

Kingspan Climate^{❄️}

The Complete Solar Powered Cooling System



Energy to the Power of



Kingspan Renewables Ltd is a division of the Kingspan Group plc. The group has manufacturing and distribution operations throughout the world and is recognised throughout the construction industry for its commitment to innovation, design, quality and technical expertise. With four distinct integrated product streams Kingspan Renewables offers: solar collectors, hot water systems, heat pumps and solar cooling solutions.

What is Solar Cooling?

Solar cooling is exactly as the name implies, it is the process of cooling a building using the power of the sun.

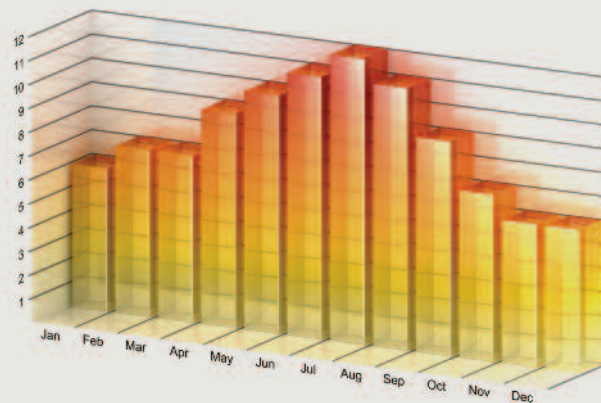
Every month the earth receives, free of charge, more solar energy than man has consumed throughout history.

Solar collectors harness energy from the sun. The harnessed heat is transported to and utilised by a heat energy exchange unit to produce a chilled water source. This is then used to cool the building. The output from the exchange unit can also be switched to allow the building to be heated.

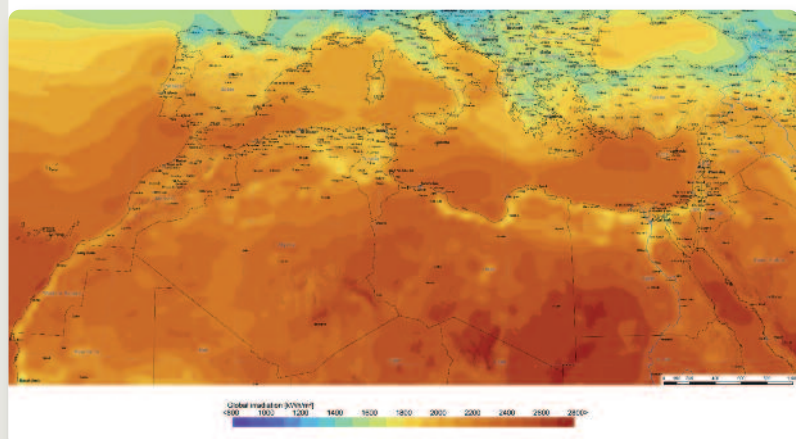
Benefits of solar-cooling:

- Up to 90% saving of the energy costs associated with traditional air conditioning systems;
- Healthier internal environment, as a result of reduced airborne allergens, when used with underfloor distribution system;
- Potential for A-rated building;
- Reduced CO₂ emissions;
- Lower designed energy load for building compared to traditional air conditioning;
- Lower demand for space heating energy; and
- Low maintenance costs.

Average number of hours of sunshine per day – Mediterranean



Solar Irradiation Map - Mediterranean



What is the Kingspan Climate[®] Solar Cooling System?

The Kingspan Climate system is a complete package that includes: **THERMOMAX**, one of the world's highest performing solar collectors; **KingspanENERGICENTER**, the intelligent hot water storage system; and the unique **ClimateWell** system that utilises patented triple state absorption technology. The Kingspan Climate package is the ultimate solar cooling system available throughout the world today.

The Kingspan Climate system delivers solar powered space cooling and heating for projects of all sizes from domestic applications to schools and hospitals. It can also provide heating for domestic water and swimming pools.

