THERMOMAX

Premium Solar Hot Water Solutions

Energy to the Power of

Kingspan SOLAR

25 years ago, we devoted ourselves to perfecting solar thermal vacuum tube technology that would generate hot water even in cold, wet and cloudy days. **We succeeded.**

Contents

Renew your way of thinking with Kingspan Solar

Thermomax - the original and still the best

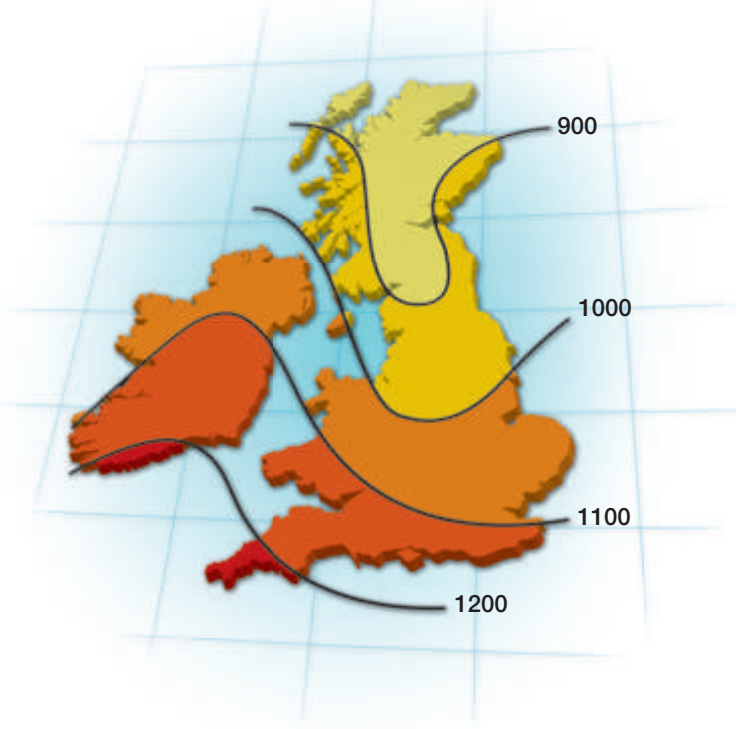
The Kingspan Solar range, from Kingspan Renewables Ltd, reflects our on-going commitment to a zero carbon lifestyle and a brighter future for us all. When it comes to creating efficient and cost effective energy solutions that address today's growing environmental concerns, the Kingspan Solar range of products leads the way. The Thermomax brand is the original and still the best vacuum tube collector in the world.

Solar Energy for a Brighter Future

Solar energy is free, clean and safe. It is environmentally friendly and produces no waste or pollution. Using solar energy enables you to reduce your carbon footprint as well as your energy bills. Grants are available through many Government schemes.

The sun radiates enormous amounts of energy to the earth. In the UK and Ireland we receive, on average per year, as much as 60% of that received on the equator. This radiation is similar to the output of 1,000 power stations.

Annual Solar Irradiation in UK and Ireland (kWh/m²)



Solar Thermal Vacuum Tube Systems

Solar thermal technology transforms direct and diffuse solar radiation into useful heat using a solar collector. Each solar collector consists of a highly insulated manifold and a row of solar tubes. The vacuum inside each tube provides perfect insulation and therefore protects the system from outside influences such as cold and windy weather or high humidity. The vacuum technology ensures the most effective transfer of energy into heat, giving extra performance in comparison to traditional flat plate collectors and providing heat not only on warm, sunny days, but also in cooler, windy or humid conditions.

Why Thermomax?

With over 25 years of experience, the **Thermomax** brand is firmly established as the world leader. **Thermomax** collectors are the premium product in the market, designed specifically for a Northern European climate. They provide a superior performance whatever the weather.

Thermomax products were the first to receive the European quality mark for solar collectors - the Solar Keymark.

In 2005, **Thermomax** collectors were awarded the International Forum Design award for excellence in product design.

Easy Installation

The unique 'plug and play' design of **Thermomax** solar collectors makes installation quick and easy. There is no need for heavy lifting equipment, as tubes can be carried onto the roof individually. Usually facing south, the collector is fixed to the roof by easy-fit roof brackets, which are simply fixed to the rafter.

