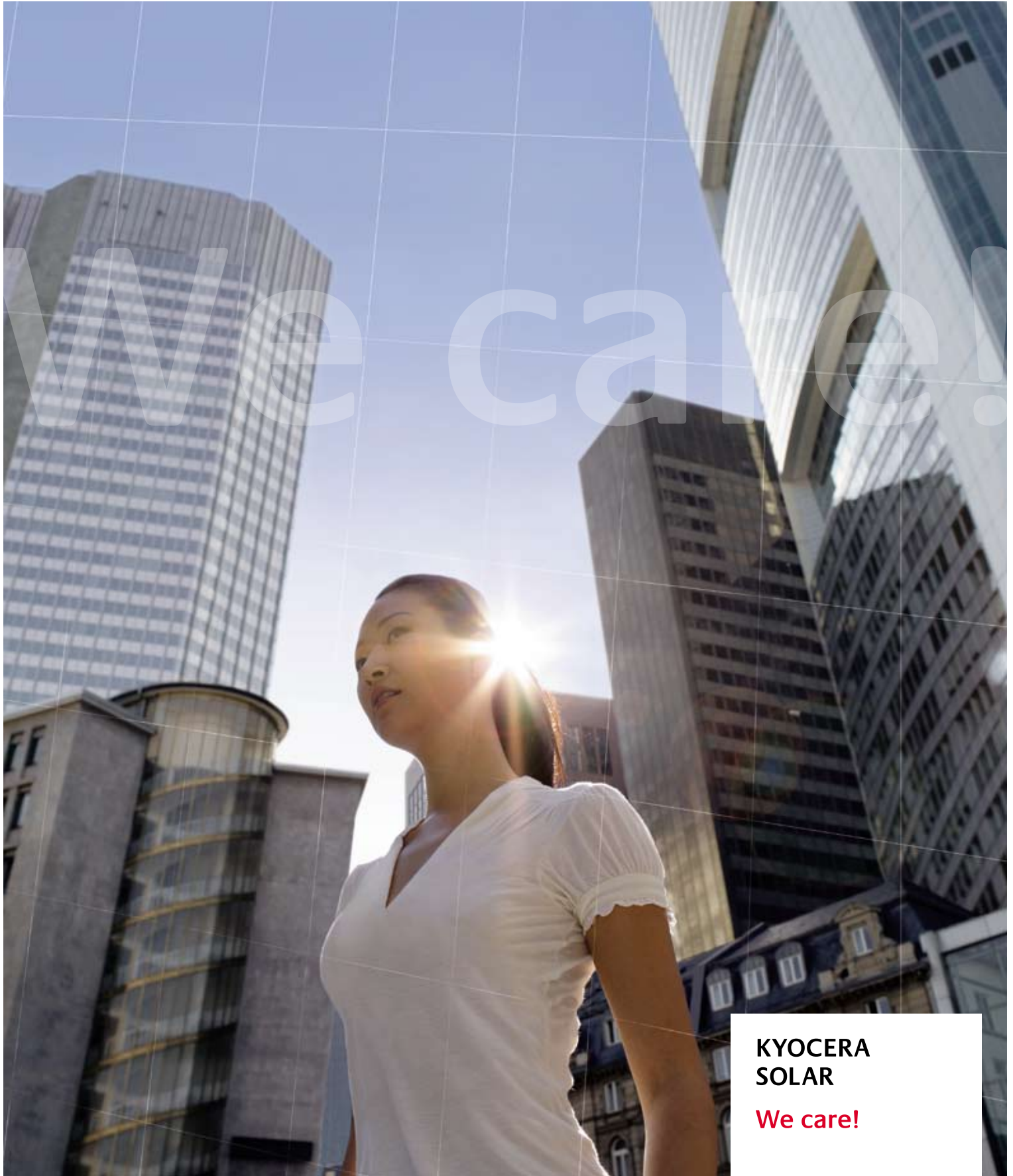


THE NEW VALUE FRONTIER



ENERGY WITHOUT LIMITS



**KYOCERA
SOLAR**

We care!