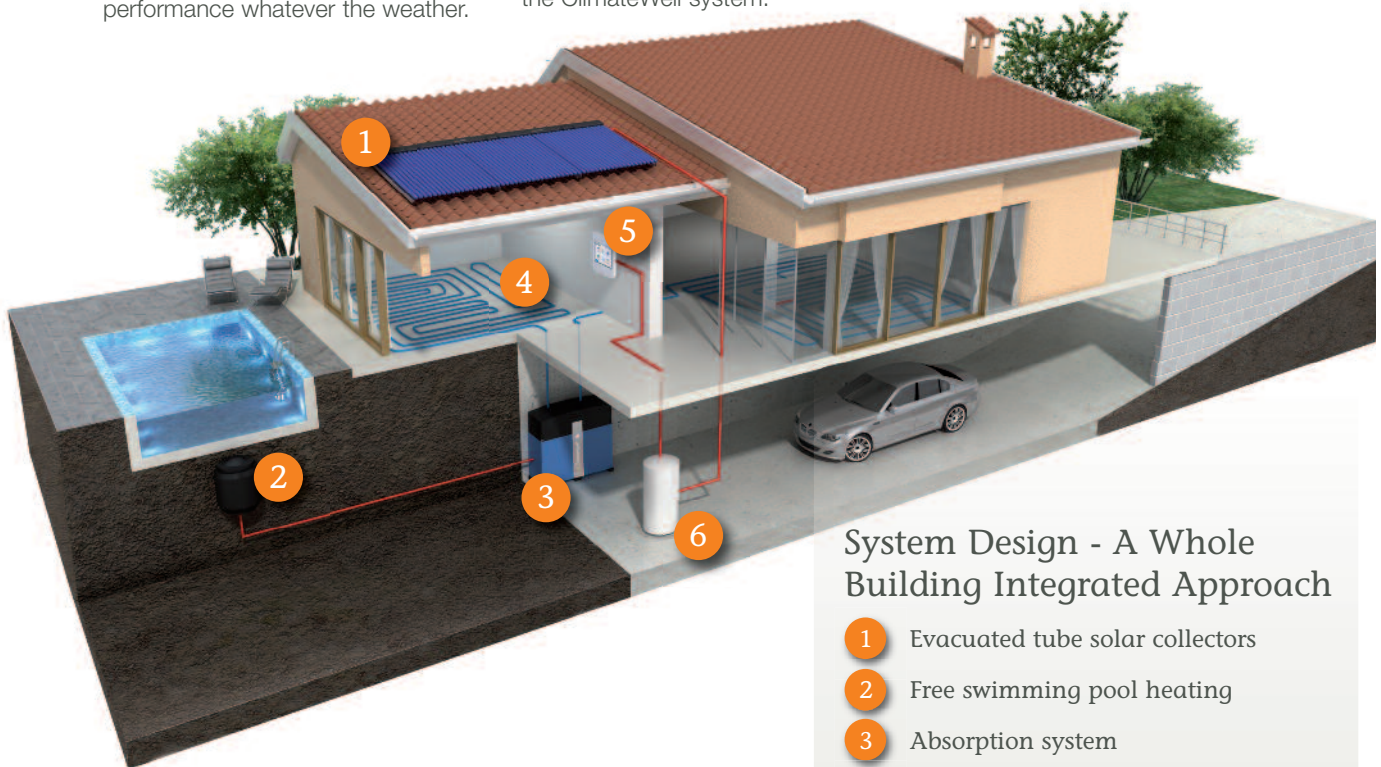
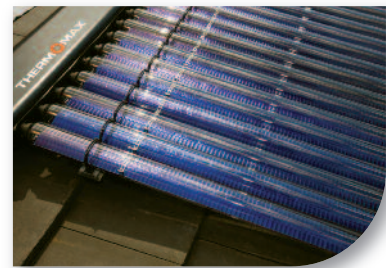
THERMOMAX Solar Collectors

With over 25 years of experience, the Thermomax evacuated tube solar collector brand is firmly established as a world leader. Kingspan Solar Thermomax collectors are amongst the highest performing collectors on the market. They provide superior performance whatever the weather.

Each Kingspan Solar Thermomax 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. Thus ensuring the most effective transfer of energy into heat, delivering world leading levels of performance to provide heat not only on warm, sunny days, but also in overcast, windy or humid conditions.

This free and efficient heat collection is utilised by the unique triple state absorption technology of the ClimateWell system.

The vacuum tubes are round and perfectly smooth allowing air to circulate around them and not trap moisture or debris which can affect the performance of other collectors.



System Design - A Whole Building Integrated Approach

- 1 Evacuated tube solar collectors
- 2 Free swimming pool heating
- 3 Absorption system
- 4 Underfloor cooling / heating
- 5 Control unit
- 6 Hot water system

What is the Kingspan Climate[®] Solar Cooling System?

Solar Powered ClimateWell System

The ClimateWell unit is a silent solar powered air conditioner that uses no electricity for the heat exchange process and only a very small amount for its control systems. In fact, the unit runs off a standard mains circuit – it is even supplied with its own plug!

Using free hot water from Kingspan Thermomax solar collectors, the system produces clean energy and generates solar cooling and / or heating day and night. The unit's core has no moving parts and no CFCs/HCFCs.

Triple State Absorption

The unit uses patented triple state absorption technology that utilises the hygroscopic characteristics of a crystalline formula to extract energy, in the form of heat, from a connected vessel of water. The extraction chills the water which can then be used to cool the internal environment of the building.

The system has more than one crystalline formula vessel so charging and discharging can occur at the same time allowing consistent cooling / heating of the building.

This ability to change the vessels and store the energy from the sun allows the Kingspan Climate system to deliver cooling and heating even when the conditions are prohibitive, such as at night.