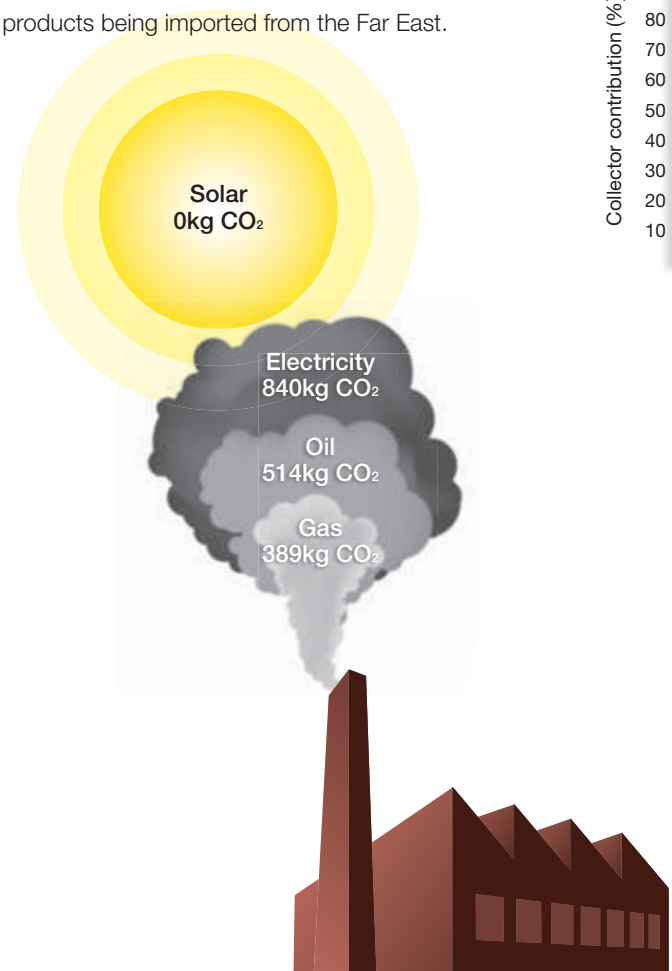
A Positive Environmental Impact

Burning fossil fuels produces vast quantities of carbon dioxide, a major contributor to global warming. The average household with a **Thermomax** system installed can expect to generate approximately 1,836 kWh/year with zero emissions.

The diagram below illustrates the amount of $C0_2$ produced by oil, gas and electricity to generate the equivalent 1,836 kWh.

Manufactured in the UK and Ireland

Thermomax Products are manufactured in Wales and at the Kingspan Renewables headquarters in Northern Ireland. A full service package is offered including bespoke design, technical advice, training and sales support. Quality of our product is paramount to Kingspan's success. This differentiates us from the influx of inferior products being imported from the Far East.



Performance and Savings

Thermomax products have been designed specifically for Northern European climates

Supplies up to 70% of your annual hot water needs - reducing dependence on increasingly expensive fossil fuels

Works from dawn until dusk and throughout the year

Provides heat even in cold, windy or humid conditions

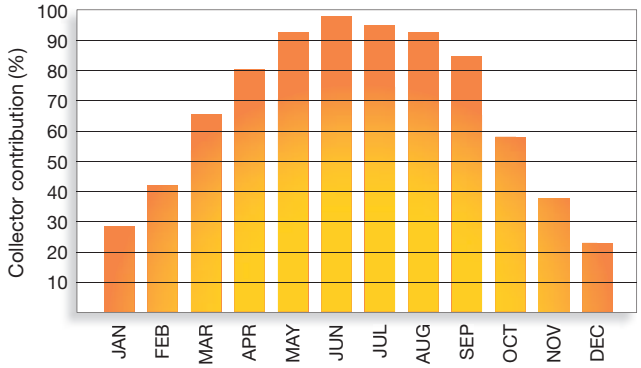
Rapid conductivity and transfer of energy into heat

30% more effective than flat plate collectors

Average 25-year lifespan

Solar Energy Contribution

The table below shows the typical annual percentage of hot water achieved using our solar collectors, based on figures for London.



Thermomax Collectors are effective for both Domestic

In addition to domestic hot water, the superior performance of a **Thermomax** vacuum tube collector can also provide central heating support for standard or under floor heating, specialised industrial hot water heating for high temperature applications and solar cooling.

Domestic Installations

These range from typical, single module systems for domestic hot water to larger installations and systems designed to fit building constraints.

A typical domestic installation

This 2m^2 installation will provide domestic hot water for up to 3 people. Collectors are usually installed facing south and fixed to the roof using easy fit brackets.

Alternative installation

An example of how **Thermomax** collectors can be installed to suit any architectural requirements or building constraints. In this case, the collector acts as a canopy.

