



U SOLAR

Insulation solutions
for thermal solar collectors



Inside your **THERMAL SOLAR COLLECTORS**



U SOLAR Strips

U SOLAR EasyRoll





Get the most **OUT OF YOUR THERMAL SOLAR COLLECTORS**

Are you looking for continuous improvement in your thermal solar collectors, better performance and a greener future?

Heat represents almost half of the energy demand in Europe and accounts for the greater part of European households' energy bills.

Thermal solar collectors provide heat in a clean, sustainable and economic way, following a basic principle: solar radiation is collected and the resulting heat is conveyed to a heat transfer medium – usually a fluid or air. The heated medium is used either directly (to heat tap water for example) or indirectly by means of a heat exchanger that transfers the heat to its final destination.

This technology is mainly used for:

-  **domestic** hot water and space heating,
-  **district** heating,
-  **industrial** process heat and
-  **air conditioning** and **cooling**.

INSULATE YOUR SOLAR PANELS WITH U SOLAR TO OPTIMISE THEIR EFFICIENCY

Adding high-performance insulation to your solar panels means adding great value for your domestic and industrial customers.

Our **U SOLAR** insulation solutions are suitable for flat single-glazed ventilated collectors, with standard or reflective glass, and working temperatures of up to 250°C. They increase the energy efficiency of your solar panels, avoiding thermal losses through the rear and sides of the collector.

Offer your customers the most efficient and sustainable solar panels, thanks to the excellent thermal performance, low weight and easy compressibility combined in our U SOLAR insulation solutions.



How can solar heat contribute to Europe's decarbonisation agenda?

The heating sector is among the highest emitters of greenhouse gases. While electricity is far from being decarbonised and cannot provide a decarbonised supply alone to cover the entirety of the space heating and hot water demand, solar heat is a quick win to shift from a fossil-based heating supply, to a cheap, abundant and clean source of heating.

The solar heat sector saved around 6.8 million tons of CO₂ in Europe – a number which could reach 687 million tons of CO₂ per year in 2050 with proper incentives from the policy-makers. Worldwide, solar heat is already delivering a CO₂ reduction of more than 120 million tons annually.

8 Facts concerning Solar Heat Technology*



36.1
GW_{th}

Total installed capacity in operation



1.5
GW_{th}

Total installed capacity in 2018



25.6
TWh_{th}

Annual energy generation (estimated)



EUR 1.85
billion

Sector turnover (estimated)



18 800

Number of jobs (estimated)



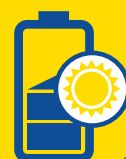
6.80
Mt CO₂

Emissions savings (estimated)



10.5
million

Number of solar thermal systems in operation (estimated)



180
GWh

(connected with solar thermal systems)

Energy storage capacity (estimated)

DID YOU KNOW?

ISOVER is a member of Solar Heat Europe, which brings together solar panel expertise from 50 members covering 90% of the industry across the entire supply chain.

7 GOOD REASONS TO CHOOSE U SOLAR

Go Greener

Save on your customers' energy bills

A solution for any design challenge

Optimise your logistics

Easy installation with EasyRoll

Work with healthy materials

Better-looking solar panels

Go GREENER



To make your solar panels even greener, capitalise on the right insulation solution.

As decarbonising heating and cooling is a key challenge in our energy system, the use of renewable energy is becoming increasingly important.

Offering a cheap, abundant and clean energy solution, with all parts being recyclable, solar panels offer a great opportunity to take action against climate change.

Example: A single domestic solar thermal system in Greece can save up to 1.5 tons of CO₂ per year. This is the equivalent of the emissions produced by an average European car in a year! *Source: Solar Heat Europe*

Insulating solar panels with **U SOLAR** solutions helps enhance their contribution to the protection of the environment in several ways over the lifetime of the panel:



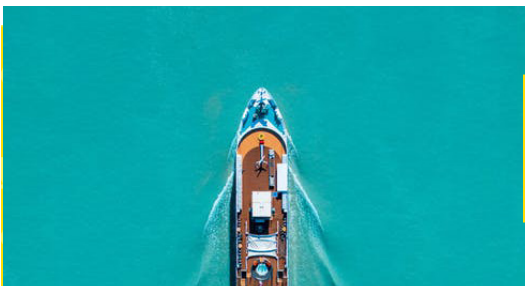
SAVE MATERIALS & RESOURCES

Our **U SOLAR** solutions are made of ULTIMATE™ mineral wool, made entirely of natural raw materials and 100% recyclable.



