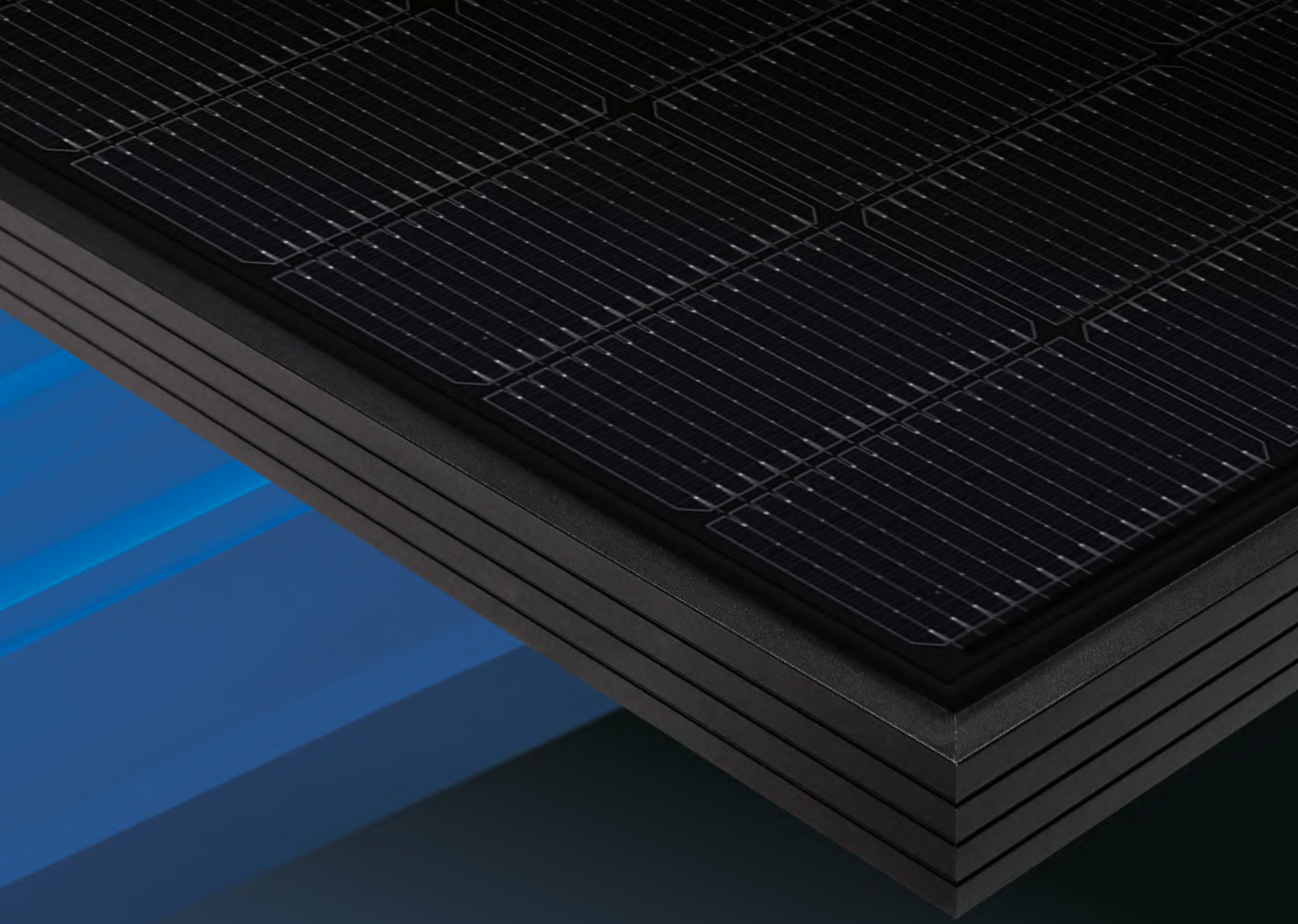


Outstanding PV module production

FuturaSun®
anticipate tomorrow

anticipate tomorrow

Anticipating the future is in our DNA.
FuturaSun was founded to offer solutions capable of driving change towards a more sustainable future in which there is no longer a place for fossil fuels. This future is already in our present, pushing us to innovate and combine our efforts to achieve a common goal, the fruits of which we are already beginning to see.

FuturaSun Group

FuturaSun

FuturaSun was established in 2008 by a team of managers in Cittadella (PD), Veneto - Italy's hub of the photovoltaic industry. Today, the company operates in over 70 countries in Europe, South America, Africa and Asia, with large, state-of-the-art production centres, a constantly expanding sales network and a strong commitment to the development of new technologies.

Solertix

Solertix is the European research and innovation hub of FuturaSun Group. Born out of the academic excellence of CHOSE at the Tor Vergata University of Rome, since 2014 it has specialised in the technological development of thirdgeneration perovskite photovoltaic cells.

OffgridSun

OffgridSun is specialized in the development and production of excellent, reliable and affordable photovoltaic technologies for all regions of the world with limited or no access to national electricity grids. The company is also developing carbon offset projects focused on improving access to clean water, clean cooking and clean energy for vulnerable communities in Africa.

FuturaSun is an international group committed to the development, production, and sale of high-efficiency photovoltaic cells and modules. Founded in 2008 in the Italian photovoltaic district in Veneto, Cittadella (Padua), the company has expanded worldwide with production facilities in China, logistics centers in Europe, and sales offices worldwide, now operating in over 70 countries across 5 continents. In the R&D field, the development of high-performance solutions continues.
The acquisition of the startup Solertix from Rome has opened up cutting-edge research into perovskite solar cells technology and its upscaling for industrial applications. In line with its vertical integration strategy, the group started the construction of an industrial hub in China that will produce 10 GW of solar cells, when fully operational. In addition, to support the European photovoltaic industry recovery plan, FuturaSun is working on the project for a high-efficiency panel gigafactory in Italy.
Another company belonging to FuturaSun group is OffgridSun, a start-up specialized in off-grid photovoltaic solutions, with a mission to bring clean energy to a part of the one billion people who today live in rural areas without access to the grid.