Larger installation

A typical domestic installation would be 2m^2 - 3m^2. Here, 8m^2 of **Thermomax** collector has been used for space heating for a house in Denmark.

and Commercial applications

Commercial Installations

These range from small-scale water heating to large applications for solar cooling.

Hotel Julia, Madrid

66m² of direct flow collectors supplying the hotel's domestic hot water needs.

University of South Carolina

Aptly named 'The Green Dorm' this 172,000 sq ft environmentally friendly halls of residence uses a 160m² system for hot water.

Newlands Golf Club, Ireland

This 16m² **Thermomax** system provides hot water for showers and catering.

Solar cooling

This installation for a leading perfume designer in Paris, was Europe's first successful large scale installation of an air-conditioner working on absorption chillers and **Thermomax** vacuum tube collectors.

300m² HP200 collectors supply hot water to the absorption chiller.

Domestic Packages

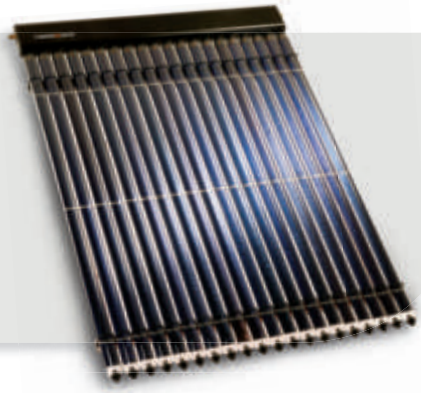
Complete system solutions for domestic applications

These are the general steps that need to be followed in order to find a package that best suits your requirements. Our Kingspan Solar sales team will work with you through these steps to help you make the correct choice.

There are three basic steps to consider:

Step 1 Select and size cylinder type

Step 2 Choose the system size



Step 3 Choose a collector type

Step 1

Select your cylinder

A twin coil hot water storage tank enables energy input from the central heating system to the top half of the tank and energy input from solar system to the bottom half of the tank. Kingspan manufacture a range of high quality, market leading cylinders. Choose your cylinder according to whether your system is pressurised or vented.

Stainless Steel *Recommended Choice*
For use in a pressurised system.

Copper
For use in an open vented system.

Choose the correct size

This is dependent on your household's hot water demand, which is estimated at 50 litres per adult / per day. Cylinder storage size is calculated at twice the demand. Therefore, we would recommend a 200 litre cylinder for a one to two adult household and a 300 litre cylinder for three to five adults.

Step 2

Choose the system size

It is important that the solar system is correctly sized in relation to the number of occupants to maximise efficiency. There are 2 basic collector sizes for domestic systems:

$2m^2$ collector for 1-2 adults
$3m^2$ collector for 3-5 adults

These sizes are based on ideal orientation.
Please call technical support on **028 9127 0411** for further advice on sizing.

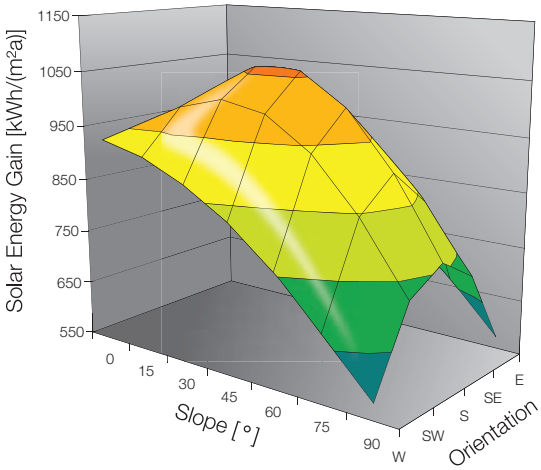
Step 3

Choose between 3 collectors

Before you choose your collector, you need to decide where it will be positioned on your house. Between the best and worst orientation, annual energy contribution can be nearly halved. To get the best efficiency, the collector should be installed, facing due south at an angle of 30-40˚, as demonstrated in the graph.

Kingspan Solar's **Thermomax** range consists of three evacuated tube collectors all suitable for domestic use: HP200, HP100 and DF100. The information below should help you decide which is the best for your home. For all **Thermomax** collectors, deviation from south can be compensated as individual tubes can be rotated up to 25˚.

