



BLAKE ECOTEC
The Renewable Heat Experts

Solar Solutions

Efficient, Sustainable and Free Energy for your home or business



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Solar sizing

Number of occupants	Number of panels needed *	Number of tubes needed *	Hot water cylinder size
			200-300 litres
			200-300 litres
			300-400 litres
			400-500 litres

* A full site survey needs to be carried out by an Microgeneration Certification Scheme (MCS) accredited, Blake Ecotec Renewable Heat Expert.

Panel mounting



① Flat roof - 45°



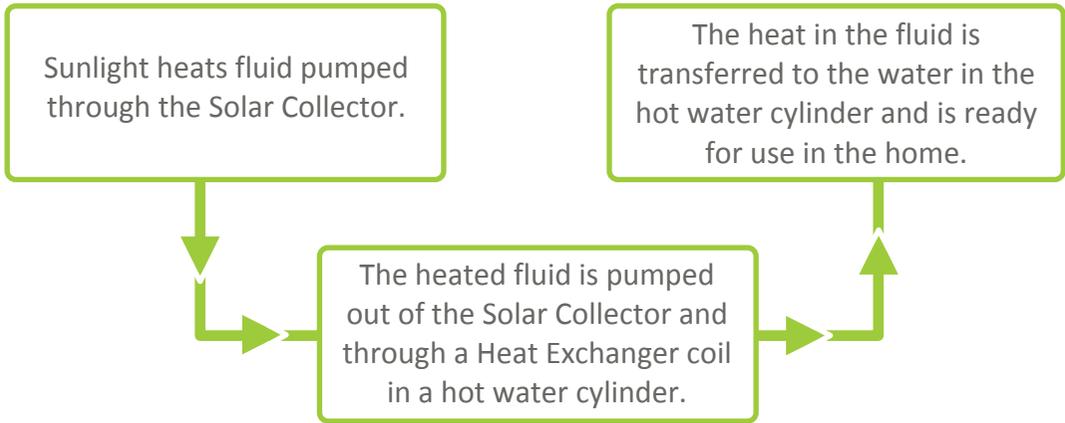
On-roof



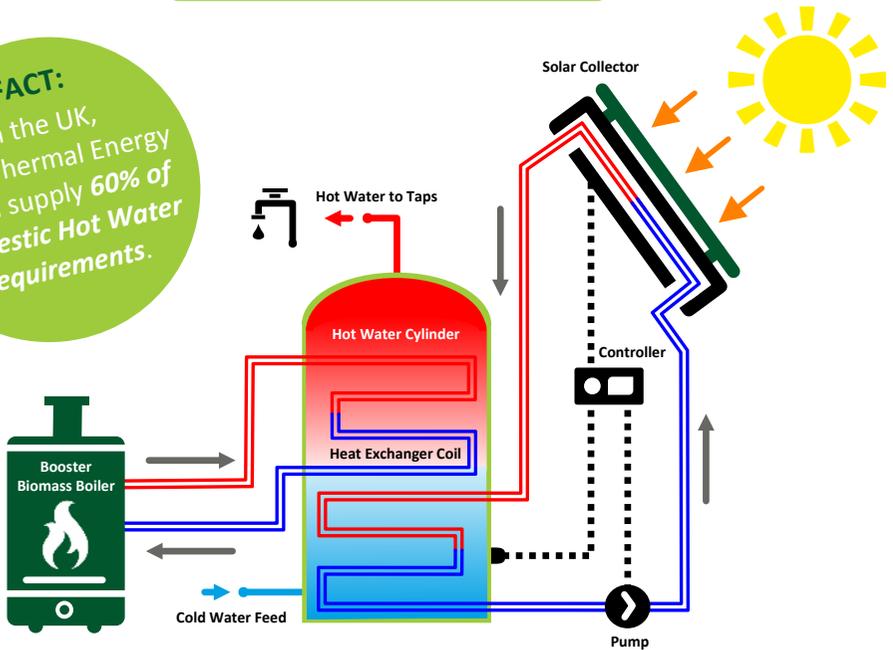
In-roof

How Solar Thermal works

Solar Thermal technology harnesses the thermal energy of the sun.