Excellent product quality and customer care are key elements of our success

2008

FOUNDING

Establishment of FuturaSun with headquarters in Cittadella (PD) in the Italian photovoltaic district.

2013

DEVELOPMENT

Expansion of the sales network in Italy and development of large photovoltaic parks in Romania.

2017

HIGH EFFICIENCY

Development of photovoltaic plants in Germany and in the United Kingdom. Start of sales of the 300 Wp modules.

2019

GROWTH

Brand success on a European scale. Growth of sales in Africa, Asia and Brazil. Development of the Silk® multi-busbar module.

2020

1 GW

Introduction of ZEBRA based on N-Type Interdigitated Back Contact technology, and expansion of the production capacity to 1 GW.

OUR HISTORY

From the first module produced in 2008 to the foundation of two new gigafactories in Europe and China, we are driven by the same desire to anticipate the future. A drive that has led us to grow in more than 70 countries, expanding constantly in both production and distribution, with major investments in research and industrialisation of innovative solutions and technologies.

2021

COLOUR

Launch of the Silk® Pro Colour Series, ideal for building integration and architectural applications.

2022

EUROPE

FuturaSun joins the European Solar PV Alliance and IBC4EU*, a project under the Horizon EU program.

2023

STRATEGIC EXPANSION

FuturaSun broadens its production capabilities with with a new gigafactory in China for PV cells and two facilities in Suzhou and Italy for PV panels.

2023

VERTICAL INTEGRATION

FuturaSun expands its operations in the PV supply chain, spanning perovskite R&D, PV cell production, modules, inverters, and batteries, and operating seamlessly across the entire value chain.

2023

GROUP

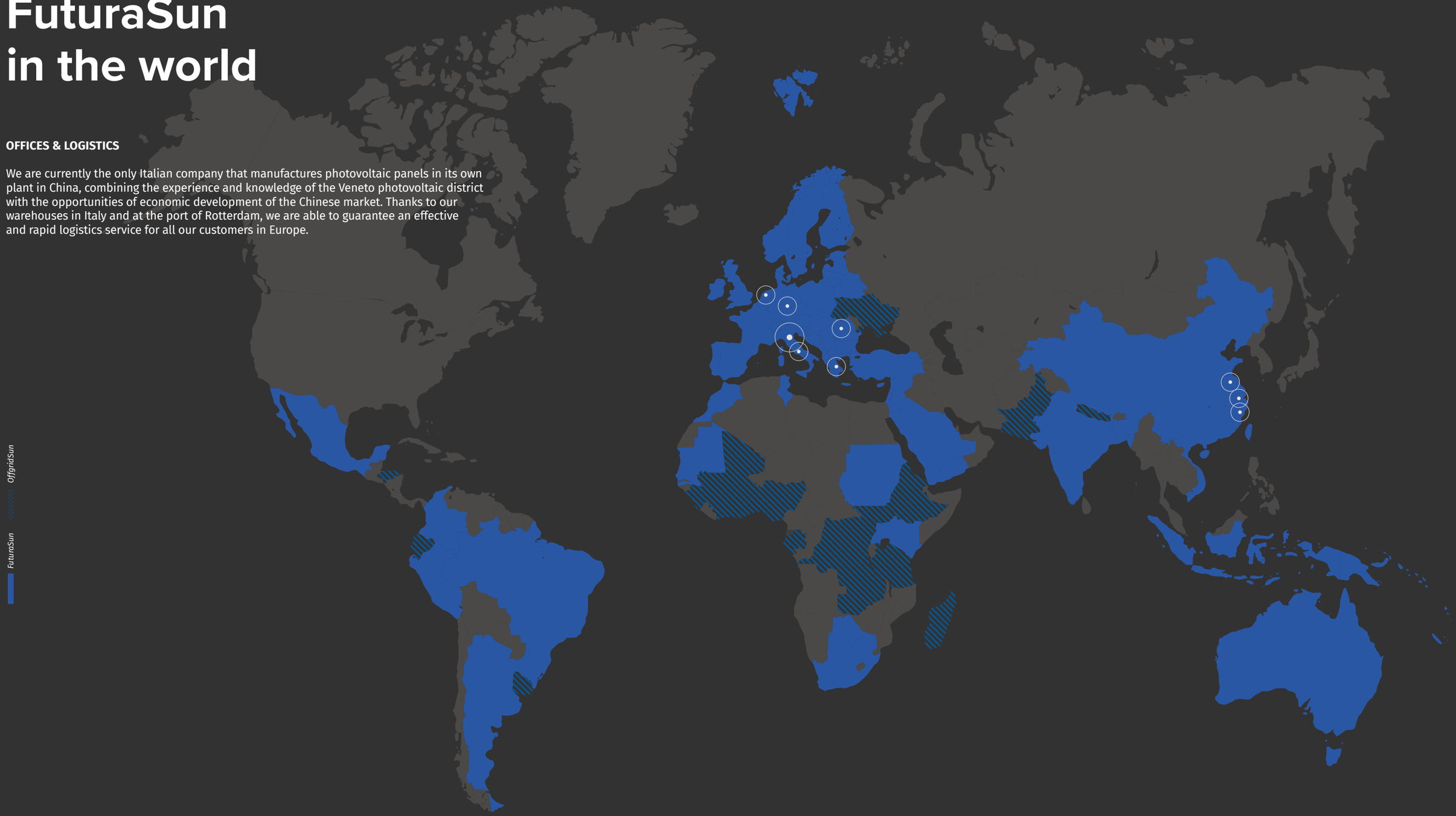
FuturaSun becomes an international Group, including R&D subsidiaries, offices in Europe and China, and projects worldwide - spanning both on-grid and off-grid solutions.

*This project has received funding from the Horizon Europe Programme for Research and Innovation (2021-2027) under grant agreement No 101084259.