How Collector Positioning Effects Solar Energy Production



Heat Pipe Collectors

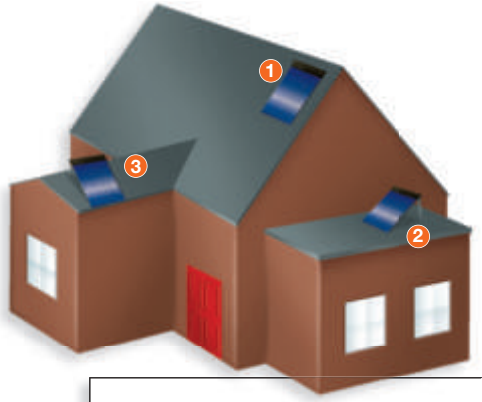
There are 2 products available in this premium range, suitable for when the ideal installation position on the building is achievable. Both heat pipe collectors have an unique temperature limitation device.

HP200

Dry System - The recommended product for domestic use, ideal for Northern European climates.

HP100

Wet System - Highly efficient with rapid heat transfer due to the heating fluid passing across the condenser.



Collector Positions

1 Ideal slope 40˚
2 Roof kit angled 40˚
3 Elevated 20˚
4 Horizontal ideal slope
5 Horizontal façade
6 Flat
7 Vertical façade

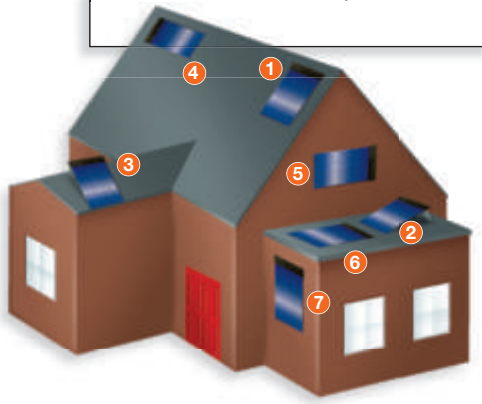
Direct Flow Collector

This versatile product provides the perfect solution when the ideal position is not available.

DF100

Simple, easy to install and cost effective. DF100 can be installed on façades or flat roofs, as seen in the diagram.

Please see specification sheets from pages 20 to 22 at the back of this brochure for differences in efficiency.



The Full Package

We have put together a number of packages which include everything you will require for your installation.

In addition to the collector and cylinder, each package includes:

- Dual stream pump station
- Expansion vessel
- Connections
- Antifreeze
- Valves
- Sloping roof kit

For alternative roof kits and optional extras, please see the accessories section on page 15.

Package Selection Table

Ordering your solar system is now simple. Just pick the appropriate product code from the table below and call our sales team:

UK Sales Hotline:
0800 328 5689

ROI Sales Hotline:
1800 812 718

Number of Adults	Size of collector	Stainless Steel Cylinders			Copper Cylinders		
		HP200	**HP100**	**DF100**	**HP200**	**HP100**	**DF100**
1-2	2m²	KSS0020	KSS0014	KSS0008	KSS0018	KSS0012	KSS0006
3-5	3m²	KSS0021	KSS0015	KSS0009	KSS0019	KSS0013	KSS0007

See overleaf for details on each package.

Find the correct package

To find the correct package for larger installations / households, please see the Complete Hot Water Solutions section of our website: **www.kingspansolar.com**

Components

Thermal Fluid Antifreeze

Thermostatic Mixing Valve

Connection Kit

Pump Station

Single Stream and Compact versions available.

Controller

Collector

Cylinder

Sloping Roof Kit

Expansion Vessel

DF100 packages also include a temperature reducing vessel, which can be seen on the accessories list.

Stainless Steel Range

HP200 (KSS0020)
2m² HP200 with stainless steel cylinder

Components	Size
HP200 collector	2m²
Stainless steel, twin coil cylinder	210 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

HP200 (KSS0021)
3m² HP200 with stainless steel cylinder

Components	Size
HP200 collector	3m²
Stainless steel, twin coil cylinder	300 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

HP100 (KSS0014)
2m² HP100 with stainless steel cylinder

Components	Size
HP100 collector	2m²
Stainless steel, twin coil cylinder	210 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

HP100 (KSS0015)
3m² HP100 with stainless steel cylinder

Components	Size
HP100 collector	3m²
Stainless steel, twin coil cylinder	300 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

DF100 (KSS0008)
2m² DF100 with stainless steel cylinder

Components	Size
DF100 collector	2m²
Stainless steel, twin coil cylinder	210 Ltr
Expansion vessel	18 Ltr
Temperature reducing vessel	5 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

DF100 (KSS0009)
3m² DF100 with stainless steel cylinder

Components	Size
DF100 collector	3m²
Stainless steel, twin coil cylinder	300 Ltr
Expansion vessel	25 Ltr
Temperature reducing vessel	8 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

