

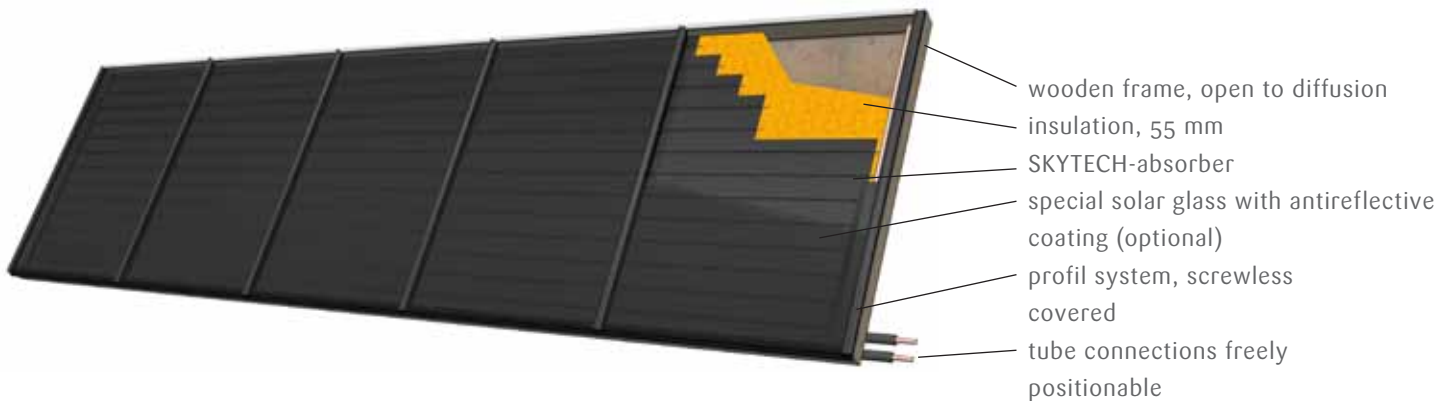
**Towards the sun.
With WSolar Energie**



VarioSol large area collectors · Solar facades

VarioSol E antireflex

The best solution for integrated mounting



Performance and quality tests according to ISO, DIN, EN, solar-keymark



The system VarioSol E integrates the collector areas into roofs and facades.

To avoid any misunderstandings: The collectors can of course be built up also on existing roofs and facades.

In-house plumbing company

A main factor for the performance of our solar systems are the metal frames of our collectors, that are perfectly adapted to the collector areas in our inhouse plumbing department. So VarioSol E stands for a safe and waterproof integration into the roof and thus for a quality that does more.

Powerful

The VarioSol E-antireflex is among the most powerful large area collectors on the market. This variant even surpasses many vacuum tube collectors thanks to it's highly transparent and precisely manufactured glass that reduces reflection markably and thus increases energy gains.

Flexibel

Customer-specific sizes and adaptations to the buildings are particularly easy to make with the VarioSol E. Both complicated facades and roof-collectors in triangle and trapeze shapes can be manufactured.

VarioSol E is recommended for:

- roof-integration with any type of tiles
- integration in metal roofs (newly constructed)
- facade integration
- integration into balconies

Mounting and integration material for VarioSol E

For actually achieving the VarioSol's extraordinary performance we need to focus on perfect mounting and integration material as well. Even these parts have been developed with great care and love for the details.

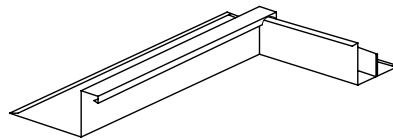
Large range of materials and colours.

For the integration into roofs we supply various metal frames, adapted to individual needs. We not just differentiate between many types of tiles the frames are made for, but also offer a wide range of materials and colours.

Material for metal frames

Only by using the right material a durable function of the metal frame can be ensured. For example the lifespan of a frame made from aluminum is reduced when it is combined with copper parts from other components on the roof.