FuturaSun in the world

OFFICES & LOGISTICS

We are currently the only Italian company that manufactures photovoltaic panels in its own plant in China, combining the experience and knowledge of the Veneto photovoltaic district with the opportunities of economic development of the Chinese market. Thanks to our warehouses in Italy and at the port of Rotterdam, we are able to guarantee an effective and rapid logistics service for all our customers in Europe.



EUROPE

Headquarters	Cittadella, Italy	FuturaSun Energy GmbH	Frankfurt
Warehouses	Rotterdam · Piacenza · Trieste · Verona	FuturaSun Hellas IKE	Athens
R&D Offices	Roma · Cittadella	Sales Offices	Heppenheim · Berlin · Tulcea

CHINA

Production	Taizhou · Huai'an · Suzhou
Warehouse	Taizhou · Huai'an
Headquarters	Suzhou

Experience & technology

Our team has more than 15 years of experience in the production of photovoltaic modules. FuturaSun modules are produced in highly automated lines with strict quality controls throughout the process to ensure the highest quality and traceability of every single piece.

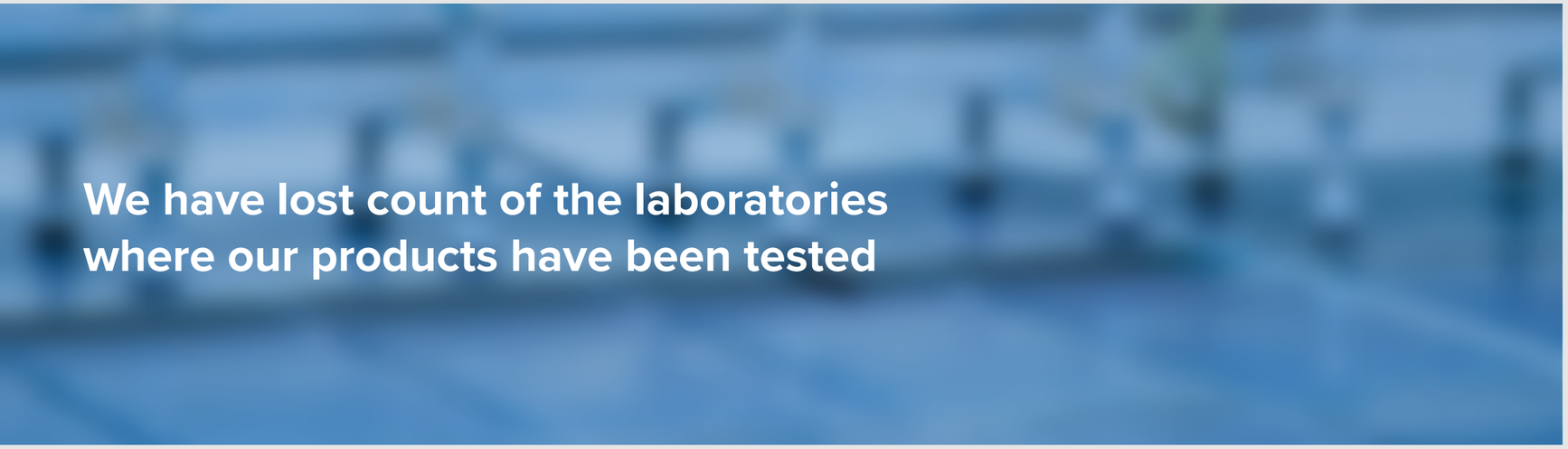
This is the only way we can offer our customers around the world modules of the highest quality, a concept of excellence at the heart of the FuturaSun brand.

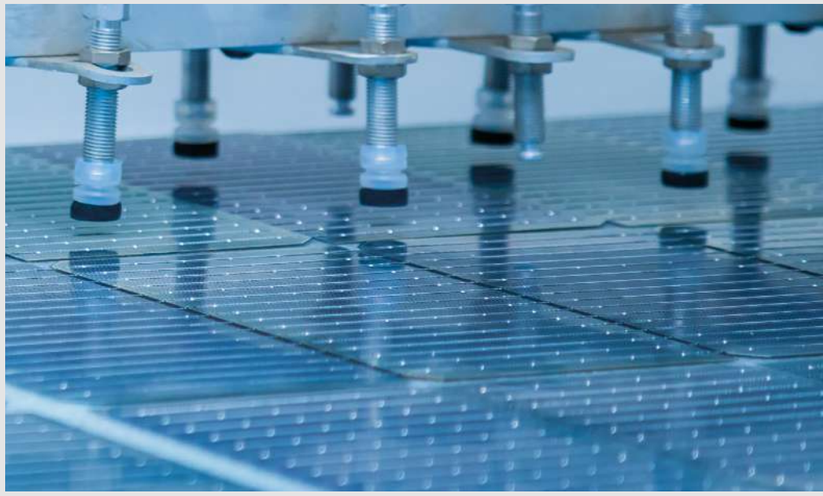
Research and development

Quality technical choices in the pursuit of high efficiency and long lasting performance have always characterised our production and continue to do so in an increasingly evolved way.

The continuous research and development carried out by international team is effectively applied at production plants, leveraging the most innovative technologies on the photovoltaic market: from IBC technology, cylindrical ribbon, glass-glass solutions and modules with independent sections, to cuttingedge research on perovskite and its revolutionary industrial applications.

Certified excellence





01

TEMPERATURE COEFFICIENT

The temperature coefficient indicates the power loss of the module with increasing temperatures. A low value of the coefficient ensures a higher yield during hot weather conditions. Test reports issued by TÜV Rheinland in Germany, KACST laboratory in Saudi Arabia and DEKRA show the excellent behaviour of FuturaSun modules even at high temperatures.

02

EL TEST

The electroluminescence test is like an “X-ray” of a PV module. FuturaSun tests all its modules to confirm the mechanical integrity and the quality of the cells. We make EL Tests before and after the lamination process to ensure the integrity of the cells.

03

PID FREE

FuturaSun modules are PID resistant (Potential Induced Degradation). They are made from “PID-free” cells, high-insulation encapsulants, and special glass with treatment to prevent electron accumulation. The combined result creates an effective barrier against PID.

