

# ThyssenKrupp Solartec. Photovoltaic roof and façade system.



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Steel

**ThyssenKrupp Hoesch Bausysteme**



ThyssenKrupp



# ThyssenKrupp Solartec.

Securing the future with solar energy.



Our aim is to make using solar panels just as easy and natural as using conventional roofing and façade systems.

**We want to help build the future.**

Solar technology will have an important part to play in future energy supplies. It is also indispensable for reducing CO<sub>2</sub> emissions.

ThyssenKrupp Solartec is a modern, high-quality, flexible system which can be used as roofing and façade elements. It offers many advantages, both economical and ecological.

Its innovative design features and forward-looking technology make ThyssenKrupp Solartec a reliable long-term investment.

ThyssenKrupp Solartec is also certified to IEC 61 646 and TÜV Protection Class II.

## Generating energy on the roofs and façades of industrial and residential buildings.



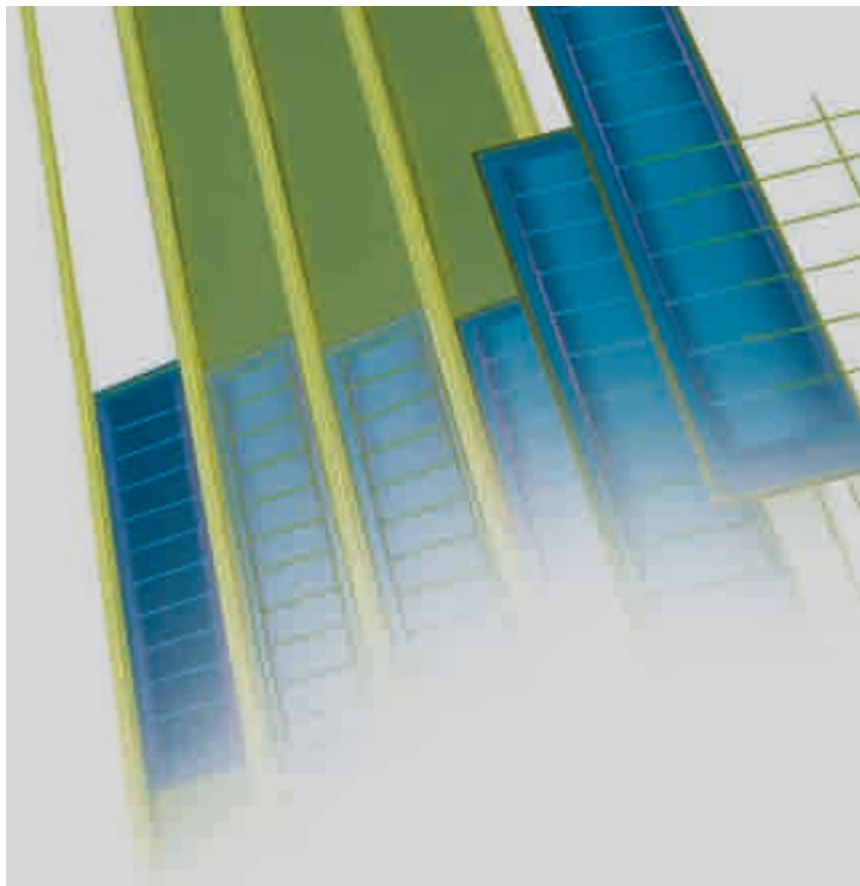
ThyssenKrupp Solartec is a complete roofing and façade system comprising UNI-SOLAR® solar film laminated onto galvanized and plastic-coated steel sheet. In roofs it completely replaces conventional roofing systems and requires no additional substructures or other mounting fixtures. The system is ideal both for new buildings and for roof or façade renovation projects.

ThyssenKrupp Solartec is suitable for both residential and industrial building. Single-shell elements are available in two performance types. The modules can also be supplied as sandwich elements with varying performance ratings. The large, unbreakable panels are easy to install, can be walked over and offer greater operating safety.

Using steel sheet as the substrate makes it possible to realize complex building designs. In fact, the flexibility of our systems opens up interesting new architectural possibilities. Structural requirements relating to building height can be incorporated and out-of-the-ordinary color designs accommodated, including the **ReflectionsOne®** color collection from ThyssenKrupp Steel.

Depending on requirements, our elements are utilized in industrial and housing construction. Our proven sandwich elements have been used as standard for many years in industrial buildings, where ease of installation combines with the large surface areas involved to allow the economical generation of electricity. Our flexible single-shell panels can be adapted to the demanding geometries frequently found in residential construction. One thing common to all types is that they are specially manufactured for your specific construction project. That makes it possible to integrate surfaces into the roofing and façade concepts which are unsuitable for other PV modules, thus avoiding clashes of style.