We care!

No matter whether you are a dealer, installation engineer or user, you have certain specific ideas about environment-friendly solutions to our energy problems or to providing energy! Kyocera even goes one step further. Themed "We care" we made it our company's philosophy to access photovoltaics to all inhabitants of this planet. Therefore we actively get involved on all continents, in all cultures and under most different local conditions.

PUTING IDEAS INTO PRACTICE

*More than 30 years
of experience in
the utilization of
solar energy.*

Kyocera laid the base for this world-wide engagement in 1975 with the foundation of the Japan Solar Energy Corp. (JSEC). In the more than 30 following years we achieved several successes in the research and utilization of solar energy.

One pioneering development came about in 1982 when the company started mass production of polycrystalline silicon solar cells. Since then, Kyocera has repeatedly succeeded in making solar cells more efficient, raising

them up to new best levels. Right through to today, the aim is to provide alternative energy for people who want to improve their standard of living regardless of the conventional power supply, or who may not even have access to conventional energy sources.

It is also a case of drastically limiting the use of fossil fuels and the resulting greenhouse effects, as well as reducing deforestation which has already affected one quarter of our land surface.



Solar Power for Everyone

Photovoltaics refers to generating electricity from solar energy. Right from the start, Kyocera managed to be involved in solutions all around the world which provided photovoltaic systems even in difficult situations, for example in settlements off the beaten track of civilisation, or complex large-scale projects. The experience gained in this way is put to the benefit of all customers, in every country, in every possible area of application.

SUSTAINING THE CONTRACT BETWEEN THE GENERATIONS

We would like to work together with you towards a vision: the vision of leaving our children and grandchildren a world where their energy requirements are covered without any problems, without jeopardising the environment. The Chances are looking pretty good.



Kyocera Corporation, Japan



Production facility in Kadan (Czech Republic)

CONSISTENT IMPLEMENTATION

Intensive research takes great priority, together with unrestricted service and delivery ability. The Kyocera Solar Group integrates its activities on a world-wide scale, offering customers a complete network of development, installation and maintenance services. It maintains production and sales facilities in all of the important markets (Europe, Japan, China and America) to ensure customer proximity. This also includes Kyocera Fineceramics GmbH in Germany, with its sales and service organisation.

Kyocera offers a complete network of development, installation and maintenance services.

INCLUDING A GUARANTEED FUTURE

Kyocera with registered headquarters in Kyoto (Japan) is a healthy, future-oriented major global corporation with about 66,500 employees. This offers project partners and customers the possibility of business relationships which are stable in the long term.



Kyocera Fineceramics GmbH, Esslingen

Always one step ahead

The technical requirements for using solar energy do not come to rest, particularly in the face of increasing demands for enhanced profitability and durability of photovoltaic installations.

_CONTANTLY REDEFINING FRONTIERS

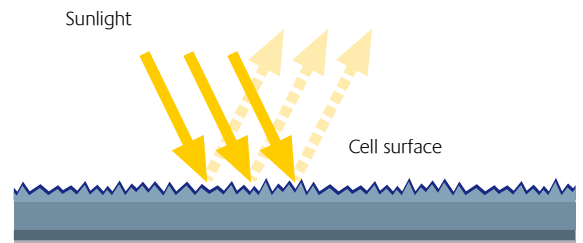
In order to ensure that its customers constantly benefit from products that are built to reflect the latest state of technology, Kyocera has built up a broad-based research and innovation programme, which is unparalleled throughout the industry. Within this framework, we have successfully managed to gradually increase the efficiency of polycrystalline solar cells to levels of up to 18.5%.

This increase in efficiency is due to increased light absorption by the cell and results from the front contact surface being repositioned to the rear side.

One of our next goals is to put these polycrystalline cells into mass production. We have already achieved this with our 3 busbar modules. And once again, it is our innovative power that was the decisive factor of our success – by implementing the optimum cell contacts that this technology allows, electrical losses have been discernibly reduced, resulting in the achievement of improved efficiencies without an increase in surface area.

