

Guarantee

All high performance Homesmart Solar Panel Collectors have a life expectancy of 30 years and carry a comprehensive 10 year guarantee period. For more information please visit our web site.



Accreditation

Homesmart Solar Panel Collectors are manufactured in accordance with ISO9001:2000 and EN 12975-2 and carry Solar Keymark certification which is a European Body designed to assist home-owners in choosing a high quality solar products.



Technical Characteristics

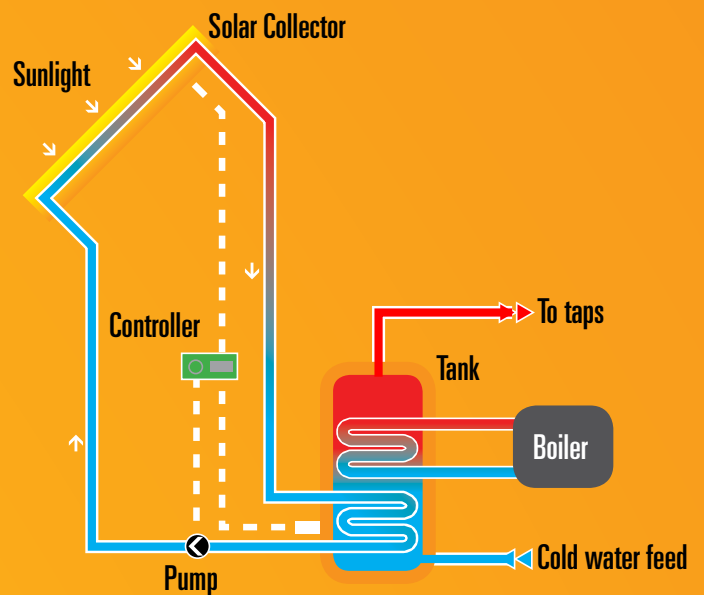


	10VTN	14VTN	
Collector:			
Dimensions:	length	1600 mm	1600 mm
	width	1330 mm	1550 mm
	height	100 mm	100 mm
Weight	30 kg	41 kg	
Aperture area	1,60 m ²	2,26 m ²	
Number of vacuum tubes	10	14	
Glass cover tube external diameter		47	
Glass cover tube length		1500 mm	
Tested at pressure		1.3 Mpa	
Vacuum tubes material		Borosilicate glass 3.3	
Vacuum		p < 0,005 Pa	
Absorber:			
Inner copper U-pipes		D=9,52 mm thickness 0,65mm	
Inner Aluminum fin		Thickness 0,8mm	
Surface treatment		Selective sputtered	
Absorption coefficient		a>0,92	
Emission coefficient		e<0,08	
Absorbing surface glass tube diameter		33 mm	
Heat transfer medium		Glycol brine	
Insulation and casing:			
Thermal insulation thickness of header		30 mm	
Header insulation		Expanded polyurethane (40-45 kg/m ³) and fiberglass	
Frame		Black anodized aluminum	
Diameter of connections		18 or 22 mm	
Reflector		High-reflection aluminum (CPC-Type)	
Limitations and efficiency:			
Maximum temperature of operation		220°C	
Maximum operating pressure		10 bar	
Efficiency (ENEA)		no = 0,665	
Thermal loss factor (ITW)		a1 = 0,7	
Certifications:			
EN 12975-2 / ISO 9001-2000 / Solar Keymark - CSTB			

Technical Information

Our range of vacuum tubes collectors consist of vacuum tubes with two concentric glass tubes between which there is high grade vacuum providing a perfect insulation, thus these collectors withstand frost up to -18°C . In the inner part of the tube there is a U- shape copper tube with an aluminum fin in which the glycol brine of the closed system is heated.

The newly designed reflector in the parabolic shape is made of highly reflective aluminum. It ensures maximum absorption of direct and diffused solar radiations. Thermal losses are minimized because of the vacuum in the tube and the strong insulation in the header. Certified with Solar Keymark and CSTB.



1. Outer Glass
2. Inner Glass
3. Aluminium Fin
4. Copper Tube in U-form
5. Vacuum
6. Tube End Cap
7. Parabolic Reflector
8. Aluminium Frame
9. Hot Water Tube



SOLAR KEYMARK



10 Reasons to Choose Solar Hot Water

1. Environmentally friendly
2. Provides a better return than flat plate collectors
3. Reduces your carbon footprint
4. Provides up to 70% of your hot water requirements
5. Protects you against rising energy costs
6. Solar keymark accredited
7. Increases the value of your home
8. No fuel tax incurred
9. Fixed costs after payback period
10. 10 year guarantee



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