

Solbian Catalogue







Product quality, durability
and maximum performance.

ALWAYS.

Led by a great energy

The feeling of freedom, the rushing of the water, the voice of the wind: a large and inexhaustible passion.

The feeling of freedom, the rushing of the water, the voice of the wind: the sea lived from a moving boat in perfect harmony with the elements generates a large and inexhaustible passion.

The same that drives Solbian, attendant in the photovoltaic industry since 2007, to produce photovoltaic panels SolbianFlex: innovative, flexible, with lightness and high efficiency. To bring the energy where and when it is really needed, using all the power of nature, respecting it.

Giovanni Soldini was one of the first seafarers to choose the flexible panels SolbianFlex for his most bold ocean crossings, affirming their quality and resistance to the challenges of life on board.

The SolbianFlex panels are, indeed, particularly suitable for sailboats, but their use is also valuable in electric mobility, caravans and camper, hiking, tents and shelters, emergency buildings and architectural integration.





Many good reasons for choosing Solbian

Product quality, durability and maximum performance, always.

- ✓ Because we manufacture the SP series, with the most efficient solar cells on the market: high power even in very small dimensions.
- ✓ Because you can even walk on our panels, they are thin and extraordinarily flexible, able to adapt to curved surfaces, such as the deck of a boat.
- ✓ Because our panels are ultra-lightweight: only 2.1 kg per square meter, compared to 12 kg and more of traditional panels.
- ✓ Because we guarantee the quality of the product and its duration in time.
- ✓ Because the ease of installation, both permanent and removable, is one of the strengths of Solbian: from structural adhesive to steel eyelets, all the different fixing methods provide easy installation.
- ✓ Because we offer a wide range of accessories, designed and manufactured for the marine industry.
- ✓ Because Solbian panels have been tested in extreme conditions by three great heroes of sailing: Giovanni Soldini, Sébastien Roubinet and Alessandro Di Benedetto.
- ✓ Because our products are certified according to IEC61215 and IEC 61730. Solbian has also obtained ISO9001 Quality, ISO18001 Safety and ISO14000 Environmental certifications.



Left: Maserati VOR 70 in 2013 with whom Giovanni Soldini has broken a new record in the route New York - San Francisco passing by Cape Horn.





Something new under the Sun **SOLBIANFLEX**

There is no firm that can't be realized with SOLBIANFLEX, because all of its panels are designed to fulfill various needs.

The SP, SX, SXp and CP with four different photovoltaic technologies series use crystalline silicon cells, the most efficient and proven technology on the market, and encapsulant materials make them so lightweight and flexible.

Four different powers, all winners.

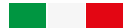
On the image: the sense of wood, winner project at the Bois Lab workshop arranged by the Province of Turin and Polytechnic of Turin, on the short chain of wood, Arch. Francesco Zannier.



The highest level of power.

SP Series

MADE IN ITALY



SP series is at the top of the range, thanks to the use of selected SunPower™ monocrystalline silicon cells, reaching a record 23% conversion of sunlight into electricity and with a pleasant appearance thanks to back-contact technology which hides the electrical contacts. SunPower™ cells represent the most advanced available technology on the market, and make the SP Solbian panels the highest-efficiency flexible panels.

Flexible, powerful and robust, the panels of the SP series are recommended for all installations where maximum reliability and power are required, and the appearance of these cells is one of the symbols of photovoltaic modules. They can be used in all situations and are a best seller in marine applications.

Features

High Efficiency

Light

Flexible

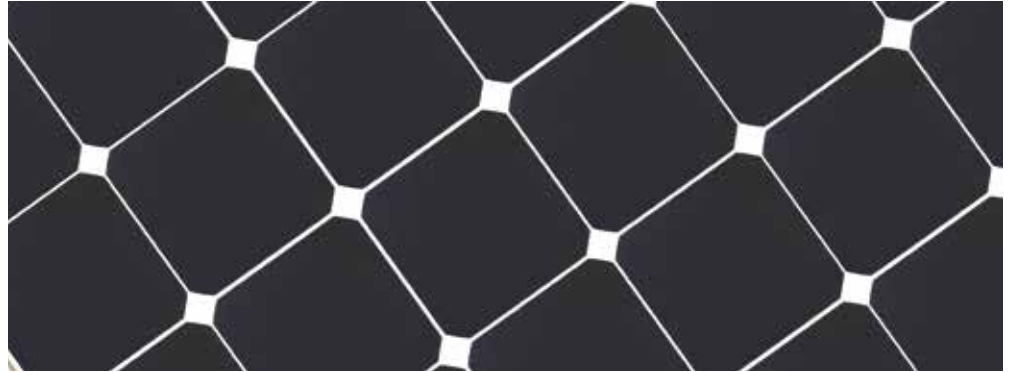
Walkable

Weather resistant

Easy installation with tenax, zip, screws, adhesive, metal eyelets

Recommended sectors:

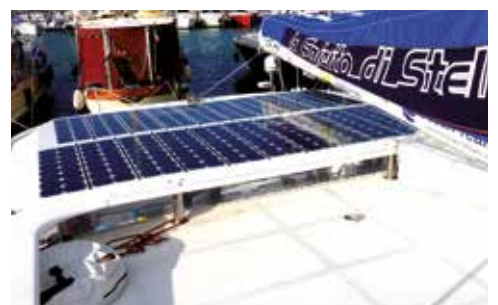
Nautical, Camper, Camping, Electric mobility, Building.



SunPower™ monocrystalline cells, incorporated in technopolymers with high strength. Thanks to their back-contact technology, they have a very pleasant esthetic appearance and products Solbian that use these cells are the flexible panels with the highest efficiency on the market.