For a proper function of the metal frame a minimum inclination of 15 degrees is necessary. For special demands the frames can be adapted.



Main advantages of in-roof mounting are:

- less heat-loss through the back panel
- no tubings above the roof
- reduction of the roofing costs (less tiles necessary)
- Broken tiles are easy to replace which is not possible when mounting an on-roof collector
- harmonic appearance

We supply metal frames from:

- copper
- aluminum brown coated
- aluminum anthrazit coated
- aluminum copper brown coated
- aluminum oxyd red coated
- titanium zinc
- Uginox
- stainless steel (Roofinox, Ugitop) (further materials and colours upon request)

Our standard folding is available for:

- Tiles
- Slate (ardesia)
- Shingles
- customized



Roof integration

When integrating a collector into a roof it is mounted directly onto the laths prepared for the tiles, so there are no further works at the roof's construction needed. The collector can be fixed by simple screwing it on through the wooden frame. For positioning on the roof we supply easy-to-use mounting instructions. Even calculation is easy with VarioSol E collectors: in opposition to on-roof collectors there are no separate mounting bases needed, just the collector itself and the metal frame.

Facade integration

This kind of application means high requirements in terms of optics and technics, as the collector is part of the houses insulation. This peculiarity as well as some other physical factors have to be considered when manufacturing the collectors and mounting equipment.

We have developed solutions that make various details and formats possible.

Adaptions in surface, colour, shape and connections are realized.

Advantages of facade integration collectors:

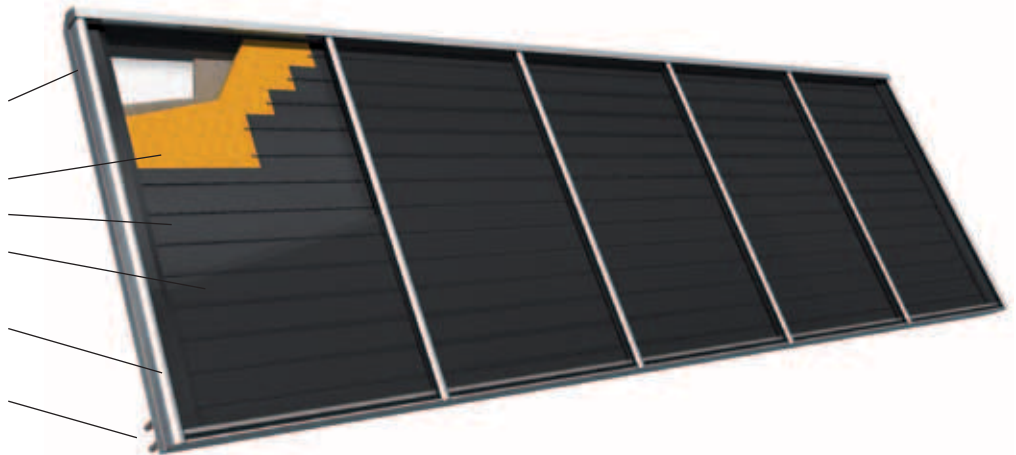
- quicker mounting
- less mounting material and tube connections
- tube connections are always where they are needed



VarioSol A antireflex

The variable on-roof large area collector

aluminum double-wall frame
profile with lateral insulation
insulation, 55 mm
SKYTECH-absorber
special solar glass with anti-
reflective coating (optional)
profile system, screwless
covered
tube connections
freely positionalee



design award
winner
2004

Performance and quality tests
according to ISO, DIN, EN, solar-keymark



The most powerful large area collector

We set the standards. With the most powerful large area collector on the market – VarioSol A-antireflex, the collector type for on-roof mounting. That means that there are no adaptations

on the building are needed. So the collectors are not integrated into a roof or a facade, but directly fixed onto the existing roof, flat roof, a balcony or simply on the floor. High-quality materials provide a long lifetime and separately

designed mounting equipment offers optimal solutions for any kind of mounting. By the way: the varioSol A is handmade by trained Austrian personnel.