For further packages, please log on to:
www.kingspansolar.com

Copper Range

HP200 (KSS0018)
2m² HP200 with copper cylinder

Components	Size
HP200 collector	2m²
Copper, twin coil cylinder	206 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

HP200 (KSS0019)
3m² HP200 with copper cylinder

Components	Size
HP200 collector	3m²
Copper, twin coil cylinder	300 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

HP100 (KSS0012)
2m² HP100 with copper cylinder

Components	Size
HP100 collector	2m²
Stainless steel, twin coil cylinder	206 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

HP100 (KSS0013)
3m² HP100 with copper cylinder

Components	Size
HP100 collector	3m²
Stainless steel, twin coil cylinder	300 Ltr
Expansion vessel	18 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

DF100 (KSS0006)
2m² DF100 with copper cylinder

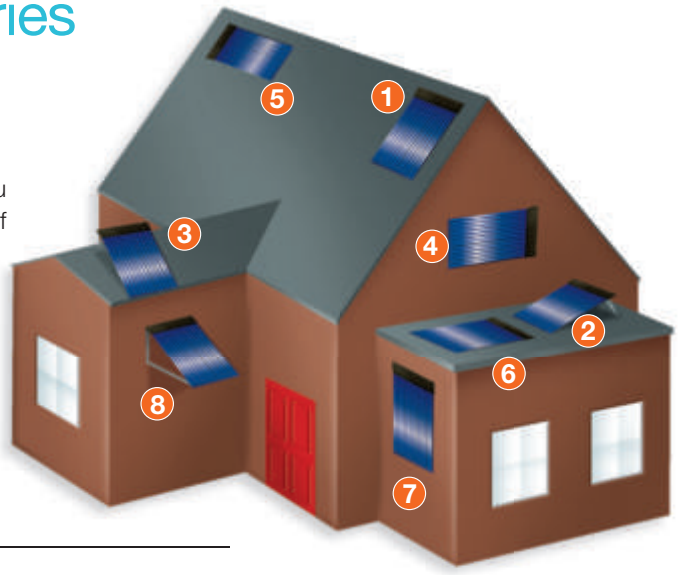
Components	Size
DF100 collector	2m²
Copper, twin coil cylinder	206 Ltr
Expansion vessel	18 Ltr
Temperature reducing vessel	5 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

DF100 (KSS0007)
3m² DF100 with copper cylinder

Components	Size
DF100 collector	3m²
Copper, twin coil cylinder	300 Ltr
Expansion vessel	25 Ltr
Temperature reducing vessel	5 Ltr
Sloping roof kit	✓
Connection kit	✓
Dual stream pump station	✓
Controller	✓
Thermal fluid antifreeze	20 Ltr
Thermostatic mixing valve	22mm

For further packages, please log on to:
www.kingspansolar.com

Roof Kits and Accessories



Roof Kits

There are a number of roof kits available to enable you to achieve the optimum efficiency from the position of your collector.

1 Sloping roof kit - C0590
2 Flat roof frame - C0599
3 Sloping roof 20° elevation - C0591
4 Horizontal façade - C0597
5 Horizontal sloping roof - C0593
6 Sloping roof kit - C0590
7 Ground/façade - C0595
8 Awning kit at 45° - KSK0018

Accessories

Below is a number of purposefully selected optional extras to enhance your system.
We have also included a demonstration kit to enhance your solar business.

Diverter Valves

Product code:
KSP0018

Flush and Fill

(pump unit)

Product code:
C0814

Demonstration Kit

Product code:
CO708

Microbubble De-aerators

Product code:
Horizontal KSK0008
Vertical KSK0009

Thermostatic Mixing Valve

Product codes:
22mm - CO769
28mm - CO770

Temperature Reducing Vessels

(5 - 12 Ltr)

Product codes:
5 Ltr - KSP0005
8 Ltr - KSP0006
12 Ltr - KSP0007

Expansion Vessels

(12 - 35 Ltr)

Product codes:
12 Ltr - KSP0017
18 Ltr - KSP0008
25 Ltr - KSP0009
35 Ltr - KSP0010

