

## Solar domestic hot water system



Using the sun's energy  
to provide hot water



# Soaking up the sun

Solar heating for domestic hot water is the fastest growing renewable technology across Europe

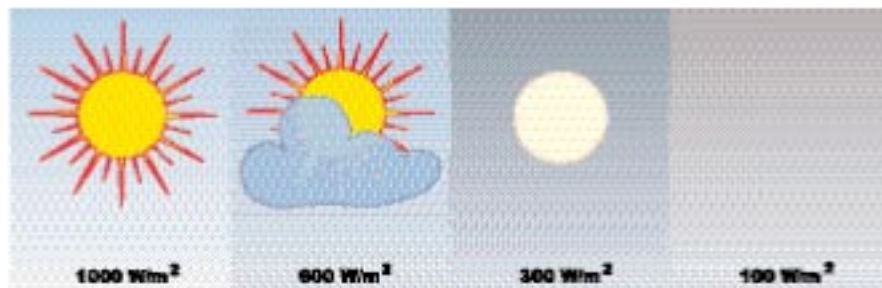


With global temperatures continuing to rise and as traditional energy resources decline, it's no wonder that domestic energy conservation remains a universally high priority. The development of innovative and effective renewable energy solutions is critical to future efficiency and environmental wellbeing. Solar heating for domestic hot water is one such solution and is the fastest growing renewable technology across Europe. It is based on harnessing energy from the sun to indirectly heat water in a cylinder, and in the UK alone, sales of glazed solar collector units are forecast to double over the next four years. It is a market in which Vaillant continues to make significant investment to create category leading products that precisely meet the needs of specifiers, installers, home owners and, of course, the environment.

## **Vaillant - the natural choice**

Vaillant are well placed to offer solar heating technology; with over 130 years experience of developing products that have shaped the heating industry. As Europe's leading boiler manufacturer, Vaillant sets the standards for performance, efficiency, quality and reliability. And just as importantly, it's about working with our customers to deliver exactly what they require. That's why, just as it is throughout Europe, our solar DHW heating system is the natural choice in the UK.

Vaillant's solar dhw system can provide around 50-60% of annual domestic hot water requirements and because it uses indirect solar radiation, not just direct sunlight, it works as efficiently in the UK as it does in other countries with similar climates. And, as you would expect from Vaillant, the solar control system has a built-in intelligence allowing it to automatically switch from solar to conventional power when needed. Vaillant domestic hot water system ensures hot water comfort, helps reduce fuel bills, adds value to a property and is a positive benefit to the environment because it reduces CO<sub>2</sub> emissions.





#### **All the benefits under the sun**

The principles of solar heating are fairly basic but in practice, designing a system that efficiently captures the sun's energy and turns it into hot water requires advanced technology.

#### **Vaillant solar domestic hot water**

Vaillant solar DHW system is a unique and sophisticated complete solar system that can be installed with a new Vaillant boiler but is also compatible for use with an existing heating appliance. The system has four major components - the solar collector, a hot water storage cylinder, a solar control and a pump unit.

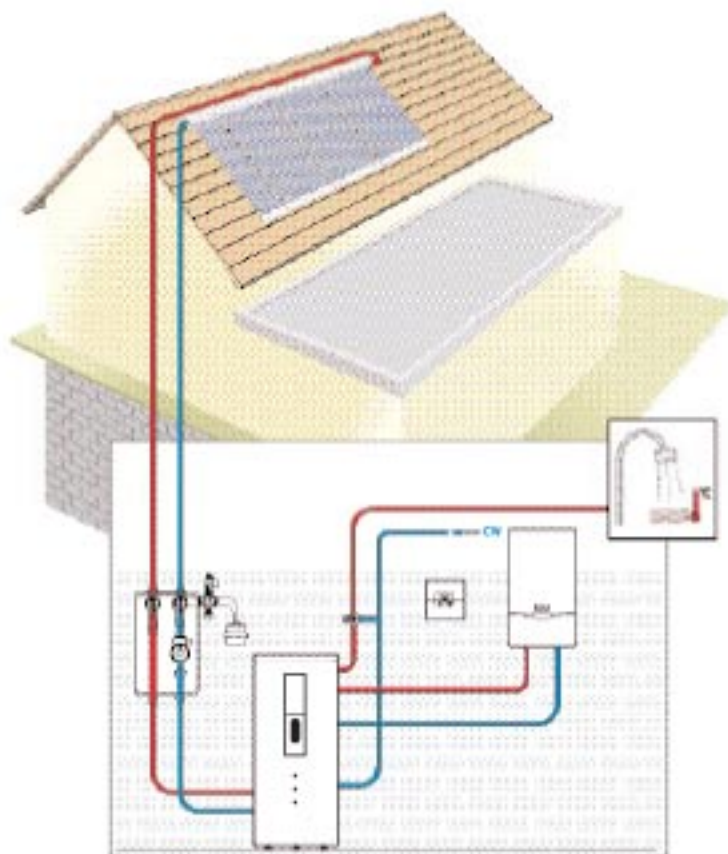
Vaillant's highly efficient evacuated tube solar collectors, **auroTHERM exclusive** are fitted using a range of mounting brackets to the pitched roof, flat roof or walls of the property to absorb solar radiation. With robust tubes manufactured from toughened glass they have been cleverly designed to deliver maximum energy absorption while being pre-assembled, lightweight and easy to install. And because the panels work on diffused light as well as direct sunlight, they will even operate on cloudy days. They look good, and multiple panels can be easily fitted in series as required.