04

FIRE RESISTANCE

FuturaSun modules are certified CLASS 1 for fire reaction in accordance with the UNI 9177 standard and have also completed the testing according to IEC 61730 MST23 standard test methods for fire tests of roof covering. FuturaSun modules can be used on a vast range of roof types.

05

LID

Light induced degradation is linked to the presence of a Boron-Oxygen complex in the wafer used to make the photovoltaic cell. This causes a reduction of voltage and current in each cell, lowering efficiency by 1 to 5%. FuturaSun provides N-Type ZEBRA, Velvet and Silk® Nova modules that are structurally resistant to LID degradation.

06

SNOW - HAIL

The modules can withstand a snow load of 5400 Pa which corresponds to a weight of 550 kg/m^2 or 112,7 lbs/sq ft. Moreover they have passed the hail test as per IEC standards of 25 mm diameter at 83 km/h.

LABORATORIES WHERE OUR PRODUCTS HAVE BEEN TESTED

DEKRA, Kiwa, Eurotest, Albarubens, Istituto Giordano, Laboratory LA.P.I. in Italy, Fraunhofer ISE, TÜV Rheinland and the Photovoltaik Institut Berlin in Germany, Kacst in Saudi Arabia, University of São Paolo/Inmetro in Brazil, Schatz Energy Research Center, Humboldt State University in California, etc.

Sustainability

ESG: ENVIRONMENT, SOCIAL & GOVERNANCE

Photovoltaic modules are already considered sustainable products because they help to achieve energy transition. But FuturaSun's commitment to sustainability goes further, engaging all the stakeholders, analysing social, environmental and economic impacts, towards more sustainable business practices.

ECOVADIS

Our operations in such areas as environment, labour practices, human rights and ethics have been assessed and awarded by EcoVadis.

CODE OF CONDUCT

FuturaSun's Code of Conduct states that we expect our suppliers to respect human rights, environmental conservation and the safety of products and services.

SUPPLY CHAIN TRANSPARENCY

FuturaSun is committed to work with reliable suppliers and partners who can guarantee the traceability of all the raw materials and components.

Environmental impact

Knowing that the majority of a company's carbon footprint comes from the products, we began making our first carbon footprint calculations of modules produced in Europe and China starting from 2015. In general, during the development of our PV modules, in addition to increasing efficiency, we aim to reduce the carbon footprint.

When module efficiency increases, the amount of material used per watt is reduced. Considering that the photovoltaic module is the electronic product with the longest lifetime guarantee, it is quite different from products with "planned obsolescence" such as cell phones, TVs, computers, etc.

Moreover, continuous technological developments in the photovoltaic industry have helped reduce the use of raw materials, so wafer thickness for example has been reducing significantly, thus lowering the whole module carbon footprint.

CARBON FOOTPRINT REDUCTION

In the European project IBC4EU FuturaSun is working on:

- less energy-intensive production process thanks to the new stringer
- higher yield of plants thanks to bifaciality
- other materials for cell screen printing

Also, our R&D team is studying solutions to have less energy intensive frames.

RECYCLING

Our company is the leading Italian contributor to the PVCycle and we have been in module recycling schemes for more than 10 years.

PFAS FREE

For the production of its PV modules, FuturaSun uses PFAS free components and is committed to further request and control that all of the parts used in its modules stay PFAS free.

PACKAGING

The packaging of our products is constantly optimized to reduce the waste for each delivery.

Our carbon neutral PV module

ENERGY PAYBACK TIME VS CARBON NEUTRALITY

A photovoltaic module generates much more energy in its life cycle than is used to make it. In fact within 1-2 years, depending on the latitude, a photovoltaic system returns all the energy that was used during its production process. However, like any other product, a PV module has its own environmental impact.

MEASURED AND NEUTRALIZED

We measured the carbon footprint of our Silk® Plus (range 400-410 Wp) panel through an LCA study carried out according to ISO 14025. We therefore made the choice to offset the remaining carbon emissions that cannot be removed immediately, through a Gold Standard certified carbon offsetting project.

REDUCING CARBON EMISSIONS

The project we have chosen involved building an aqueduct in Kenya, which, thanks to a 45 kWp FuturaSun photovoltaic system, is now providing drinking water to about 50,000 people.

We decided to participate in the project not simply by purchasing carbon credits, but rather in a structural way by becoming an active partner in the project.

ENVIRONMENTAL AS WELL AS SOCIAL VALUE

Until now, the people of Siaya County on Lake Victoria have been drinking unsafe water: the lucky ones could afford to boil it, using inefficient methods, contributing to the deforestation in the area. Women and children will no longer have to spend up to 3 hours every day to fetch water. Instead, they are now able to get it at the distribution point near their homes. In addition to reducing CO_2 emissions into the atmosphere, this project will significantly improve the living conditions of local people.

SDGs achieved through the project.
Assigned to the project by Gold Standard, the certifying body.

FuturaSun: high performance photovoltaic modules

PRODUCT RANGE

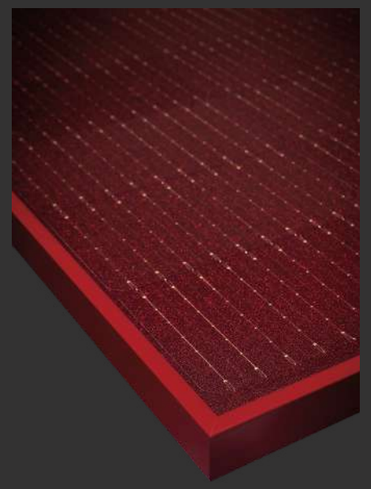
FuturaSun offers modules for residential, commercial and industrial projects up to utility scale. We also take care of special requirements, such as coloured modules for architectural applications and repowering panels for those who need to make replacements of modules of previous generations.