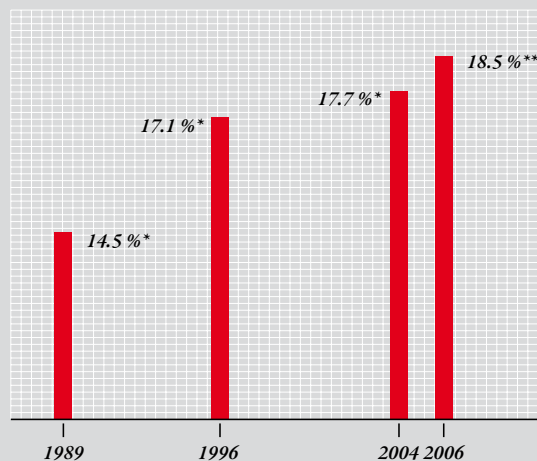
_PUT IN THE RIGHT LIGHT

The efficiency of the modules is highly dependent on the level of reflection on the cell surface. It determines the volume of light that is able to penetrate to the transforming layer. Using the 'ion-etching' process developed by Kyocera, the surface is given a pyramid-style roughness, which causes the light to undergo multiple reflection, thereby increasing the yield. The dark blue cells of the modules are obtained from the 'd.blue' process developed by Kyocera. In conjunction with the sturdy black aluminium frames, a roof that has been fitted with these modules takes on a pleasant appearance.

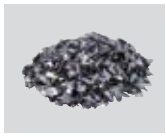


Functionality

Kyocera achieved the highest efficiency level in the world for polycrystalline cells in 1989, 1996, 2004 and 2006.