The sun's energy heats solar fluid in the solar panel which is then pumped by the **solar pump unit** to a coil designed to heat water in a dedicated stainless steel storage cylinder, **auroSTOR**. A second coil in the cylinder is connected to a conventional heating source, such as a gas boiler, to provide additional heating when there is insufficient solar energy available. The boiler is also required to provide central heating. Managed by the solar control **auroMATIC 560** the system is able to automatically switch between solar and the auxiliary heat source to ensure there is always hot water on demand.

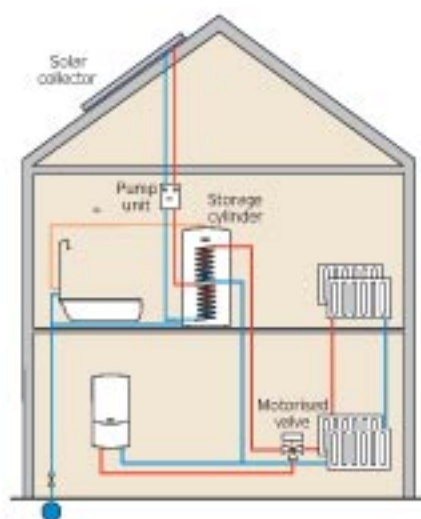
So, by incorporating the most modern technology, Vaillant's unique Total Solar System Solution intelligently blends solar and conventional energy supplies to optimise domestic heating efficiency.

# Total Solar System Solution

The Vaillant solar domestic hot water system is a sealed pressurised solar system with unique features built-in to every component. It's the most advanced complete solar heating system available and is totally consistent with our commitment to providing maximum efficiency, high performance and total reliability.



Schematic showing typical solar domestic hot water and auxiliary cylinder heating system



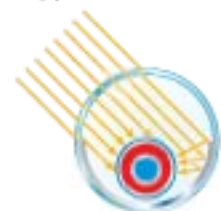
Typical solar installation and heating system



## auroTHERM exclusive

Vaillant's evacuated tube collectors are manufactured using specially toughened glass and a special high selective absorber coating. They are delivered pre-assembled with either 8 or 16 tubes and are compact and lightweight for ease of installation. The tubes have the benefit of a 10 year warranty against defects in manufacture. Panels can be simply pushed together and up to a total of 12 panels can be connected in series providing a neat and attractive installation. Total siting flexibility is provided by an extensive range of mounting accessories, suitable for pitched or flat roofs and wall fixing. The auroTHERM exclusive collectors are fully tested and approved to EN 12975.

**10**  
year  
guarantee  
vacuum tubes





**auroSTOR**

This twin coil unvented solar cylinder manufactured from stainless steel has a 25 year warranty on the shell. It is available in 200, 250 and 300 litre volumes and is delivered with a 3kW back up immersion heater as standard. Each cylinder features two sensor pockets for simple straightforward connection of the control sensors and a 22kW rated coil for a rapid heat up. Insulation exceeds CHeSS best practice and heat loss is as low as 0.08kW/h. Compact and stylish the cylinders are easy to install.

**25**  
year  
guarantee  
cylinder shell

**2** year  
guarantee

**auroMATIC 560**

An intelligent solar differential control with an easy to read LCD display and simple push button operation, auroMATIC offers three time periods for auxiliary cylinder heating giving the end user total control over the availability of hot water. The control monitors the temperature of the collector and of the cylinder. When sufficient solar energy is available the control switches on the solar pump unit to charge the cylinder. If there is insufficient solar energy available the control will automatically determine when the auxiliary heat source is required.



auroSTOR complies with G3 Building Regulations and is WRAS and KIWA approved for use within solar systems incorporating non-return valves in the solar circuit. The Vaillant Total Solar System Solution package also has WRAS approval which allows the heating system to be controlled by the Vaillant weather compensator VRC 400.