Silk® Nova

N-TYPE

Silk® Nova · 420-430W
Silk® Nova · 570-580W
Silk® Nova All Black · 410-420W
Silk® Nova Duetto · 420-425W
Silk® Nova Duetto · 565-580W
Silk® Nova Duetto · 615-625W
Silk® Nova Duetto All Black · 410-420W
Silk® Nova Duetto Transparent · 410-420W
Silk® Nova Duetto Transparent · 560-570W

Silk® Nova

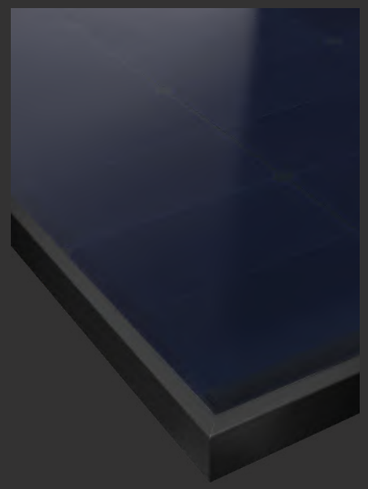


Silk® Nova Colour

N-TYPE

Silk® Nova Red · 370W
Silk® Nova Orange · 380W
Silk® Nova Silver · 390W
Silk® Nova Green · 390W

Silk® Nova Colour



ZEBRA

IBC ZEBRA

ZEBRA Pro · 420-430W
ZEBRA Pro All Black · 410-420W

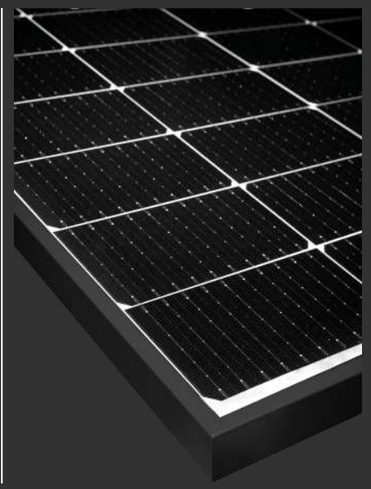
ZEBRA

Velvet

HJT

Velvet Pro · 470W
Velvet Plus · 430W
Velvet Premium Max · 700W

Velvet



Silk® Plus

PERC

Silk® Plus · 410W*
Silk® Plus · 540-550W
Silk® Plus All Black · 400W*
Silk® Plus Duetto Transparent · 390-400W

*Carbon Neutral as optional

Silk® Plus

Repowering

MONO & POLYCRYSTALLINE

Silk® Pro · 190-200W
Silk® Pro · 380W
Silk® Pro · 450-455W
Silk® Pro All Black · 370W
Silk® Pro Duetto Transparent · 370W
Polycrystalline · 280W
Monocrystalline · 310-315W
Next · 330W

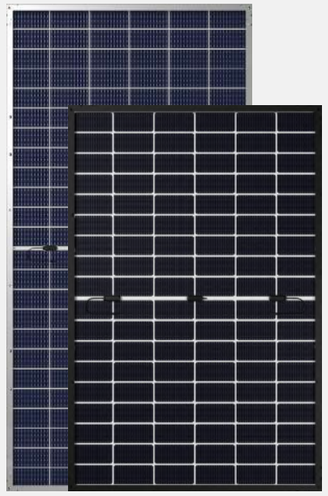
Repowering

Silk® Nova

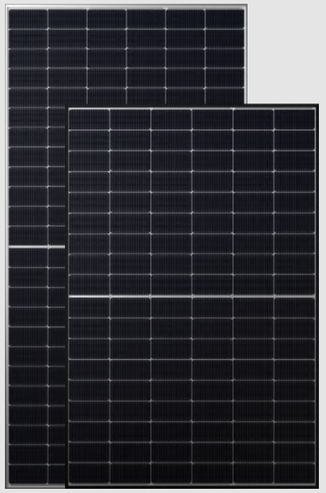
N-TYPE TECHNOLOGY

FuturaSun expands its product range with Silk® Nova: the new series of high efficiency modules with a power range from 410 to 430 Wp for the smaller size and from 570 to 580 Wp for the larger version. Composed respectively of 108 and 144 half-cut cells measuring 182 mm, equipped with N-Type technology, the module is capable of achieving a power output up to 570 Wp, with an efficiency of up to 22.4%. The glass-glass configuration of the series, Silk® Nova Duetto, benefits the yield of the system thanks to its bifacial backside and the performance warranty has been extended to 30 years as a result of its improved technical characteristics.

N-Type cells are characterized by an ultra-thin layer of silicon dioxide and phosphorus -doped crystalline silicon. Such addition allows for a better surface passivation with lower recombination losses thus improving the lifetime of the charge carrier benefitting enhanced technical characteristics.



Silk® Nova Duetto · back side



Silk® Nova

Silk® Nova All Black

High efficiency and enhanced low light performance

Excellent temperature coefficent -0,29 % / °C

The new normal in photovoltaic technology

Reduced LID (Light Induced Degradation)

MODULE	POWER RANGE [W]	MAX EFFICIENCY [%]	CELLS	FEATURES	PRODUCT / PERFORMANCE WARRANTY [years]	SUITABLE FOR	DIMENSIONS [mm]	WEIGHT [Kg]	PCS PER CNT / PALLET
Silk® Nova	420 - 430	22	108 M10	black frame	15 / 25	residential / commercial	1722 x 1134 x 30	20.8	936 / 36
Silk® Nova	570 - 580	22.4	144 M10	silver frame	15 / 25	commercial / utility-scale	2278 x 1134 x 35	28.2	620 / 31
Silk® Nova All Black	410 - 420	21.8	108 M10	all black front	15 / 25	residential / BIPV	1722 x 1134 x 30	20.8	936 / 36
Silk® Nova Duetto	420 - 425	22	108 M10	glass-glass, white grid, black frame	15 / 30	residential / commercial	1722 x 1134 x 30	25.4	936 / 36
Silk® Nova Duetto	565 - 580	22.4	144 M10	glass-glass, white grid, silver frame	15 / 30	commercial / utility-scale	2278 x 1134 x 30	32	720 / 36
Silk® Nova Duetto	615 - 625	22.4	156 M10	glass-glass, white grid, silver frame	15 / 30	utility-scale	2465 x 1134 x 35	35	496 / 31
Silk® Nova Duetto All Black	410 - 420	22	108 M10	glass-glass, black grid, black frame	15 / 30	residential / BIPV	1722 x 1134 x 30	25.4	936 / 36
Silk® Nova Duetto Transparent	410 - 420	22	108 M10	glass-glass, black frame	15 / 30	residential / commercial	1722 x 1134 x 30	25.4	936 / 36
Silk® Nova Duetto Transparent	560 - 570	22.4	144 M10	glass-glass, silver frame	15 / 30	commercial / utility-scale	2278 x 1134 x 30	32	620 / 36