Moreover, the innovative triple-junction technology used by UNI-SOLAR® generates more energy than conventional PV systems. That translates into a higher annual yield per kWp of installed power. Considering the savings made on roofing material, the ThyssenKrupp Solartec system offers an economical and attractive solution which makes an active contribution to protecting the environment.



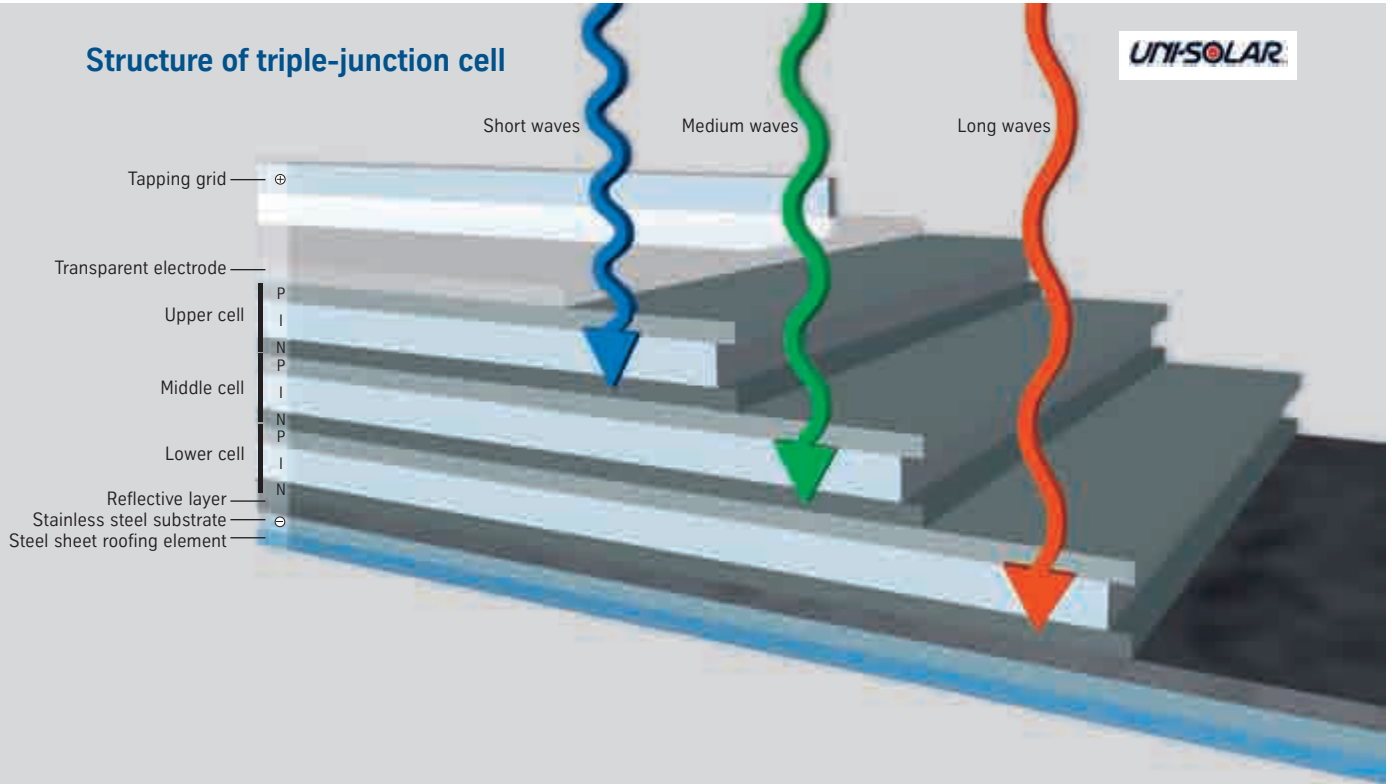
**1** New architectural office in Drachten/NL, 6.12 kWp.

**2** Roof renovation Schmiedl in Rietberg, 33.18 kWp.

**3** New covered paddock in Rupichteroth, 65 kWp.

**4** Renovation of flat roof on school/hall buildings in Staufen/Breisgau, 48 kWp.

## Technological edge provides higher energy yields.

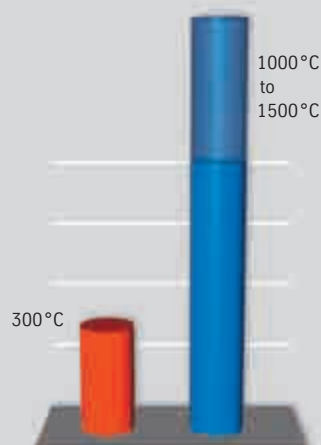


UNI-SOLAR® solar laminate comprises three solar cells stacked on top of each other. Each of these cells is sensitive to a different spectral range to improve energy yield. Nine thin-film layers of nanocrystalline silicon alloy are laminated together using a continuous roll-to-roll deposition process.