# Your questions about solar domestic hot water heating answered

## **Why should I consider using solar energy?**

Firstly, because of reduced CO<sub>2</sub> emissions, you can rest assured that it's better for the environment and you will also be helping to conserve the world's rapidly diminishing supplies of gas and oil. Secondly, utilising solar energy for hot water will help to reduce the impact of rising oil and gas prices and means that you won't be so reliant on these conventional fuels. Thirdly, installing a good solar system will add value to your property.

## **How does a solar DHW heating system work?**

The principles are quite straightforward. Solar panels absorb energy from the sun to heat a fluid that is pumped in a sealed circuit to an indirect coil in a water cylinder to heat the domestic water.

## **Where are the collectors fixed?**

Vaillant's lightweight, compact and high performance solar collectors are easily sited on pitched or flat roofs. Ideally the solar panels should be oriented to face south, but they work with only a small loss of efficiency sited between 30 degrees east and 40 degrees west of south. And with design awards to their credit, they look good as well.

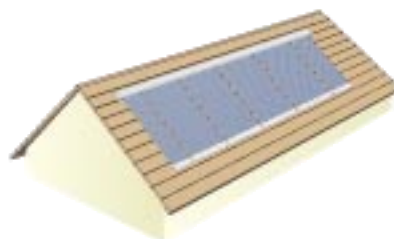


## **Why should I opt for an evacuated tube collector instead of a flat plate collector?**

Evacuated tube collectors like the Vaillant auroTHERM exclusive are superior to flat plate collectors in situations where there is a big difference between the ambient temperature and the temperature of the solar fluid. They are the number one choice in central and northern Europe and in general for all those wanting to optimise their year-round solar energy usage. In addition, the vacuum inside of the collector tubes offers the best possible insulation.

## **Surely there isn't enough sunshine in this country to make it work?**

Vaillant's solar DHW heating system uses solar radiation to generate heat. This means that it doesn't rely on just direct sunlight, it uses diffused radiation too so that the system also works on cloudy days. The DTI has calculated that there are sufficient radiation levels across the whole UK to provide useful energy. In areas with lower solar radiation, the number of collectors can be increased to maximise solar



energy usage. The design of Vaillant's collectors ensures that they capture solar radiation at a wide range of angles making them more efficient than other designs during spring and autumn.

## **So why do I still need a conventional boiler?**

Vaillant's solar DHW heating system will provide around 50-60% of annual domestic hot water requirements, but an auxiliary power source is required to ensure there's always hot water on demand. In addition, the boiler is also necessary to operate the central heating system. Vaillant's intelligent solar control unit facilitates automatic switching between solar and conventional power when there is insufficient solar energy available to heat the water - particularly useful during the winter months. The system will work with a new Vaillant boiler and is also compatible with most existing heating appliances but remember to check the controls configuration to make sure the boiler only fires when there is little or no solar energy available.

## **How much would a typical solar system cost?**

There is not really a typical cost - it depends on the number of panels required, the size of the cylinder and on installation details such as accessibility for the scaffold and the complexity of the wiring.

## **Are there any financial incentives to install solar power?**

The Clear-Skies initiative funded by the Government encourages homeowners to apply for grants of



Map source: Solar Trade Association (STA)

up to £400 to assist with installing a solar energy system. What's more, a system that is installed by a heating professional attracts VAT at 5%. Please refer to <http://www.clear-skies.org> for grant availability.

**When will Vaillant auroTHERM exclusive be available?**

Vaillant auroTHERM exclusive solar systems will be available from April 2006.

**What additional products will I need to complete the installation?**

Research indicates that installers prefer to purchase all their solar equipment from one manufacturer so Vaillant has ensured that we can supply all the necessary components. This includes the collectors, fixing brackets, solar pump station, stainless steel cylinder, solar control, and even the insulated flexible stainless steel



pipes to run between the collectors and the cylinder. The only other items you may need are electrical cables and copper pipe work.

**How do I design a solar system?**

Vaillant's solar training course will give installers details of how to design solar systems and advice on all the key issues. Our expert technical team will be able to assist with general design questions and a dedicated technical engineer will help tackle more complex work, (a service charge may be incurred). We are committed to working in partnership with our installers, offering the very best industry support and training to develop the solar heating market.

**Do I need to be a registered installer?**

To be eligible for the Clear-Skies grant, a registered Clear-Skies installer must install the solar

system - refer to <http://www.clear-skies.org> for the latest requirements. Installers wishing to be certified with Vaillant will be required to attend a Vaillant solar training course.

**How do I book a solar training course?**

Please contact our training department to register your interest in attending a Vaillant solar training course.