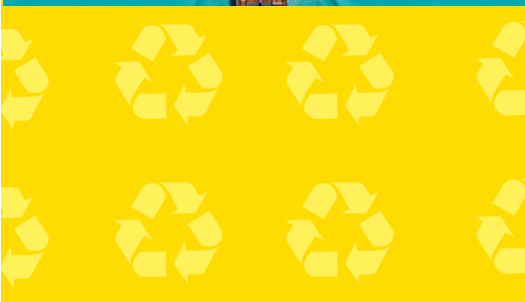
CUT DOWN ON WASTE

As ISOVER's unique **U SOLAR EasyRoll** system comes cut to size, there are no offcuts, so there is less waste.



REDUCE TRANSPORT EMISSIONS

U SOLAR EasyRoll can save up to 65% of space during transport – meaning fewer trucks, fewer journeys and reduced CO₂ emissions. In addition, all products are designed and produced in Europe, which reduces the impact of transport.



Save on your customers' ENERGY BILLS



No one wants to spend more than necessary on heating and hot water – neither do your customers.

Wherever your customers are, solar panels will save them money on their energy bills. Insulating the panels helps them run more efficiently, and makes the savings even greater.

Example: Solar thermal collectors for domestic hot water in single-family houses

We can consider that, on average, the annual domestic energy consumption for heating water in developed countries is around 1000 kWh per person. As domestic hot water demand is generally constant all year round, solar thermal collectors are particularly suited to meet this demand. At higher latitudes, where the radiation in winter is significantly lower than in summer, such systems can cover between 60 and 80% of the annual domestic hot water demand, whilst at low latitudes, solar thermal collectors can cover 100% of the domestic hot water demand. *Source: Solar Heat Europe*

Optimising energy efficiency with U SOLAR EasyRoll

Thanks to the naturally flexible and resilient properties of ULTIMATE™, **U SOLAR EasyRoll** is the ideal solution to optimally embed the copper pipes into the insulation, so that there are no air gaps causing energy losses, making the panel even more efficient. In addition to the **U SOLAR EasyRoll** slabs used to insulate the surface of the solar panel, our **U SOLAR Strips** allow insulation of the sides of the panel, minimising energy losses.

U SOLAR also prevents outgassing, meaning that the glass of the panel doesn't become fogged and its performance remains optimised throughout the life of the panel.



A solution for **ANY DESIGN CHALLENGE**



Your process is unique – our solutions adapt to it.

U SOLAR solutions are available with a range of shapes and facings, to offer you the most suitable solution for your solar panels.

Cutting insulation to size on site is not only time-consuming for you but it can also lead to waste.

Using our pre-cut **U SOLAR EasyRoll** saves you time, almost entirely eliminates waste and also ensures - as the insulation is perfectly sized - that the performance of the solar panels will be enhanced.



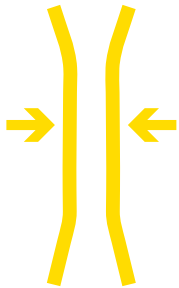
You need a customised solution?

Your ISOVER experts are available to help you solve any design challenge.

U SOLAR solutions can be entirely tailor-made according to your needs and in line with your production processes.



Optimise YOUR LOGISTICS



Optimising your process also means optimising your logistics, i.e. storage space and transport needs.

Thanks to the unique flexibility and resilience of ULTIMATE™, U SOLAR EasyRoll can be compressed into rolls without losing its mechanical properties.

This translates into a space gain of up to **65%**, in your premises and during transport.

It limits the number of kilometres travelled, which helps you save money and limits your carbon footprint:



Transport cost

CO₂ emissions

Loading & unloading operations

**divided
by 3**



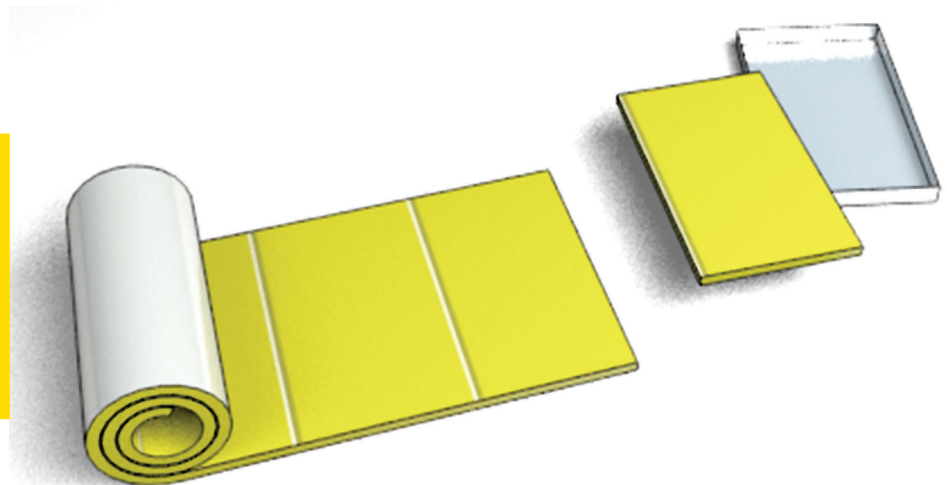
Easy installation WITH EASYROLL



The installation and assembly of the different components of a solar panel have an important impact on the efficiency of the overall manufacturing process.