Precisely processes solar safety glass

The glass of the VarioSol A-antireflex has a sensational energy transmittance of 96 percent. With that glass the power output even surpasses many clearly more expensive vacuum tube collectors.

According to the ITW-standard it yields a performance of 528 kWh per squaremeter and year. The very special antireflective coating of the glass makes it possible, as it reduces reflections of sunlight distinctly and thus increases performance.

The VarioSol A is also available with standard solar glass.



Mounting material for VarioSol A

For the on-roof collector VarioSol A we supply mounting systems for:

- free-field mounting on flat roofs or on the ground
- on-roof mounting on metal roof inclined or parallel
- wall-mounting inclined with support bases
- on-roof mounting on various type of tiles, inclined or parallel

A separately designed system from aluminum mounting profiles and fixings provides a safe, quick and cheap mounting of the collectors. For any individual needs we adapt these system to our customer's and the constructional demands.

Free field mounting

For a free field or a flat roof mounting we recommend the collector height of 1,25 meters. These sizes have a reduced windage which leads to relatively light fixings, low ballast weights

and perfect optics. The self-supporting frame of the large area collectors allows to do without horizontal profiles at the base construction: collector fields up to 8 meters of length consist of just one single collector element.

Mounting on metal roofs

For metal roofs we have a system of standing seam clamps and connecting profiles. For forces have to be transmitted into the roof over the metal sheet,

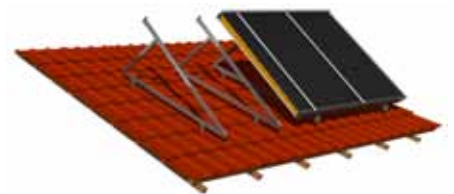
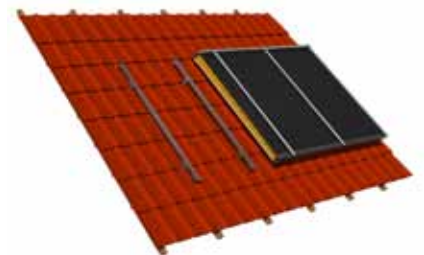
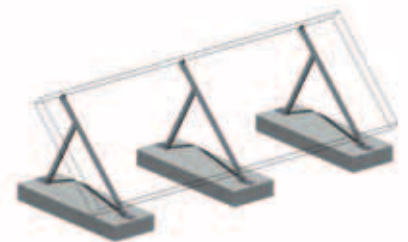
the capacity of the roof has to be verified.

Therefore we also offer mounting systems that transmit forces directly into the base of the roof and do not charge the metal sheet.