In cooling mode, the ClimateWell system delivers a typical chilled water temperature, to the building's distribution system, of between 7 and 19°C depending on the specification of the heat sink.

Kingspan ENERGiCENTER

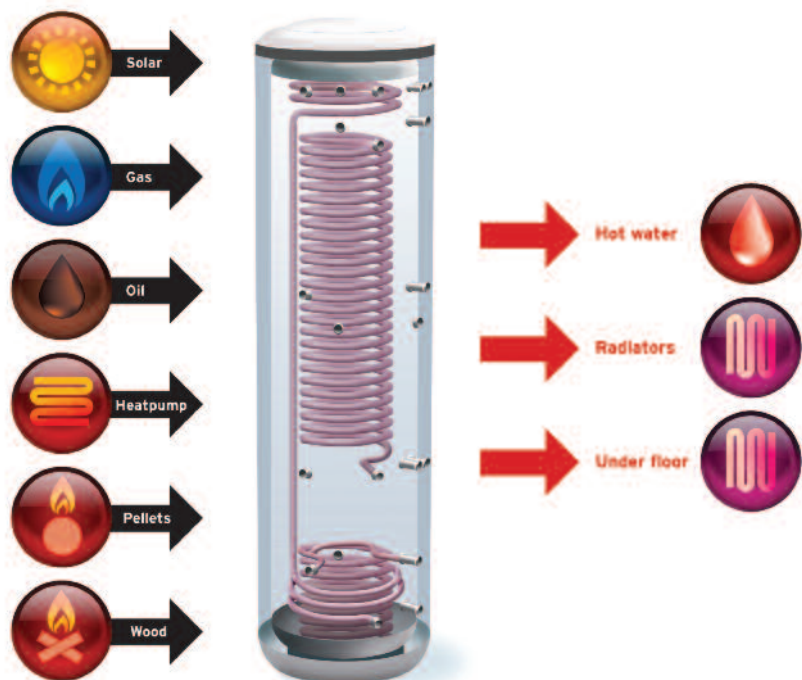
The Kingspan EnergiCenter is an intelligent hot water storage system. It can combine multiple renewable and traditional methods of heat inputs, to offer an integrated central energy system. The ultimate integrated energy store, Kingspan EnergiCenter can be integrated at any stage into any heating system; offering optimal contribution of renewable energy to both space and water heating. Compact in size, this single tank system results in minimum space requirement.

The Kingspan EnergiCenter has been developed in-house by the technical team behind Kingspan Hot Water Systems' cylinders. As the largest manufacturer of hot water cylinders in UK and Ireland with over 80 years' experience, Kingspan Hot Water produces copper cylinder combination units and 'Duplex' stainless steel high performance unvented units in over four hundred different sizes, types and patterns.



A silent solar powered air conditioner

The 'Duplex' stainless steel offers superior corrosion resistance to copper, glass-lined steel and other lesser grades of stainless steel, particularly in aggressive water areas.



Benefits of choosing a Kingspan Climate[®] system

Complete System Design

Kingspan Renewables can offer standardised design templates for both residential and commercial applications. With over 25 years' experience in the design, specification and installation of solar applications, we will advise and work with you on any project.

All the components are designed, selected and sized to work together simply, effectively and efficiently.

The Kingspan Climate system also benefits from fewer components than traditional solar powered cooling systems, therefore offering capital expenditure savings. The utilisation of fewer components that have been designed and sized to work together reduces the occurrence of installation and in-use problems.

Low Running Costs

The payback on the Kingspan Climate system, depending on system specification, can be as short as six years when you consider the savings made on running costs compared to a traditional air-conditioning unit. The use of a Kingspan Climate system delivers cooling / heating with up to a 90% saving on running cost.

This is possible as a result of the patented triple state absorption process having no requirement for electricity and therefore no associated cost. In fact the only running costs involved in the system is the small amount of electricity required to operate the control systems and pumps.

Durability

The ClimateWell system has at its core no moving parts, eliminating the opportunity for failure.

The absorption process takes place inside a vacuum for an infinite number of cycles.

The Kingspan Thermomax solar collectors have a life expectancy of 25 years and are one of the most efficient collectors available on the market.

The 'Duplex' stainless steel used to manufacture the Kingspan EnergiCenter cylinder is resistant to all forms of corrosion including crevice, pitting, uniform and stress cracking.

Full warranty applies for ClimateWell, Thermomax and the EnergiCenter when installed by a Kingspan Renewables approved and accredited installer.

Architectural Integrity

The Kingspan Climate system complements the aspirations of the architect by allowing freedom of positioning. Externally, solar collectors can be fixed at any angle (horizontally, vertically or anywhere between) and can even be integrated into the architecture.

Internally, the use of an underfloor distribution system or ducted convection systems negates the need for wall mounted radiators leaving the internal space free and uncluttered.

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





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