Our **U SOLAR EasyRoll** solutions are designed to make the installation of the insulation as quick and easy as possible for you: the rolls are pre-cut and the slabs can simply be lifted off the roll and put into the panel – easy to handle and user-friendly.

The panel sides can be insulated conveniently with our **U SOLAR Strips**.



As a result, you save time and money on the factory floor, eliminating waste.

**Discover how
to install U SOLAR
EasyRoll on YouTube:**

[https://www.youtube.com/
watch?v=cqISJhajTcM](https://www.youtube.com/watch?v=cqISJhajTcM)



Work with HEALTHY MATERIALS



ISOVER insulation solutions for solar panels are safe to work and live with.


All ISOVER ULTIMATE™ fibres are certified as biosoluble and non-carcinogenic and are EUCEB- and RAL-certified. In addition, **U SOLAR EasyRoll** is 50% lighter than equivalent stone wool solutions, offering a more ergonomic and effortless installation.

More than 2500 scientific publications have demonstrated that mineral wool fibres are safe to manufacture, install and live with. This has been recognised by health authorities at an international level e.g. REACH regulations.

The health and safety of our customers is a top priority for us, not only for the building's occupants, but also during installation.



Better-looking SOLAR PANELS



While the service temperature of a solar collector can go up to 150 °C, stagnation or slow circulation of the calorific fluid due to low hot water consumption or system failure can raise the temperature inside the collector up to 250°C. This could result in insulation materials outgassing, so that the panels become fogged, spoiling their appearance and affecting their efficiency.



U SOLAR insulation solutions are specially designed to avoid any fogging deposit or condensation on the glazing, even at 250°C and over a period of 150 hours, improving not only the thermal performance of the solar panel, but ensuring their optimal light transmittance and enhancing the overall appearance of the panel.

U SOLAR EasyRoll is optionally available with a black glass tissue facing on one side, while the **U SOLAR Strips** for the panel sides are systematically faced, which guarantees your panels a perfectly homogeneous appearance, wherever they are placed.

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**DID YOU
KNOW?**

**All
ISOVER
products are
SPF-certified
for your peace
of mind.**

WHICH U SOLAR PRODUCT IS RIGHT FOR YOUR PROJECT?

Choose from a comprehensive range of solutions, trusted by customers around the world.

A comprehensive range TO MEET ALL YOUR NEEDS

Whether you are looking for the most economical or the best-performing solution, either you will find a U SOLAR product within our standard range, or we will customise it for you.

U SOLAR EasyRoll pre-cut insulation comes in a range of thicknesses and sizes:

	DENSITY	LAMBDA VALUE mW/(m*K) AT 10° C	FACING
U SOLAR EasyRoll 1.5 N	15 kg/m ³	37	Unfaced
U SOLAR EasyRoll 2.0 N	20 kg/m ³	34	Unfaced
U SOLAR EasyRoll 2.5 N	25 kg/m ³	33	Unfaced
U SOLAR EasyRoll 2.5 V2	25 kg/m ³	33	Black facing on one side

For an optimised performance of your solar collectors, use our U SOLAR Strips 3.5 V2, in combination with any U SOLAR EasyRoll solution:

	DENSITY	LAMBDA VALUE mW/(m*K) AT 10° C	FACING
U SOLAR Strips 3.5 V2	35 kg/m ³	32	Black facing on one side

Our solar panel insulation products are made from ULTIMATE™ mineral wool. Based on a patented fiberizing process and a unique structure, ULTIMATE™ provides outstanding thermal insulation as well as the high temperature stability necessary for installation in solar panels. This RAL-certified material offers the strength of stone wool combined with the low weight and compressibility of glass wool.

- **Best-in-class thermal insulation**
- **Stable dimensions for temperatures up to 250°C**
- **No fogging (binder outgassing), certified by SPF lab.**
- **Low densities for light collectors and easy handling on the roof**
- **Easy installation: flexibility, EasyRoll concept**
- **Optimised logistics with compressed products**

Contact your
ISOVER experts
to help you
solve any design
challenge.
U SOLAR
solutions can
be customised,
to fit the needs
of your produc-
tion processes.

Optimise the efficiency of YOUR SOLAR PIPEWORK



To avoid wasting energy, it is not just the solar panels that need to be correctly insulated, but the surrounding pipework too. To keep your solar panels running at optimum efficiency, our sister company KAIMANN offers several products that will help.








kaiflex[®] SOLAR EPDM *plus 2in2*

KAIFLEX Solar EPDMplus 2in2 is a pre-insulated pipe which connects solar panels to storage cylinders, keeping water hotter for longer and minimising energy loss. It is made of UV-resistant EPDM rubber and comes with pre-applied foil that can be bent around the tightest bends to protect against vandalism and damage.