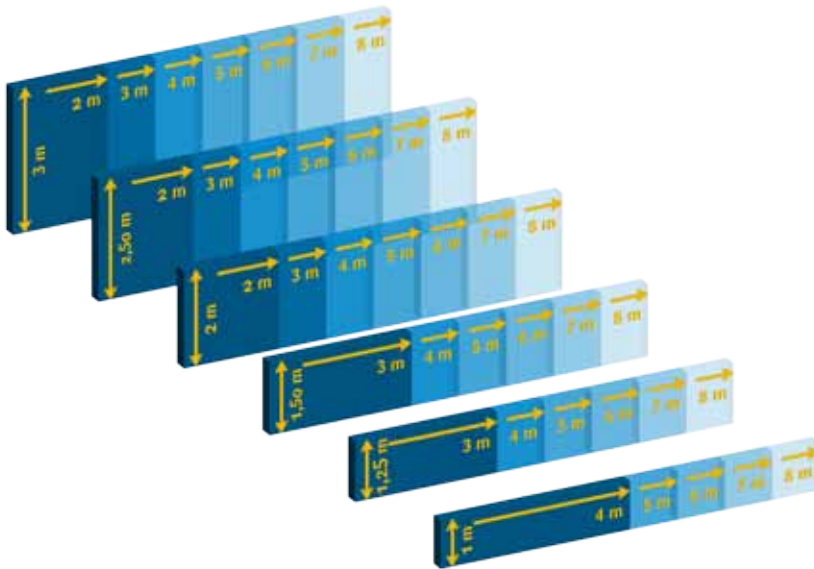
Mounting on tiled roofs

For mounting on tiled roofs we use stainless roof hooks, particularly made for various types of tiles. In combination with a aluminum profile system and the self-supporting frame of the collectors it makes a stable unit that is suitable for additional inclination, too.

When mounting a collector in the roof's inclination the VarioSol E in-roof collector will often be a preferable solution.



Technics – our collectors in detail



Tube connections

The position of the tube connections can always freely be chosen. Usually hot and cold connection are placed side to side.

For in-roof mounting the connections are lead through the back panel of the collector. Upon requirements the tubes can be connected below the tiles and are thus out of visibility, weather's influences and birds'

nibble attacks.

Connections straight through the back panel: installation from inside the house.

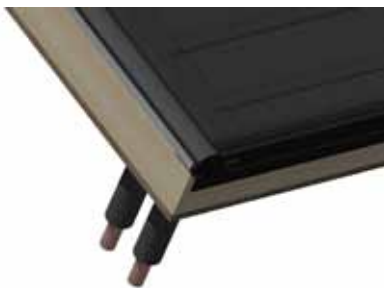
So at the VarioSol E the tubing is below surface protected from any outer influences. If the attic is accessible, the temperatur sensor can be put in and changed from inside the house.

Dimensions

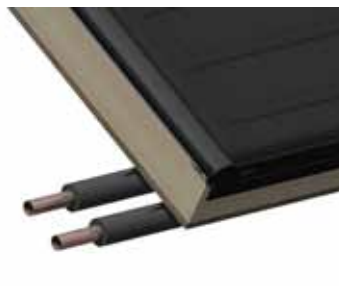
We offer a wide range of standard sizes between 3,75 and 24 m². If you still cannot find a fitting format from these, we are pleased to manufacture your individual custom size - according to your personal demands. Each of the collectors shown in the graphics is made in one piece. All collectors are delivered completely assembled with installed glass. Custom-specific sizes like triangles and trapezes as well as overlenghts up to approximately 10 meters can be manufactured by appointment. Even particular details or connections are possible - we have many practically proven special constructions on our disposal.

Connections of our collectors

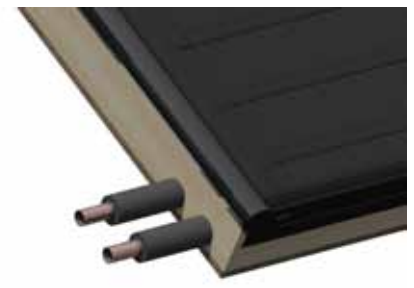
- two copper tubes with a diameter of 22 mm
- one insertion tube for a temperatur sensor
- upon request connection for venting



Connections straight through the back panel: installation from inside the house.



Connection below the tiles: Tubing can be extended below the surface of the roof.



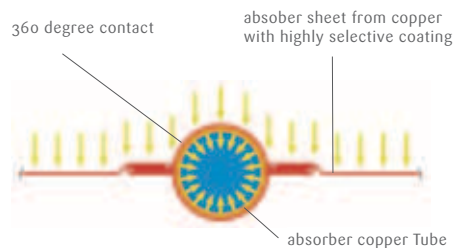
Connection through the frame: e.g. for facade integration

Technics - our collectors in detail

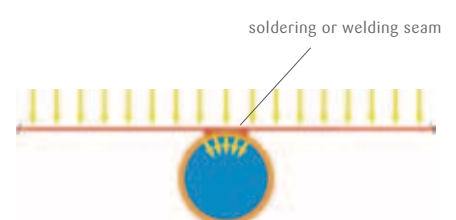
Absorber – SKYTECH-full-copperabsorber from own production

The absorber is the heart of a collector. Our roll-folding technology connects absorber sheet and tube over it's entire circumference. This 360-degree-contact is unique and guarantees optimal heat transfer. In combination with a highly selective absorber coating the collectors achieve high performances even at low outside temperatures.