FACT:
In the UK,
Solar Thermal Energy
could supply **60%** of
Domestic Hot Water
requirements.



How will the water be heated if there is insufficient sunlight?

When there is insufficient sunlight to heat the hot water and the temperature in the hot water cylinder drops, a booster system (a biomass boiler or heat pump) automatically provides the extra heat required to ensure an uninterrupted supply of hot water.

Vacuum Tube Systems

Evacuated tube solar thermal panels are the most common solar thermal panel on the market.

The system works through a panel with an array of 10-40 evacuated tubes, dependent on manufacturer.



How does it work?

- The evacuated tubes are surrounded by reflective material on the underside of the tubes.
- As the sunlight and heat hit the panel heat is transferred to the evacuated tubes either directly or via reflection.
- These tubes are filled with fluid, most commonly Gycol, which has a greater thermal conductivity than water and the heat is pumped from the panels to a hot water cylinder

FACT:
Flat Bed and
Vacuum Tube
systems are great
for properties with
High Water
Demands

Low
Energy Bills

Low
Maintenance

Key
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Eas

Flat Plate Systems

Flat Plates utilise a flat, darkened area to act as an absorber.

How does it work?

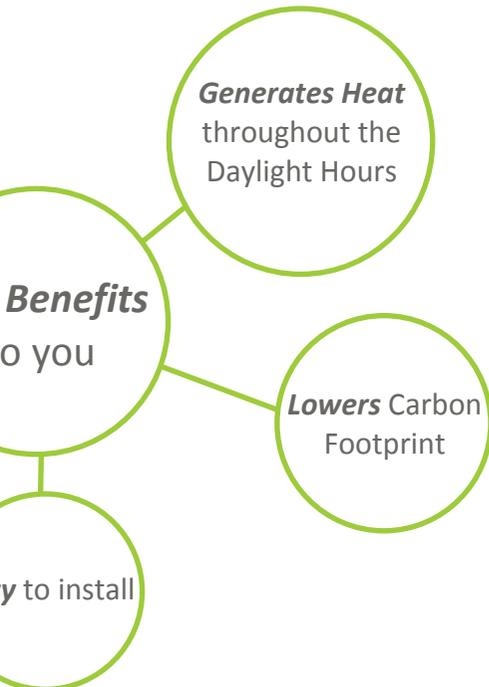
- The plate is filled with Gycol to extract heat from the panel.
- That heat is pumped away from the panel via a circulation pump to a hot water cylinder or accumulator tank.



FACT:
A Solar Thermal Solution can provide up to **90%** of a household's hot water.

System Configurations

- **On Roof:** Secured to the roof with a frame and ballasted to prevent damage.
- **In Roof:** Existing roof tiles are removed and the panel is secured to the internals of the roof making for a more aesthetically appealing installation.
- **Frame:** Installed on a ballasted frame ensuring that the panel will be exposed to longer periods of sunlight and heat.
- **East/West:** If there is an insufficient south facing area for installation the panels are secured to the east and west so heat is absorbed through the entire day.



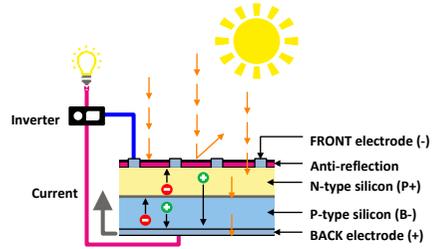
How Solar PV works

Solar PV systems convert sunlight into electricity.

The PV cell consists of two layers of a semi conducting silicon.

When light shines on the cell it creates an electric field across the layers causing electricity to flow.

The greater the intensity of the light, the greater the flow of electricity.