Insulated Flexible Stainless Steel Pipework

Product codes:
5m - CO780
10m - CO781
15m - CO782

Service Kit

Product code:
KSK0019

- Refractometer
- Digital pressure gauge
- PH test paper
- Compass

Understanding Your System

Components and Applications

Key

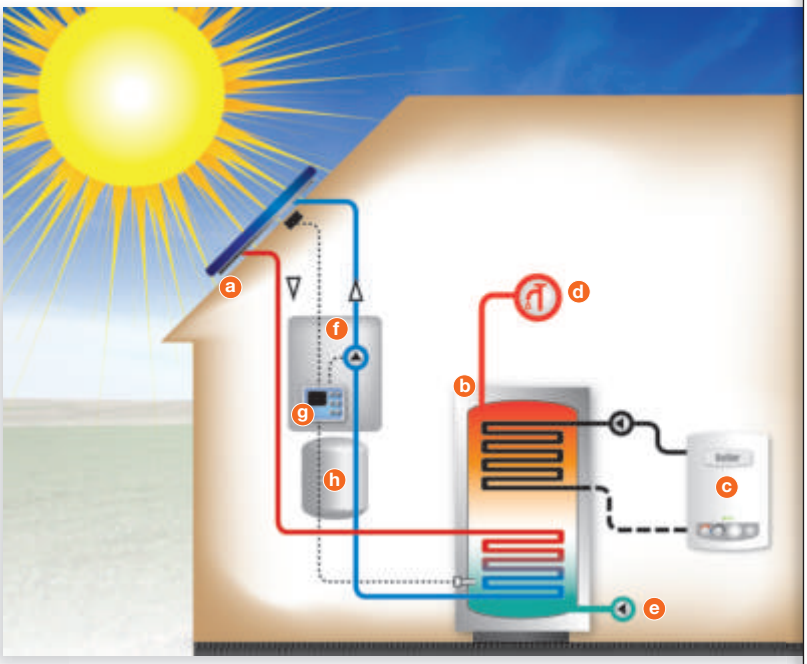
1 **Thermomax** collector
2 Hot water
3 Cylinder

Applications

4 Bath/Shower/Tap
5 Under floor heating/Space heating
6 Washing machine/Dishwasher
7 Swimming pool

A Typical Solar Installation

The diagram below shows a typical solar installation for domestic hot water with a twin coil hot water storage tank. This enables energy input from the central heating system to the top half of the tank and energy input from the solar system to the bottom half of the tank.



Components

a Solar collector on sloping roof kit. The connection kit connects the pipe work to the collector

b Cylinder with solar coil at the bottom and coil for boiler at the top

c Boiler or other space heating source

d Hot water out

e Cold water mains in

f Pump station used to circulate water from the collector to the user application

g Controller uses temperature sensors to monitor heat differences between the collector and the water in the tank and switches the pump on or off accordingly

h Expansion vessel to contain increased water volume in the system due to rise in temperature, and hence increased pressure, of water

Commercial Packages

Commercial Installations

From a 5m² installation on a guest house to 300m² on a factory, the advantages of **Thermomax** solar systems are immediate, the most obvious of which is the saving on fuel bills.

With today's commercial and environmental pressures, a shift towards a green business philosophy is essential to survival. This competitive advantage not only strengthens the brand position but also brings economic and financial rewards. This is particularly relevant in hotels and leisure facilities, where solar energy attracts the rising number of 'Ecotourists'.

All commercial installations will be different, which is why Kingspan Solar offer a FREE bespoke design service. This includes:

- Assistance with the design of your project, producing solar simulation and full project based AutoCad schematics
- Recommendation of an accredited installer for the project through our network of installers
- The services of an on-site technical support engineer
- Commissioning of the **Thermomax** solar system to ensure it is working at 100% of its capability

Applications

In addition to commercial hot water, the higher operating temperatures of **Thermomax** evacuated tube collectors make them suitable for the following applications:

Swimming Pools

To incorporate a swimming pool into the system, a heat exchanger is used between the pool water and the circulating water through the collector. A wound coil is used to give a large exchange area which allows a high volume of pool water to be passed through.

Solar Cooling

Huge potential for solar cooling exists, as the times of high cooling demand corresponds with the highest yields from the solar collector. Solar chillers use thermal energy to produce cold and / or dehumidified air. **Thermomax** collectors have been used in numerous solar cooling projects around the world.

Industrial Process Heat

Thermomax collectors can provide the heat needed in many industrial processes. They typically provide temperatures around 60 - 100°C, which is perfect for many applications such as food processing, water desalination and industrial washing processes.

Changi Airport, Singapore. Largest solar thermal installation with more than 10,000 tubes.

Solar Cooling in Galderma Pharmaceutical Research Centre, France. The 5,600 tubes double up as a car park pergola.