Silk® Nova

Silk® Nova Colour

MAXIMUM BUILDING INTEGRATION

Photovoltaic technology is versatile and its possible utilization goes beyond traditional rooftop or field installations as photovoltaic panels can also be integrated into buildings and facades, extending the use of the product also as an architectural element.
With the creation of our coloured series Silk® Nova Colour, we transform the modules into highly aesthetical components, easily integrated into the surrounding environment.

The series, with its coloured glass and frame, makes these panels perfect for renovations as they are able to ensure overall harmony on historical buildings, even in areas subject to landscape constraints.

Silk® Nova Red

Ideal for restorations of historical buildings

Silk® Nova Orange

Ideal for buildings in areas subject to landscape constraints

Silk® Nova Silver

Ideal for innovative facades and modern buildings

Silk® Nova Green

Ideal for green metal roofs

Coloured glass and frame for special achitectural requirements

Coloured glass for a consistent appearance over time

Approved in areas subject to historical and landscape constraints

Possibility to customize in other colours

MODULE	POWER RANGE [W]	MAX EFFICIENCY [%]	CELLS	SIMILAR TO RAL*	PRODUCT / PERFORMANCE WARRANTY [years]	SUITABLE FOR	DIMENSIONS [mm]	WEIGHT [kg]	PCS PER CNT / PALLET
Silk® Nova Red	370	18.97	108 M10	glass and frame colour: 3005	15 / 25	residential / BIPV	1722 x 1134 x 30	20.8	936 / 36
Silk® Nova Orange	380	19.49	108 M10	glass and frame colour: 8007	15 / 25	residential / BIPV	1722 x 1134 x 30	20.8	936 / 36
Silk® Nova Silver	390	19.97	108 M10	glass and frame colour: 7043	15 / 25	residential / BIPV	1722 x 1134 x 30	20.8	936 / 36
Silk® Nova Green	390	19.97	108 M10	glass and frame colour: 6000	15 / 25	residential / BIPV	1722 x 1134 x 30	20.8	936 / 36

Silk® Nova Colour

*All images shown are for illustration purpose only, product appearance and colour reference (RAL) may vary according to the installation, light and ambient reflection.

ZEBRA

IBC ZEBRA DEVELOPED IN EUROPE

This high-efficiency module stands out for its N-type IBC (Interdigitated Back Contact) technology characterized by having all electrical contacts on its back, thus maximizing the available cell surface for an improved light absorption.

The excellent technical features of the panel benefit a higher kWh production and excellent long-term stability making it a reliable and durable choice for solar installations.
ZEBRA Pro is featuring 132 N-Type ZEBRA IBC cells reaching 430 Wp and 21.84% module efficiency.
The panel is also available with an elegant total black front side design that makes it the perfect choice for buildings of high architectural value.

IBC: INTERDIGITATED BACK CONTACT

The key structural modification made to IBC solar cells is the inclusion of a diffused layer, characterized by N-Type and P-Type interdigitated layers that allow printing of metal contacts on the rear surface. This technologically advanced solution increases the surface exposed to the sun, allowing more photons to be “captured” and transformed into electrons thus increasing overall converted efficiency.

ENHANCED LOW LIGHT PERFORMANCE

The ZEBRA cell can gather more light at every wavelength thanks to the unshaded front side and even at low irradiation levels ZEBRA maintains high efficiency allowing a better energy yield.
Compared to standard cells the biggest differences are found at short and long wavelengths due to a better surface passivation. This benefit translates to a higher output and a longer duration during cloudy days when light is shifted to blue and in the mornings and evenings when light is shifted to red.

LOWER HOT-SPOT RISK

Thanks to the distributed junction, ZEBRA dissipates in reverse bias conditions the power over a larger area and stays at a lower temperature, minimizing the risk of damaging the panel.

ZEBRA Pro

ZEBRA Pro All Black

Excellent temperature coefficent -0.29 % / °C

Lower hot spot risk thanks to the distributed junction of the ZEBRA cell

Enhanced low light performance

Improved behaviour under partially shaded conditions

MODULE	POWER RANGE [W]	MAX EFFICIENCY [%]	CELLS	FEATURES	PRODUCT / PERFORMANCE WARRANTY [years]	SUITABLE FOR	DIMENSIONS [mm]	WEIGHT [Kg]	PCS PER CNT / PALLET
ZEBRA Pro	420 - 430	21.84	166 M10	black frame	25 / 25	residential / commercial	1895 x 1039 x 30	21	900 / 36
ZEBRA Pro All Black	410 - 420	21.3	166 M10	all black front	25 / 25	residential	1895 x 1039 x 30	21	900 / 36

ZEBRA

IBC ZEBRA cell technology developed in Europe

Velvet

HJT TECHNOLOGY

Velvet is a bifacial glass-glass module based on N-type heterojunction half-cut multi-busbar solar cells. The series is available in various versions of different power and sizes covering therefore, every market segment from residential to utility scale.

HJT: HETEROJUNCTION

Heterojunction solar cells combine two different technologies into one cell: a crystalline silicon cell between two layers of amorphous “thin-film” silicon. HJT technology merges like this the qualities of crystalline silicon with those of thin-film silicon for higher outputs. The structure of the cell is symmetrical, resulting in a high bifaciality factor, and the various layers work altogether to maximize the energy from the solar spectrum for both direct and diffused light.