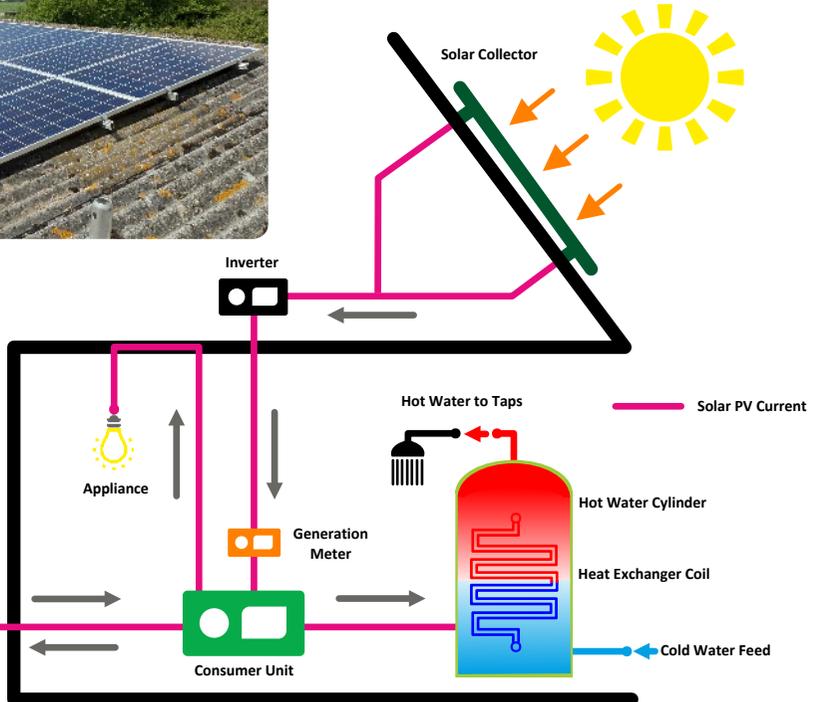
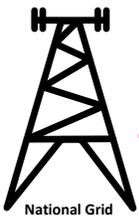


The Modules gather solar energy from the sun and convert it into Direct Current (DC) electricity.

An inverter converts this DC power into Alternating Current (AC) which can be used to power your home or business.



FACT:
PV systems can sell any surplus energy back to National Grid

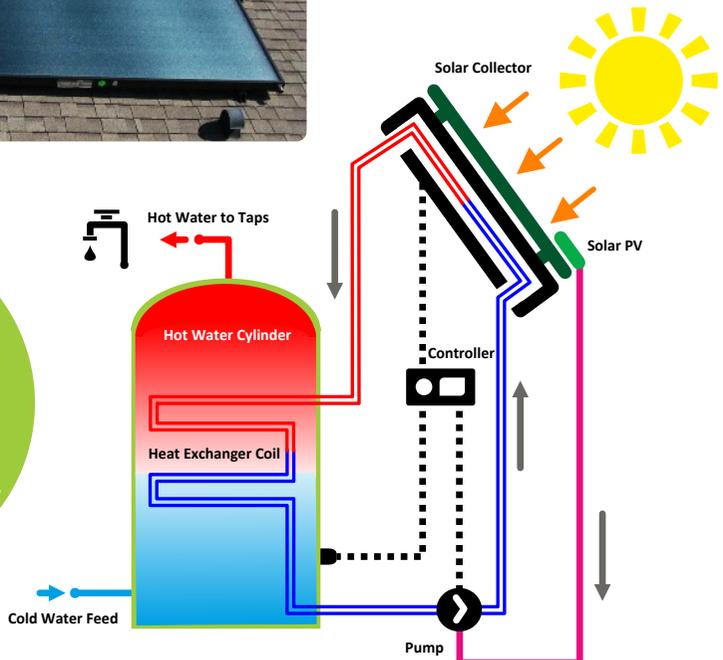


PV Solar Twin Systems

Solar Twin Systems utilise both forms of solar energy; Solar Thermal and PV.

How does it work?

- The in-built PV technology harnesses the sun's energy to power the controls and pumping station.
- This makes the solution completely off-grid and free to run.
- The panels are incredibly versatile to a wide range of energy users. They are designed to be retro-fitted to gravity fed hot water systems and can also be converted to operate on un-vented systems.



FACT:
PV cells are measured in **kilowatts peak (kWp)**.
The rate at which it generates energy at peak performance.