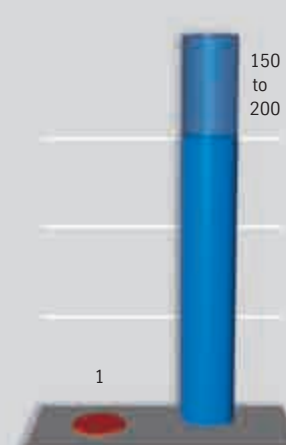
### Advantages of UNI-SOLAR®

- enhanced sensitivity to blue-green light delivers higher annual yields even under diffuse light
- bypass diodes for improved shadow tolerance
- reduced performance loss at higher temperatures
- higher annual yield than from conventional PV systems

### Required temperature for manufacture

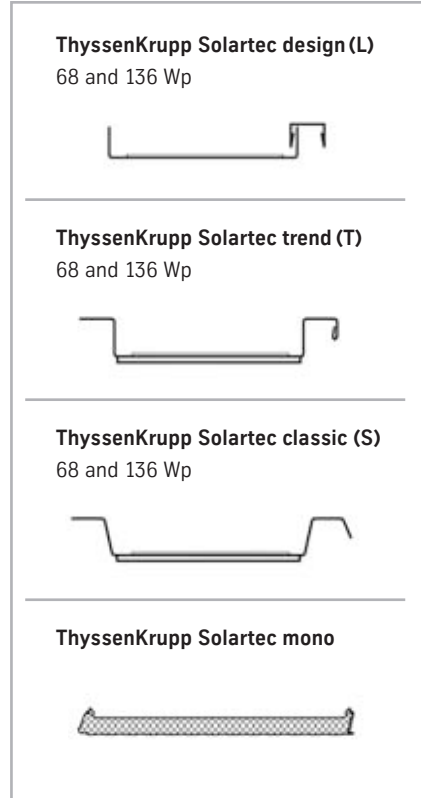
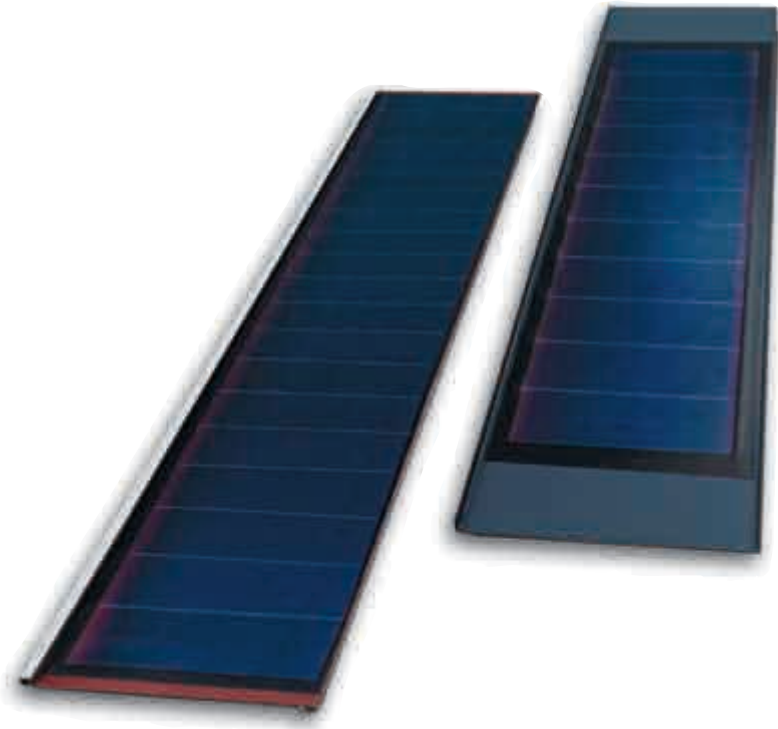


### Silicon units required to generate the equivalent energy



Producing triple-junction solar cells uses fewer resources and less energy than the manufacture of crystalline cells. The modules generate the energy that was needed to make them in around 22 months.