Velvet · back side

Velvet

High bifaciality factor thanks to the symmetrical structure

Mechanically strong thanks to the dual glass configuration

Excellent temperature coefficient -0.26 % / °C

Superior module efficiency up to 22.5 %

MODULE	POWER RANGE [W]	MAX EFFICIENCY [%]	CELLS	FEATURES	PRODUCT / PERFORMANCE WARRANTY [years]	SUITABLE FOR	DIMENSIONS [mm]	WEIGHT [kg]	PCS PER CNT / PALLET
Velvet Pro	470	21.6	120 M6	glass-glass, white grid, silver frame	15 / 30	residential / commercial	2094 x 1038 x 30	27.5	792 / 36
Velvet Plus	430	22	108 G10	glass-glass, white grid, silver frame	15 / 30	residential / commercial	1722 x 1134 x 30	26	936 / 36
Velvet Premium Max	700	22.5	132 G12	glass-glass, white grid, silver frame	15 / 30	utility-scale	2384 x 1303 x 35	38.7	527 / 17

Velvet

Silk® Plus

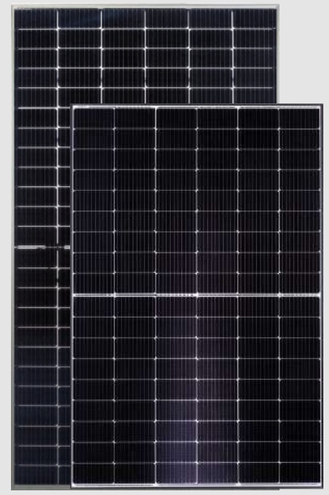
PERC TECHNOLOGY

FuturaSun series Silk® Plus is based on half-cut multi-busbar PERC cells of size M10. The series is available in different configurations in terms of size and colour and is therefore a versatile choice for most market segments.
Moreover, a Carbon Neutral version of the series is also available. Its carbon footprint has been offset thanks to a certified carbon reduction mechanism offering an even more sustainable choice for photovoltaic installations.

PERC: PASSIVATED EMITTER AND REAR CELL

PERC solar cells are a family of cells based on monocrystalline silicon. The production process for PERC cells has two additional steps compared to standard monocrystalline cells; an additional layer on the rear of the cell and the successive opening of holes in this second layer. By focusing also on the rear side of the cell, it was found possible to increase the level of conversion efficiency.

Silk® Duetto · back side



Silk®

Silk® Plus All Black

Half-cut design in combination with multi busbar reduce operating current and internal resistance

Well-established technology for reliable business plans

A design with two independent sections secures a higher energy yield under shaded conditions

*Carbon Neutral as optional

MODULE	POWER RANGE [W]	MAX EFFICIENCY [%]	CELLS	FEATURES	PRODUCT / PERFORMANCE WARRANTY [years]	SUITABLE FOR	DIMENSIONS [mm]	WEIGHT [kg]	PCS PER CNT / PALLET
Silk® Plus*	410	21	108 M10	black frame	15 / 25	residential / commercial	1722 x 1134 x 30	20.8	936 / 36
Silk® Plus	540 - 550	28.2	144 M10	silver frame	15 / 25	commercial / utility-scale	2279 x 1134 x 35	28.2	620 / 31
Silk® Plus All Black*	400	20.74	108 M10	all black	15 / 25	residential / BIPV	1722 x 1134 x 30	20.8	936 / 36
Silk® Plus Duetto Transparent	390 - 400	20.48	108 M10	glass-glass, black frame	15 / 30	residential / commercial	1722 x 1134 x 30	25	864 / 36

Silk® Plus

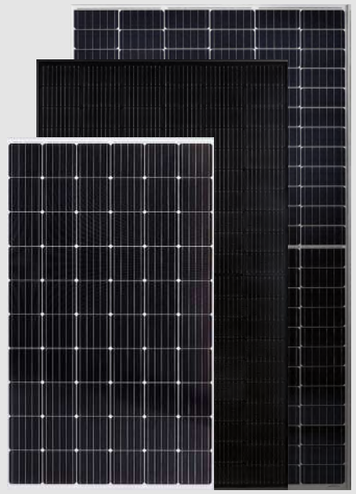
Repowering

MONO & POLYCRYSTALLINE

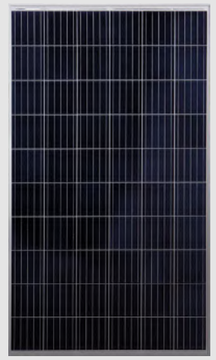
In recent years, photovoltaic cells have rapidly changed in terms of technology, formats and sizes. Until about 15 years ago, most solar panels consisted of small 5-inch (125 mm) cells. A shift to larger cells followed this until the current sizes. Around the world, millions of photovoltaic systems are built with modules of previous technologies that, sooner or later, will need to be replaced. These interventions are known as Revamping or Repowering, which return an existing installation to its initial, or sometimes also increased, performance and minimize changes of other elements such as inverters or cables. Upon request, FuturaSun offers five series of photovoltaic modules that can be used for Revamping maintenance works:

· Monocrystalline panels with half-cut M6 cells configurated to obtain a current level of ~5 Amperes, suitable to replace modules with 5-inch cells
· Polycrystalline panels with 60 cells of size 156.75-mm (M2)
· Monocrystalline panels with 60 cells of size 156.75-mm (M2)
. Monocrystalline panels with 60 cells of size 158.75 mm (G1)
· Monocrystalline panels with 120 half-cut cells of size 166 mm (M6)

Silk® Pro Duetto · back side



Monocrystalline



Polycrystalline

Revamping series - Specifically designed for replacement of old photovoltaic modules