The internal corrugated pipe is specifically designed to withstand high solar temperatures and pressures and is fully compatible with all standard solar panels, cylinders, pumps and fittings.

KAIFLEX Solar EPDMplus 2in2 has such great water-resistance that there is no need to apply a separate water vapour barrier.

-  **Excellent thermal efficiency**
-  **Moisture protection**
-  **Temperature-resistance from +150°C down to -50°C**
-  **Does not drip in the event of fire**
-  **Durable connection between feed and return pipes**

There is also a wide range of accessories available, including pipe cuffs, tape and adhesive to ensure a tight bond between Kaiflex surfaces, pipes and ductwork, to further protect the pipes and minimise energy loss.



www.kaimann.com



What our customers ARE SAYING

ABORA ENERGY (Zaragoza, Spain)

Abora is a young Spanish company (founded in 2017) in the field of solar energy, specialised in the design, development and manufacture of hybrid solar panels.

A hybrid solar panel generates electricity and hot water simultaneously thanks to solar energy. It combines two technologies in the same panel: photovoltaics for electricity generation and solar thermal for hot water production. Abora has developed the world's most efficient solar panel, which can generate the same energy as 5 photovoltaic panels.

Hybrid solar panels from Abora are used in any application where water- and space-heating requirements are significant, such as industry, hospitals, hotels, residences, sports centres, etc.

They incorporate the latest technology, including high-performance 60 mm thick **U SOLAR** insulation.



SYTA INDUSTRIAL FACILITY, ALFAJARÍN, ZARAGOZA (SPAIN)

- › Number of hybrid panels: 160
- › Payback: 4.8 years
- › Emissions avoided: 84 800 kg CO₂/year



HOTEL IBEROSTAR, TENERIFE (SPAIN)

- › Number of hybrid panels: 102
- › Payback: 5 years
- › Emissions avoided: 86 544 kg CO₂/year

3 QUESTIONS PUT TO VICENTE ZÁRATE ÁVILA (DIRECTOR OF OPERATIONS AT ABORA):

WHAT ARE THE MOST IMPORTANT CRITERIA FOR YOU WHEN CHOOSING AN INSULATION SOLUTION?

“ We look for the lowest possible thermal conductivity, and the insulation must withstand temperatures of up to 200°C. It is of course crucial for us that any product or component we use is not detrimental to health. Insulation materials must have the necessary certifications, such as SPF, RAL, etc. ”

WHY DID YOU CHOOSE U SOLAR EASYROLL?

“ Because it has the best lambda value of the various solutions studied and because it comes pre-cut to size. ”

WHAT ARE THE MAIN BENEFITS THAT U SOLAR EASYROLL OFFERS YOU?

“ **U SOLAR Easyroll** significantly reduces energy losses and allows us to optimise the efficiency of our solar panels. In addition, the product is made with customised dimensions, which allows fast assembly on the production line. ”

ABOUT US

Discover the Saint-Gobain Group,
and read more about ISOVER,
the world-leading supplier
of sustainable insulation solutions.

About US

Saint-Gobain

Saint-Gobain designs, manufactures and distributes materials and solutions that improve the comfort of each of us and the future of all. Saint-Gobain products are found everywhere in our daily lives: from the home to the office, in cars and infrastructure and in high-performance materials for the health sector and many industrial applications.

The Group aims to meet today's individual requirements for comfort, performance, safety, aesthetics. It also aims to take up the collective challenges of the future, from construction to sustainable mobility, from population growth to climate change.

In this way, Saint-Gobain continues to write the history of a company dating back more than 350 years, continuously improving its products, processes and services in a spirit of openness and attentiveness to customer needs.

As one of the top 100 industrial groups in the world and one of the 100 most innovative companies, Saint-Gobain continues to apply its technological know-how, often in partnership with the most prestigious universities and laboratories.

With 2018 sales of 41.8 billion, Saint-Gobain operates in 67 countries and has more than 180,000 employees.

ISOVER

ISOVER creates efficient thermal and acoustic insulation solutions to design energy-efficient constructions, provide safe comfort for users and help protect the environment.

As the world-leading supplier of sustainable insulation solutions for all major application areas in both residential and non-residential buildings, ISOVER has drawn attention to the importance of effective insulation in technical sectors, such as marine applications, industry, HVAC and original equipment manufacturing (OEM), where effective insulation is important not only for saving energy but also for providing fire safety and acoustic and thermal comfort.

Our strategy is global but its implementation remains local, based on our strong local presence.



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