*Efficiency of square polycrystalline solar cells:
*15 x 15 cm, ** 15 x 15.5 cm*



Polysilicon



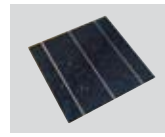
Cast polysilicon block



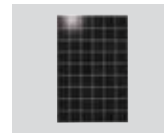
Sawn silicon bars



Wafer



Polycrystalline solar cell



Module

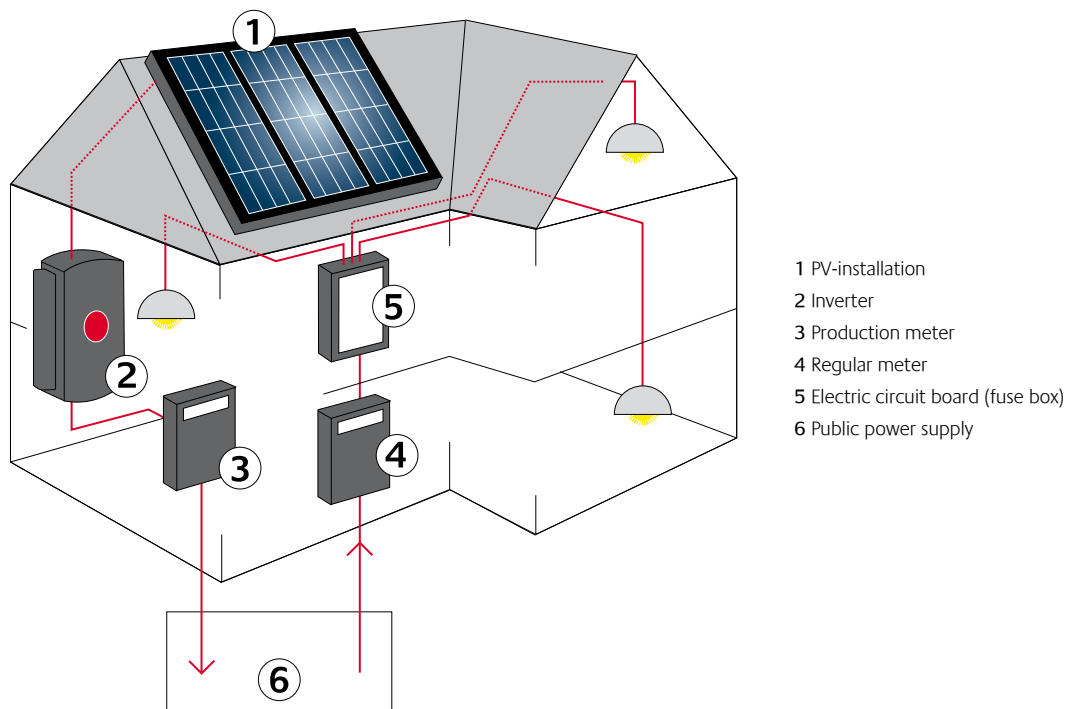
_INNOVATIVE ADVANCED TECHNOLOGY

When you use a photovoltaic system from Kyocera, you can be sure that you are benefiting from the very latest technology. Polycrystalline photovoltaic modules from Kyocera are produced using a casting process that has been subjected to constant refinement over a period of decades. The casting process produces a rectangular block of raw silicon, which, once cooled, is divided into four ingots. It is from these ingots that the wafers are made, which then undergo manufacture into solar cells. Solar cells made from crystalline silicon display a high efficiency and high energy yield. They are extracted by way of a series of refinement processes from an inexhaustible resource – quartz sand.

A PV module comprises several solar cells which are electrically interconnected. To protect against the harshest weather conditions, the cells are embedded between a reinforced glass covering and EVA foil.

And because high quality always wins through, it is this production method that constitutes the modern standard. Our flexible solar modules represent a perfect union between quality and innovation – and our broad-based product range contains modules for a wide variety of applications.

Layout and functionality of a grid-connected photovoltaic system



Setting a good example

As one of the world's market leaders for photovoltaic systems, Kyocera sees it as a natural obligation to impose strictest quality standards on module production, from the raw materials through to the product ready for use.

_NEVER SATISFIED

All Kyocera module types sold in Europe undergo TÜV acceptance testing.

ISO 9001 audits and certification are just one indication of the company's quality policy. All steps in the production process are performed within the company itself, without buying in any semi-finished products.

This allows for 100 % controls, resulting in fully automatic production processes with integrated constant product quality levels way above average. All Kyocera module types sold in Europe also undergo TÜV acceptance testing. Certification to ISO 14001 verifies that Kyocera's production process is environment-friendly, using renewable resources with extensive energy recovery or savings.

Furthermore, Kyocera is a member of PV CYCLE – an independent organisation with the declared aim of establishing a take back and recycling programme for old modules to realise the promise made by the industry to ensure comprehensive sustainability.

_EXEMPLARY EFFICIENCY

Individual measurement of the modules ensures that only series with high efficiency and optimum surface utilisation leave the factory for shipment to customers. Kyocera modules generate the highest energy yield per year.

_EXCELLENT RESULTS

When you choose PV modules from Kyocera you can be sure that you are choosing operational quality; this has been confirmed by the independent tests performed by Stiftung Warentest (the leading consumer safety group in Germany), who awarded our solar modules the grade Good (1.9), putting it in first place ahead of all other manufacturers of solar modules.

_A GOOD CHOICE

The excellent, constantly controlled quality, the enormous efficiency levels, and the long service life of our products, coupled with our position as a highly-renowned and world-famous major corporation are just some of the benefits that more and more Kyocera customers have chosen to enjoy.

You too can profit from the over 30 years of experience of one of the real pioneers in the solar cell market. You can choose between a wide range of modules from 50 Wp to 210 Wp, to be sure that you find the optimum solution for your project. There is nothing more than can stand in the way of a successful, long-term business association.



Kyocera PV module range

Apartment house, Germany



EXTREME WARRANTY PERIODS

Based on the current warranty conditions, Kyocera offers a 20-year guarantee on the rated output of its photovoltaic modules. That's just about the best possible way of expressing maximum reliability and durability.