SKYTECH absorber



Standard absorber



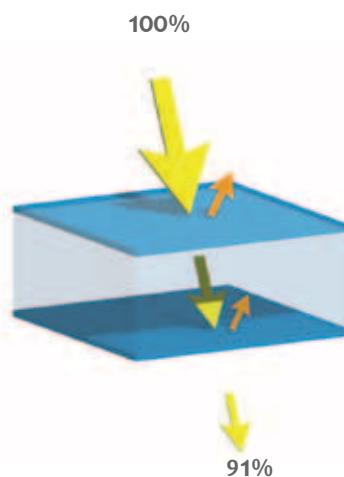
Covering

The job of the covering is to protect the collector from external influences and - simultaneously - let as much as possible light enter.

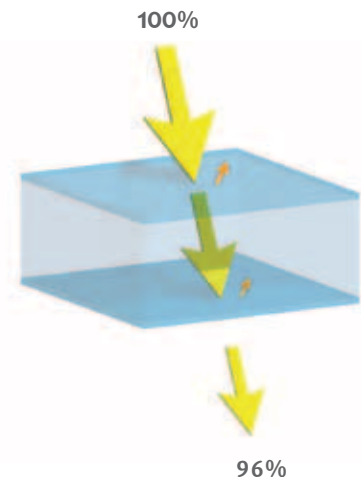
Our hail-resistant safety glass was specially developed for these demands.

It lets even sloping light pass excellently and cares for a perfect appearance.

Standard solar glass



Anti reflective glass



Waterproof

An essential feature of quality of in-roof collectors is their fitting and permanently waterproof metal frame. For just a perfect connection to the roof means a perfect integration. Handmade in our own plumbin department, the metal frame makes the interface between collector and roof.

The quality of that connection is confirmed by particular tests. In a windtunnel under extreme amounts of water it was tested in detail.

Valori di test

Efficiency values at a glance (according to EN 12975, SPF Rapperswil, TÜV Rheinland)

WSolar VarioSol antireflex (TÜV):

$$\eta_0 = 0,851 (0,74)$$

$$a_1 = 3,749 (3,25)$$

$$a_2 = 0,015 (0,013)$$

WSolar VarioSol A (SPF C567):

$$\eta_0 = 0,81 (0,73)$$

$$a_1 = 3,40 (3,04)$$

$$a_2 = 0,013 (0,012)$$

WSolar VarioSol E (SPF C398):

$$\eta_0 = 0,79 (0,70)$$

$$g_{trfa_1} = 3,15 (2,80)$$

$$a_2 = 0,016 (0,014)$$

I valori si riferiscono alla superficie di assorbimento, i valori tra parentesi si riferiscono alla superficie lorda.

Our collectors achieve unique performance levels. No other large area collector has an equivalent energetic efficiency output than our VarioSol A-antireflex. Noticeable more heat gain is what you will get from a Winkler solar collector.

Approved Quality

The largest European solar testing institute, the SPF Rapperswil, has tested our products and awarded them with the Swiss Quality Label.

Among experts a testing at the SPF Rapperswil is known as the highest challenge.



A Swiss Quality Label tests includes:

- Pressure test
- Internal shock test
- External shock test
- Watertightness
- Hail resistnace
- Wind tests
- Stagnation tests

Examples and referencies













W.S.E. GmbH
6800 Feldkirch | Räterweg 17 | Österreich
www.wsolarenergie.com | info@wsolarenergie.com