Current levels suitable for replacing only few modules in a string

Common old dimensions

Polycrystalline version available

MODULE	POWER RANGE [W]	MAX EFFICIENCY [%]	CELLS	FEATURES	PRODUCT / PERFORMANCE WARRANTY [years]	SUITABLE FOR	DIMENSIONS [mm]	WEIGHT [kg]	PCS PER CNT / PALLET
Silk® Pro	190 - 200	20.86	120 M6	silver frame	15 / 25	repowering	1755 x 1038 x 35	19.7	938 / 31 - 34
Silk® Pro	380	20.86	120 M6	silver frame	15 / 25	residential	1755 x 1038 x 35	19.7	845 / 31 - 34
Silk® Pro	450 - 455	20.93	144 M6	silver frame	15 / 25	commercial / utility-scale	2094 x 1038 x 35	23.6	715 / 31 - 34
Silk® Pro All Black*	370	20.31	120 M6	all black	15 / 25	residential / BIPV	1755 x 1038 x 35	19.7	845 / 31 - 34
Silk® Pro Duetto Transparent	370	20.31	120 M6	glass-glass, black frame	15 / 25	residential	1755 x 1038 x 30	23.3	864 / 36
Polycrystalline	280	17.1	60 M2	silver frame	15 / 25	repowering	1650 x 990 x 35	17.7	910 / 30 - 35
Monocrystalline	310 - 315	19.3	60 M2	silver frame	15 / 25	repowering	1650 x 990 x 35	17.7	910 / 30 - 35
Next	330	19.8	60 G1	silver frame	15 / 25	repowering	1665 x 1002 x 35	18.4	910 / 30 - 35

Repowering

Inverter

OPTOR SINGLE AND OPTOR TRI

Inverters are used to convert electrical energy generated by the photovoltaic module from direct current (DC) to alternating current (AC), making it suitable for residential appliances. Hybrid inverters go one step further, connecting to the storage batteries so that the energy produced can be stored for use at a later time. They also guarantee non-stop supply in the event of a grid blackout.

With Optor, you can choose at any given moment whether to feed energy into the grid, store it up, or consume it immediately. Hybrid Optors are the ideal solution for optimally monitoring and organising management of your photovoltaic system.

FREEDOM TO SET PRODUCTION AND CONSUMPTION

With Optor inverters, you are free to choose at any given moment whether to use the energy generated by the photovoltaic system for your consumption, store it in the battery for subsequent use, or feed it into the grid.

ANTI-BLACKOUT BACKUP

In the event of an interruption in the grid power supply, the inverter automatically switches to energy from the storage battery, to power priority devices and household appliances such as refrigerators and computers.

Unlike the main inverters on the market, with OPTOR inverters, the backup function is also available when the system is at full power and not just at partial load.

CONSUMPTION MONITORING VIA APP

All information on the system's functioning, settings, output and consumption is always available to view via smartphone, tablet and PC apps.

DIRECT BILL SAVINGS

Thanks to the option of setting up to six different daily time intervals, with Optor hybrid inverters you can set the battery to charge during hours when energy costs are lower and use the stored energy during peak times.

SMART-LOAD

This is an alternative feature of the GEN connector which can be activated for more efficient energy use.
Once the battery is 100% charged, the surplus photovoltaic energy generated by the system will feed selected appliances such as the electric water heater. If the system stops generating and the battery charge drops below 95%, this feed will stop.

Optor Single

Optor Tri

Can work with and without batteries

Suitable for on-grid and full off-grid systems

Built-in anti-blackout function

Full-color display

INVERTER	POWER [kW]	PHASE	SUITABLE FOR LOW VOLTAGE BATTERIES [V]	PEAK POWER (OFFGRID)	MAX EFFICIENCY [%]	MAX. NUMBER PARALLEL FOR ON-GRID AND OFF-GRID OPERATION	DIMENSIONS [mm]	WEIGHT [Kg]	PRODUCT WARRANTY [years]
Optor Single	3/3.6/5/6	Single	48	2 times of rated power for 10s	97.60	16	330 x 580 x 332	20.5	5
Optor Tri	6/8/10/12	Three	48	2 times of rated power for 10s	97.60	10	442 x 699.3 x 279	20.5	5

Inverter

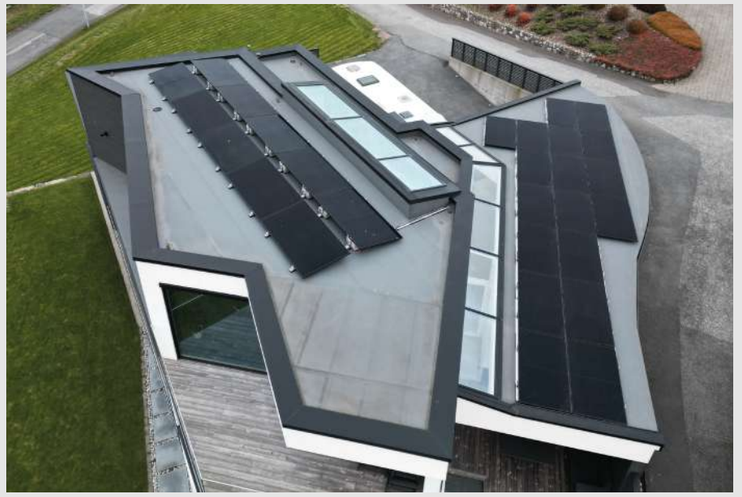
References

SWEDEN 12.5 kWp

ITALY 3 kWp

GERMANY 3 kWp

NORWAY 11.7 kWp



GREECE 2 MWp

SERBIA 35 kWp

ROMANIA 4 MWp

LATVIA 262 kWp

References

GERMANY · FRAUNHOFER INSTITUTE IPT **333 kWp**

ITALY **800 kWp**

GERMANY **116 kWp**

GERMANY **7 kWp**

GERMANY **5 kWp**

CHINA **2.7 MWp**

ITALY **4.1 MWp**

SWITZERLAND **8.4 kWp**

We are producing more and more renewable energy, and this process is now unstoppable. Our products are designed, developed and manufactured with the only certainty that has become reality: the future of the energy lies in a greater use of the Sun. Our commitment is and will be, to make it more and more accessible.

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