LOWEST COSTS

Thanks to minimum rejects, low-cost production processes, recycling measures and a coordinated modular approach, Kyocera can offer pricing which means absolutely competitive value for money for the trade and in particular for the customer.



Football Stadium Stade de Suisse, Bern

What the customer says, goes

“Energy without Limits” refers not only to the inexhaustible reserves provided by the sun, but also to the amazingly extensive range of possible uses for photovoltaic systems.



Foto: © Tritec AG, Schweiz

Weissfluchjoch, Davos



Foto: © www.pvphotohaus.de

Apartment house

EXAMPLES OF USING PHOTOVOLTAIC

- Grid-connected solutions for private homes
- Industrial installations
- Island solutions for holiday homes / summer homes
- Power supply concepts for remote villages
- Telecommunications
- Traffic control
- Medical facilities in developing countries
- Emergency power supplies
- Disaster protection
- Pumping systems
- Laminates for in-roof solutions
- and last but not least, entire solar power plants

ASSISTANCE FROM THE GOVERNMENT

Admittedly, a photovoltaic system is not a small investment, but it is one which is worthwhile – for you it will be investing in the future of the Earth. This has been recognised by the German Government, which has passed the Renewable Energy Law (EEG), which lays down conditions whereby a system owner is eligible for a feed-in allowance over a period of 20 years.

With the goal of drastically increasing the proportion of renewable energy in the total volume of energy generated over the coming years, the EEG law obliges energy grid operators to allow electricity produced by photovoltaic systems to be fed into the grid and to pay an allowance for electricity fed into the grid in this way. The amount of the allowance depends on the year of the system's construction and the type of system. The success story of PV deployment in Germany speaks for itself.

That's why many other countries in Europe (e.g. Austria, France, Greece, Italy or Spain) have introduced similar feed-in tariffs as well.

Furthermore several promotional programmes are available which offers favourable investment loans for borrowers interested in photovoltaic systems. This makes investing in a solar energy system a safe and lucrative prospect for your capital.

Service without compromise

Solar modules supplied by Kyocera are equipped with an all-round service that is nothing less than exemplary.

_WE WON'T LEAVE YOU OUT IN THE RAIN

Kyocera Solar has established a comprehensive network of assistance and support measures for installers, architects, solar technicians and construction planners. Customers can consult our service and support for product- or application-specific queries. This ensures the optimum use of Kyocera photovoltaic systems, which is in turn reflected by a high degree of efficiency and cost effectiveness. Installer and end user are thus both on the safe side.

Regular training is part and parcel of our service. Our engineers and consultants are hence able to provide qualified answers to each and every of your questions at any time.

_OUR SERVICES

- Consulting in design matters
- Location and installation guidance
- Information on new products and methods
- Special support regarding the start of operations
- Joint error analysis
- Fast and unbureaucratic handling of warranty claims

_TRAINING

In line with its motto "We care", Kyocera conducts customer-specific training activities and basic seminars on the subject of photovoltaics. Competent personnel are on hand to provide assistance and advice, should matters require more detailed explanation. So why don't you too consider entering the field of photovoltaics, and find out more about the current range of products on offer from Kyocera.

For more detailed information, including a calendar of events, please visit us at:
www.kyocerasolar.de
 E-Mail: training@kyocera.de



_SERVICE HOTLINES

- **for technical issues:**
 Tel: +49 (0)711-93 93 49 98
 Fax: +49 (0)711-93 93 48 61
 E-Mail: pv-support@kyocera.de
- **for general issues:**
 Tel: +49 (0)711-93 93 49 99
 Fax: +49 (0)711-93 93 49 50
 E-Mail: solar@kyocera.de

Technology from the very best

SPECIFICATIONS: AN OVERVIEW

The following table shows some of Kyocera's key photovoltaic modules. We advise professional solar installation engineers to request detailed data sheets directly from Kyocera Fineceramics GmbH or from your dealer.