Call our technical team on **028 9127 0411** for advice or download an installation form from our website:
www.kingspansolar.com

Distribution

Network of Accredited Solar Installers

With a worldwide network of Kingspan Solar accredited installers on-hand to advise you on design, installation and grants, you can be confident that your investment in **Thermomax** solar vacuum tube technology will be an informed one.

UK Sales Hotline:
0800 328 5689

Thinking of an installation on your home or small business?

Your nearest **Thermomax** distributor is never far away. Call our sales hotline and we will put you in touch with your nearest local supplier / dealer.

ROI Sales Hotline:
1800 812 718

FAQs

Q: Does Solar only work when the sun is shining?

A: **Thermomax** solar vacuum tubes work all year round - and even in winter it will help to give you hot water because vacuum tubes absorb energy efficiently in all different weather conditions.

Q: Where are the panels fitted?

A: Ideally to a south facing roof or slight deviations of about 30 - 40° from that. The inclination / pitch of the collector is equal to the geographical latitude. So if you live at 45° latitude north the ideal pitch is about 45°. Once again slight deviations are not a problem and will only slightly effect the solar yield.

Q: What are the savings?

A: Up to 70% of your annual hot water and / or heating cost. Over time your savings will increase as the price of oil / gas / electricity and other natural fossil fuels will escalate in the future. Solar also reduces carbon dioxide (CO_2) emissions - one of the largest single contributors towards global warming.

Q: Do I need planning permission?

A: Normally only if the building is in a conservation area / listed building or under construction - but you should check with your local planning office. Our panels are environmentally friendly and aesthetically pleasing.

Q: What does installation involve?

A: **Thermomax** collectors are light and modular and can usually be installed in one day. They easily attach to your existing structure via a roof kit.

Q: Do they break easily?

A: The tubes are tested to withstand the mechanical load requirements of Solar Keymark which means the tubes have been subject to a force of 1000 N/m^2. **Thermomax** collectors are certified to meet the requirements of this standard and tests have proven they can withstand more than 3 times this force.

Q: Can I combine solar thermal with heat pumps and other Renewables?

A: Yes, **Thermomax** collectors can be used with all forms of traditional or renewable heating systems without any difficulty.

Q: What maintenance is required?

A: No collector maintenance is required. The glass tubes are round and perfectly smooth. They allow air to circulate around them and will not trap moisture or debris. A system check by a professional every three to five years should be sufficient.

Q: Is there a solar system suitable for use on a large scale commercial building?

A: The collectors can be integrated with your existing system to provide hot water throughout the building for wash hand basins / showers / canteens etc. In fact, anywhere large quantities of free hot water can be used. Hospitals, leisure centres, swimming pools are all suitable large scale commercial applications.

Q: Is it possible to retain heat gained?

A: Yes, the heat is stored in a twin coil solar cylinder usually for domestic hot water. However, the stored energy can also be used for space heating or to heat a swimming pool. It is also possible to combine the different applications.

Q: What happens when I go on holiday?

A: A well-designed and sized solar system should provide you with the right amount of hot water for your household requirements. Even when going on holiday the system will still work, feeding the energy into the cylinder. This will just lead to a slightly higher cylinder temperature. The system is self-regulating - HP100 and HP200 tubes have a memotron valve to switch them off at 95/135°.

DF100

Technical Specification DF100		
	DF100 - 2m²	**DF100 - 3m²**
Dimensions		
Absorber Area	2.004m²	3.020m²
Overall Dimensions	1996 x 1418 x 97mm	1996 x 2127 x 97mm
Width of Manifold	1418mm	2127mm
Length (Tube and Manifold)	1996mm	1996mm
Depth	97mm	97mm
Fluid Volume (In Manifold)	3.8 Ltr	5.6 Ltr
Inlet and Outlet Dimensions	22mm	22mm
Weight	54.8kg	81.4kg
Mounting		
Recommended Inclination	0-90°	0-90°
Operating Data		
Efficiency	Based on Absorber	Based on Absorber
eta 0	0.83	0.832
k1	1.53 W/m²K	1.14 W/m²K
k2	0.0063 W/m²K²	0.0144 W/m²K²
Test Report	BLG 10606	BLG 10706
Flow Rate		
Rated	160 Ltr / h	240 Ltr / h
Minimum	120 Ltr / h	180 Ltr / h
Maximum	300 Ltr / h	480 Ltr / h
Maximum Operating Pressure	8 Bar	8 Bar
Stagnation Temperature	286°C	286°C
Heat Transfer Fluid	Water/Glycol	Water/Glycol
Materials		
Absorber	Copper	Copper
Coating	Selective Coating	Selective Coating
Absorbance	95%	95%
Emissivity	5%	5%
Mounting Frame and Clips	Stainless Steel, Aluminium EPDM	Stainless Steel, Aluminium EPDM
Glass	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92
Vacuum	Higher than 10^{-8} Bar	Higher than 10^{-8} Bar
Quality Certification / Solar Keymark	Yes	Yes