■ Triple-junction cell technology
 ■ Crystalline cells



## Data

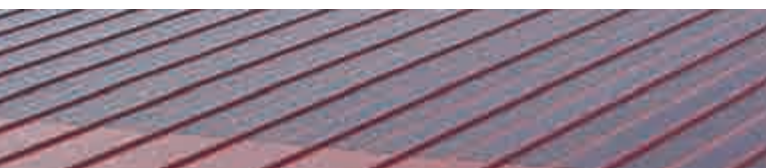
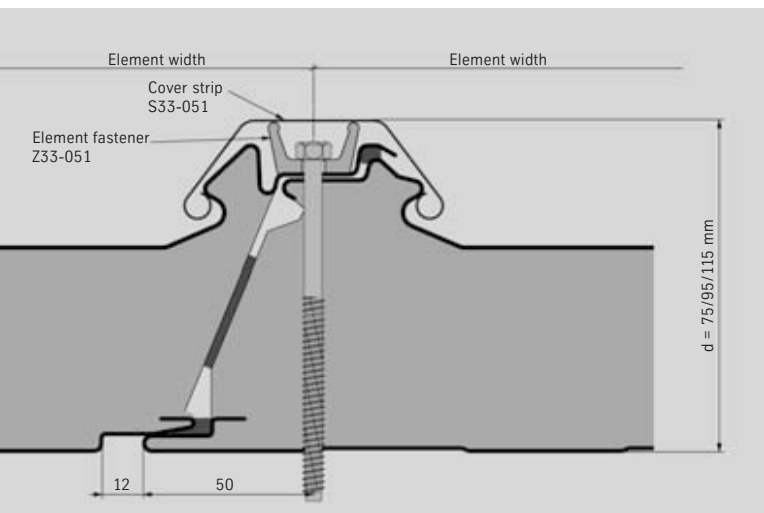
ThyssenKrupp Solartec	design (L), trend (T), classic (S)	mono 1000 <sup>*)</sup>
Rated power	68 Wp and 136 Wp	136 – 1,088 Wp
Length [m]	3.00 – 8.00	3.00 – 24.00
Width [mm]	450 (design), 455 (trend), 480 (classic)	1,000
Weight [kg/m <sup>2</sup> ]	8.57	8.46
Thickness of steel sheet [mm]	0.75	0.75
Cell type	triple-junction thin film technology <i>UNI-SOLAR</i> <sup>®</sup>	
Maximum output (P <sub>max</sub> ) [Wp]	68	136
Triple-junction cells per module	11	22
Nominal voltage [VDC]	12	24
Current at max. output (I <sub>mpp</sub> ) [A]	4.13	4.13
Voltage at max. output (U <sub>mpp</sub> ) [V]	16.5	33.0
Open circuit voltage (U <sub>OC</sub> ) [V]	23.1	46.2
Short-circuit current (I <sub>SC</sub> ) [V]	5.10	5.10
Connection	Multi-contact cable	
Steel element colors	TC 7016 (RAL) charcoal gray or TC 3009 (RAL) oxide red; other colors on request	

<sup>\*)</sup>available in thicknesses d=75.95 mm and d=115 mm

# ThyssenKrupp Solartec – the system.

## Product description.

- ThyssenKrupp Solartec elements are available in single-shell design for air-insulated roofs, in double-shell design for non-insulated roofs and as heat-insulating sandwich components.
- The elements provide a complete roofing and façade system with integrated triple-junction solar cells, saving the building owner the costs of conventional roofing and wall cladding.
- No additional substructures are required for mounting.
- The large-area panels are linked together during installation by just two plug connections, while the individual solar cells in each panel are factory interconnected.
- With no glass used, the ThyssenKrupp Solartec elements are lightweight yet robust enough to allow them to be walked on. Their low weight allows the entire roof substructure to be made lighter and thus less expensive.
- ThyssenKrupp Solartec ‘shadow’ modules without PV laminate are available for north-facing or other shaded areas. The required AC converters, DC cables and molded edgings are also available.







**1** New kindergarten in Bickenbach, 8.64 kWp.

**2** Wieland horse riding center in Gaidorf, 66.09 kWp.

**3** New factory/warehouse unit in Hechingen, 65 kWp.

**4** Roof renovation on a land-marked building at the University of Osnabrück, 22.53 kWp.

**5** New "energy house" in Eearnewoude/NL, 2.08 kWp.

**6** Industrial façade design at ThyssenKrupp Steel AG, Duisburg, in combination with **ReflectionsOne**®, 54 kWp.

## Your first step to generating electricity.

# www.solartec.de

Visit our website to obtain up-to-the-minute technical information, order brochures online or read the latest news from our company. Authorized Solartec partners in your area can also be found here.

You can also download tender documents, design details and full technical information about the ThyssenKrupp Solartec system at [www.solartec.de](http://www.solartec.de).

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