# Customer Support Services



## **Working in partnership**

The after sales service and support behind every Vaillant product is part of the quality package that has helped us build a unique reputation within the industry. It is an approach that is reflected in our support for our Total Solar System Solution. We are committed to working in partnership with our installers, offering the very best industry support and training to develop the solar heating market.

## **Vaillant support team**

Our dedicated team is on-hand to offer technical support. We are here to help with product familiarisation and to tackle any other issues that arise in relation to our solar DHW products.

## **High quality training**

We are renowned for our extensive range of training courses held at five fully equipped training centres around the country and are pleased to add a full solar training package to our existing course list.

## Contact details

### **Head Office, Southern Region**

Vaillant Ltd., Vaillant House, Trident  
Close, Rochester, Kent ME2 4EZ  
Telephone 01634 292300  
E-mail [info@vaillant.co.uk](mailto:info@vaillant.co.uk)

### **Northern Region**

Vaillant Ltd., Unit D1, Lowfields  
Business Park, Elland, West Yorkshire  
HX5 9DG  
Telephone 01422 376070  
Fax 01422 311986  
E-mail [elland@vaillant.co.uk](mailto:elland@vaillant.co.uk)

### **Sales**

Telephone 01634 292310  
Fax 01634 712804  
E-mail [sales@vaillant.co.uk](mailto:sales@vaillant.co.uk)

### **Contracts, Partnering & Leasing**

Telephone 01634 292322  
Fax 01634 292379  
E-mail [contracts@vaillant.co.uk](mailto:contracts@vaillant.co.uk)

### **Technical**

Telephone 01634 292392  
Fax 01634 294504  
E-mail [technical@vaillant.co.uk](mailto:technical@vaillant.co.uk)

### **Training**

Telephone 01634 292370  
Fax 01634 292354  
E-mail [training@vaillant.co.uk](mailto:training@vaillant.co.uk)

### **Service**

Telephone 0870 6060 777  
Fax 01634 294506  
E-mail [service@vaillant.co.uk](mailto:service@vaillant.co.uk)

Mon - Fri 8.00am - 8.00pm

Sat - Sun 9.00am - 4.00pm

Website [www.vaillant.co.uk](http://www.vaillant.co.uk)



# Technical Specification

Vaillant auroTHERM exclusive		auroTHERM exclusive 275	auroTHERM exclusive 550
Number of tubes		8	16
Gross collector area	m <sup>2</sup>	0.68	1.29
Net collector area	m <sup>2</sup>	0.41	0.804
Height	mm	1682	1682
Width	mm	440	790
Depth	mm	100	100
Weight	kgs	10.3	19
Collector capacity	litres	1.6	3.6
Collector absorption	%	95 ± 1	95 ± 1
Collector emission	%	5 ± 2	5 ± 2
Solar efficiency (EN 12975)	%	77.3	77.3

Vaillant auroSTOR		auroSTOR 200	auroSTOR 250	auroSTOR 300
Volume	litres	200	250	300
Maximum water supply pressure	bar	10	10	10
Operating pressure	bar	3.5	3.5	3.5
Pressure reducing valve	bar	3.5	3.5	3.5
Expansion relief valve	bar	6.0	6.0	6.0
Expansion vessel charge pressure	bar	4.0	4.0	4.0
Temperature & Pressure valve	°C / bar	95°C / 7 bar	95°C / 7 bar	95°C / 7 bar
Maximum primary circuit pressure	bar	2.5	2.5	2.5
Weight (empty)	kgs	39	44	49
Weight (full)	kgs	245	310	340
Height	mm	1500	1790	2110
Width (excluding connections and PRV)	mm	554	554	554
Heat Loss	kW / 24 hrs	1.9	2.1	2.4
Cylinder connections		22mm compression	22mm compression	22mm compression
Secondary return connection		G 3/4"	G 3/4"	G 3/4"
Electrical connections		230/240 V, 50 Hz	230/240 V, 50 Hz	230/240 V, 50 Hz
Immersion heater length	mm	430	430	430

Vaillant auroMATIC 560		auroMATIC 560
Dimensions (W x H x D)	mm	272 x 175 x 55
Operating voltage	V	230
Power consumption	W	Max 10
Minimum sensor wire diameter	mm <sup>2</sup>	0.75
Minimum power cable wire diameter	mm <sup>2</sup>	1.5
Level of protection		IP 20

Vaillant Ltd.

Vaillant House ■ Medway City Estate ■ Trident Close ■ Rochester ■ Kent ME2 4EZ  
Telephone 01634 292300 ■ Fax 01634 290166 ■ [www.vaillant.co.uk](http://www.vaillant.co.uk) ■ [info@vaillant.co.uk](mailto:info@vaillant.co.uk)