QUALITY FEATURES AND CERTIFICATES

- * 10 years on 90 % of the minimum specified power P under standard tests conditions (STC).
- * 20 years on 80 % of the minimum specified power P under standard test conditions (STC).

Every module goes through 100 % final testing with individual registration of the electrical parameters. Kyocera photovoltaic modules surpass the international standards and comply in particular with the requirements as per:

TUVdotCOM Service: Internet platform for tested quality and service. www.tuvdotcom.com
(TUVdotCOM-ID: 0000022565, 0000023299 und 0000023574)
IEC 61215 ed. 2, IEC 61730 and Safety Class II
Kyocera is ISO 9001 and ISO 14001 certified and tested.



Maximum Power (Pmax)	[W]
Tolerance	[%]
Maximum System Voltage	[V]
Maximum Power Voltage	[V]
Maximum Power Current	[A]
Open Circuit Voltage	[V]
Short Circuit Current	[A]
Length	[mm]
Width	[mm]
Depth / including Box	[mm]
Weight	[kg]
Warranty*	

INFORMATION ABOUT ALL MODULES

The KD series that we present to you represents the successor series to our successful KC modules. The most obvious change to be implemented affects the cells' format. The new cells will have a square format with the dimensions 156 mm x 156 mm.

INFORMATION ABOUT OUR BIG MODULES

All module types -GH-2PU are equipped with a new frame. Our warranty covers a surface load of 2,400 N/m², but (in addition to that), the module even passed TÜV certification test IEC 61215 ed. 2 with the test condition of 5,400N/m². This means improved safety for the entire photovoltaic system during extreme weather conditions such as heavy loads of snow.

INFORMATION ABOUT THE NEW JUNCTION BOX FOR MODULE TYPES -SX-1P AND -SE-1P

All KD-modules suitable for off-grid applications (module types -SX-1P and -SE-1P) will be equipped with an accessible junction box again. Therefore the solar cables can be mounted flexible which again simplifies installations of stand-alone solutions in particular.

Features:

- Accessible junction box
- Direct connection of the PV-cables to the terminal contacts
- Bypass diodes can be easily exchanged
- Ideal for off-grid applications



KD210GH-2PU	KD205GH-2PU	KD180GH-2PU	KD135GH-2PU	KD135SX-1PU	KD95SX-1P	KD80SE-1P*	KD70SX-1P	KD50SE-1P	FC130GX-2P
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210	205	180	135	135	95	80	70	50	130
+5/-5	+5/-5	+5/-5	+5/-5	+5/-5	+10/-5	+10/-5	+10/-5	+10/-5	+10/-5
1000	1000	1000	1000	750	750	750	750	750	750
26.6	26.6	23.6	17.7	17.7	17.9	17.9	17.9	17.9	17.6
7.90	7.71	7.63	7.63	7.63	5.31	4.47	3.92	2.80	7.39
33.2	33.2	29.5	22.1	22.1	22.1	22.1	22.1	22.1	21.9
8.58	8.36	8.35	8.37	8.37	5.81	4.86	4.30	3.07	8.02
1500 (±2.5)	1500 (±2.5)	1338 (±2.5)	1500 (±2.5)	1500 (±2.5)	1043 (±2.5)	940 (±2.5)	778 (±2.5)	706 (±2.5)	1468 (±2.5)
990 (±2.5)	990 (±2.5)	990 (±2.5)	668 (±2.5)	668 (±2.5)	660 (±2.5)	744 (±2.5)	660 (±2.5)	744 (±2.5)	695 (±2.5)
46	46	46	46	46	36 / 45	36 / 45	36 / 45	36 / 45	5.5 / 22.5
18	18	16	12.5	12.5	8.5	8.5	6.5	6.5	10.5
10/20 years	10/20 years	10/20 years	10/20 years	10/20 years	10/20 years	10/20 years	10/20 years	10/20 years	10 years

* Availability Summer 2009

THE NEW VALUE FRONTIER



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We care!