HP100

Technical Specification HP100		
	HP100 - 2m²	**HP100 - 3m²**
Dimensions		
Absorber Area	2.006m²	3.009m²
Overall Dimensions	2005 x 1418 x 97mm	2005 x 2127 x 97mm
Width of Manifold	1418mm	2127mm
Length (Tube and Manifold)	2005mm	2005mm
Depth	97mm	97mm
Aperture Area	2.157m²	3.229m²
Fluid Volume (In Manifold)	1.2 Ltr	1.7 Ltr
Inlet and Outlet Dimensions	22mm	22mm
Weight (Empty)	47.2kg	70.5kg
Mounting		
Recommended Inclination	20-70°	20-70°
Operating Data		
Efficiency	Based on Absorber	Based on Absorber
eta 0	0.815	0.795
k1	1.1 W/m²K	1.07 W/m²K
k2	0.0106 W/m²K²	0.008 W/m²K²
Test Report		
Performance Test report	BLG109 - 06	BLG110 - 06
Quality Test report		BQG111 - 06
Flow Rate		
Rated	160 Ltr / h	240 Ltr / h
Minimum	120 Ltr / h	180 Ltr / h
Maximum	300 Ltr / h	480 Ltr / h
Maximum Operating Pressure	8 Bar	8 Bar
Stagnation Temperature	183.6°C	183.6°C
Heat Transfer Fluid	Water/Glycol	Water/Glycol
Materials		
Absorber	Copper	Copper
Coating	Selective Coating	Selective Coating
Absorbance	95%	95%
Emissivity	5%	5%
Mounting frame and clips	Stainless Steel, Aluminium EPDM	Stainless Steel, Aluminium EPDM
Glass	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92
Vacuum	Higher than 10^{-8} Bar	Higher than 10^{-8} Bar
Temperature limitation (Memotron)	95/130°C	95/130°C
Quality Certification / Solar Keymark	Yes	Yes

HP200

Technical Specification HP200		
	HP200 - 2m²	**HP200 - 3m²**
Dimensions		
Absorber Area	2.01m²	3.021m²
Overall Dimensions	2005 x 1418 x 97mm	2005 x 2127 x 97mm
Width of Manifold	1418mm	2127mm
Length (Tube and Manifold)	2005mm	2005mm
Depth	97mm	97mm
Fluid Volume (In Manifold)	1.1 Ltr	1.7 Ltr
Inlet and Outlet Dimensions	22mm	22mm
Weight (Empty)	50.3kg	75.1kg
Mounting		
Recommended Inclination	20-70°	20-70°
Operating Data		
Efficiency	Based on Absorber	Based on Absorber
eta 0	0.792	0.778
k1	1.25 W/m²K	0.91 W/m²K
k2	0.0088 W/m²K²	0.01 W/m²K²
Test Report		
Performance Test Report	BLG 10906	BLG 11006
Quality Test report		
Flow Rate		
Rated	160 Ltr / h	240 Ltr / h
Minimum	120 Ltr / h	180 Ltr / h
Maximum	300 Ltr / h	480 Ltr / h
Maximum Operating Pressure	8 Bar	8 Bar
Stagnation Temperature	183.6°C	183.6°C
Heat Transfer Fluid	Water/Glycol	Water/Glycol
Materials		
Absorber	Copper	Copper
Coating	Selective Coating	Selective Coating
Absorbance	95%	95%
Emissivity	5%	5%
Mounting Frame and Clips	Stainless Steel, Aluminium, EPDM	Stainless Steel, Aluminium, EPDM
Glass	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92
Vacuum	Higher than 10^{-8} Bar	Higher than 10^{-8} Bar
Temperature limitation (Memotron)	95/130°C	95/130°C
Quality Certification / Solar Keymark	Yes	Yes

Solar heating is the natural way to reduce your energy bills and your carbon footprint.

It doesn't have to cost the earth.

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THERMOMAX

Due to our continuing policy of development and improvement we reserve the right to alter and amend the specification as shown in this literature

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