Thermodynamic Systems

A new approach to generating heat from the sun.

Thermodynamic Panels use a methodology similar to that of a heat pump for generating heat.

How does it work?

- The panel is filled with refrigerant gases, these have a lower boiling point than Gycol or water and will generate heat even when the temperature outside is cold or freezing.
- The refrigerant is pumped through the panel and, as it extracts heat, is turned into a gas.
- This gas is compressed and passed through a heat exchanger.
- Finally, the gas is passed through an expansion valve to convert it back to a liquid before the process starts over again.



Extra Information

These systems require a specialised thermodynamic solar hot water cylinder.

However, thermodynamic heat exchanger units have been developed to allow retro-fitting to standard hot water cylinders.

FACT:
Thermodynamic panels soak up energy from the atmosphere, meaning they do not require direct sunlight or mounting on a south facing roof.

The *Solar PV Feed in Tariff*

Under the Feed in Tariffs the Government guarantee to pay a premium amount for the electricity generated, whether it is used or not.

An average 4kWp PV system can produce as much as £525 in income from the Feed in Tariffs and a further £264 in savings from free electricity*

* Statistics Correct as of April 1st 2015.

Based upon Feed in Tariffs of 13.39p per kWh, electricity costs of 15p per kWh and all of the electricity being used on-site.

If electricity is sold back to the National Grid/Energy Company, it will generate 4.85p per kWh on top of the Feed in Tariff.

The *Renewable Heat Incentive*

The Domestic RHI Scheme pays per kWh of heat produced by a Solar Thermal solution and are made quarterly by the Government over a seven year period.

This is based on the estimated hot water demand of the property.

** Statistics Correct as of April 1st 2015.

FACT:
Payments of **19.51p per kWh** of eligible heat produced will be **paid quarterly** by **OFGEM**

Predicted Thermal Potential (kWh)	Annual RHI Payment**	Typical Size Household Permanent Residents
1,000 kWh	£195.10 - Annual Total	1
	£1,365.70 - 7 Year Total	
1,250 kWh	£243.88 - Annual Total	2
	£1,707.13 - 7 Year Total	
1,500 kWh	£292.65 - Annual Total	3
	£2,048.55 - 7 Year Total	
1,750 kWh	£341.43 - Annual Total	4
	£2,383.98 - 7 Year Total	
2,000 kWh	£390.20 - Annual Total	5 or 6
	£2,731.40 - 7 Year Total	
2,500 kWh	£487.75 - Annual Total	5 or 6
	£3,414.25 - 7 Year Total	

About **BLAKE ECOTEC**



BLAKE ECOTEC are a market expert in the design, supply, installation and maintenance of renewable heating solutions including; biomass boilers, air source heat pumps and solar thermal systems.

Based in Somerset, our highly dedicated and experienced team operate throughout the entire South West region, installing solutions for customers across Somerset and Devon as well as in Cornwall, Dorset, Bristol and Avon and Wiltshire.

A few facts about BLAKE ECOTEC:

- **We install solutions from leading manufacturers including: ETA, Froling, Eco Angus, MCZ, Nordica Extraflame and Panasonic.**
- **Our Team have many years experience designing and installing; gas, electric, solid fuel and oil fired heating and hot water systems which we have successfully transferred to the renewable heating sector.**
- **Once completed we offer full training on all our heating solutions and are we are always available to help with servicing or queries.**
- **MCS, Green Deal, NAPIT and RECC accredited.**

We have built our reputation on a tradition of superb customer service and the reassurance that we have the technical, design and operational experience that our customers expect. We work to the ethos of total engagement and commitment, through high quality, personal and on-going support.

Our product range is wide and the strong professional partnerships we have with well renowned manufacturers means we can offer certified boilers, heat pumps and solar solutions in a variety of options to meet any installation criteria. We can install a simple, robust solution or a fully automated, highly sophisticated system, our company ethos means that the high quality of work is the same throughout.

Notes



Registered in England - No. 07571105



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The Renewable Heat Experts

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Find out about our full range of Renewable Heat Solutions

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