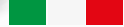
	SP 137	SP 125	SP 112 L	SP 112 Q	SP 100	SP 50 L	SP 50 Q
Power	137 W	125 W	112 W	112 W	102 W	51 W	51 W
Height	1490	1363	1236	855	1109	1109	601
Width	546	546	546	800	546	292	546
Thickness	2 mm	2 mm	2 mm	2 mm	2 mm	2 mm	2 mm
Weight	2 Kg	1.8 Kg	1.7 Kg	1.7 Kg	1.5 Kg	0.8 Kg	0.8 Kg

SP series installations



The path to reliability. SX Series

MADE IN ITALY



The monocrystalline solar cells used in the SX series are electrically connected using ultra-thin copper wires that form a very fine mesh on the cell surface, resulting in thousands of contact points. This alternative to the standard bus-bar method allows a higher module power and increases the energy yield. This technology is optimally suited to flexible modules, due to its intrinsic insensitivity to micro-cracks, that are the most common cause of energy loss in solar modules. Another advantage is a reduced shading effect, a quite important issue in marine and mobility applications.

The new connection technology, together with the use of high efficiency "full square" monocrystalline silicon cells, makes SX panels especially powerful and reliable.

Features

Thin wires dense mesh

Particularly resistant to shocks

Less sensitive to shading

"Full square" Monocrystalline Cells

Easy installation with tenax, zip, screws, adhesive, metal eyelets

Recommended sectors:

Nautical, Pleasure boat, Boat racing, Shipbuilding, Electric mobility, Building.



The SX series solar panels with “full square” monocrystalline cells have efficiency greater than 19%. The sophisticated connection technology makes these cells particularly resistant to shocks and less sensitive to shading, mechanical stress and atmospheric agents. High performance and high reliability.

	SX 156 Q	SX 156 L	SX 70 Q	SX 70 L	SX 52
Power	156 W	156 W	70 W	70 W	52 W
Height	1041	1515	725	1357	1041
Width	996	680	680	364	364
Thickness	2 mm	2 mm	2 mm	2 mm	2 mm
Weight	2.1 Kg	2.1 Kg	1.2 Kg	1.2 Kg	0.9 Kg

SX series installations



Aesthetics, reliability and price. SXp Series

MADE IN ITALY



The SXp series shares with the SX the connection technology of the photovoltaic cells, even though it uses polycrystalline silicon cells, less potent than the monocrystalline ones but equally reliable thanks to the particularity of the electrical connection. An optimal compromise between quality and price for panels with high aesthetic value.

Features

Thin wires dense mesh

Particularly resistant to shocks

Less sensitive to shading

"Full square" polycrystalline cells for a great quality/price ratio

Easy installation with tenax, zip, screws, adhesive, metal eyelets

Recommended sectors:

Nautical, Pleasure boat, Boat racing, Shipbuilding, Electric mobility, Building.



The SXp series solar panels, made with polycrystalline cells with efficiency greater than 18%, share the vanguard of the SX series connection technology, that makes this series particularly resistant and less sensitive to shading, mechanical stresses and atmospheric agents. High reliability at a more aggressive price.

	SXp 145 Q	SXp 145 L	SXp 64 Q	SXp 64 L	SXp 48
Power	145 W	145 W	64 W	64 W	48 W
Height	1041	1515	725	1357	1041
Width	996	680	680	364	364
Thickness	2 mm	2 mm	2 mm	2 mm	2 mm
Weight	2.1 Kg	2.1 Kg	1.2 Kg	1.2 Kg	0.9 Kg

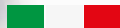
SXp series installations





Quality at the best price. CP Series

MADE IN ITALY



CP series products use standard 156x156 monocrystalline cells with efficiency greater than 18%, the best established technology to offer powerful and reliable panels at the best price.

Their size and high power make them particularly suitable for motor homes and caravans, even on curved surfaces, such as the profile of an attic roof.

Features

Powerful

Light weight

Flexible

Ideal for camper vans, electric vehicles, etc..

Easy installation with tenax, zip, screws, adhesive, metal eyelets

Recommended sectors:

Nautical, Camper, Camping, Electric mobility, Building.



The CP series flexible solar panels are made using monocrystalline silicon cells, with efficiency greater than 18%, incorporated in technopolymers with high strength.

	CP 140 L	CP 140 Q	CP 125
Power	144 W	144 W	128 W
Height	1523	1046	1364
Width	676	996	676
Thickness	2 mm	2 mm	2 mm
Weight	2.6 Kg	2.6 Kg	2.3 Kg

CP series installations





For those who have the bravery
TO ASK
FOR MORE



Freedom made-to-measure. Custom Panels

MADE IN ITALY



With great versatility, SOLBIANFLEX panels are able to meet the most demanding requirements, even in the most unusual installations. They can be mounted and removed with ease, thanks to several accessories, and adapt to various surfaces.



SolbianFlex panel with transparent backsheet to customer request



Custom panel with laminated bypass diodes, to minimize shading effects on a flexible panel without Junction Box



SP-94C



SP-75C



SP-31C

Each customer can choose the number of cells, colors, electrical features to obtain a result that perfectly suit to your needs. Discover all SOLBIANFLEX Panels possible customizations.

PHYSICAL CHARACTERISTICS	SP-94C	SP-75C	SP-31C
Length	1350 mm	850 mm	685 mm
Width	411 mm	540 mm	285 mm
ELECTRICAL CHARACTERISTICS	SP-94C	SP-75C	SP-31C
Peak power (+ / - 5%) - Pmax	94 W	75 W	31 W
Nominal Voltage - Vmp	17.1 V	13.6 V	5.7 V
Current Rating - Imp	5.5 A	5.5 A	5.5 A
Open circuit voltage - Voc	20 V	16 V	6.7 V
Short Circuit Current - Isc	5.9 A	5.9 A	5.9 A

Custom installations

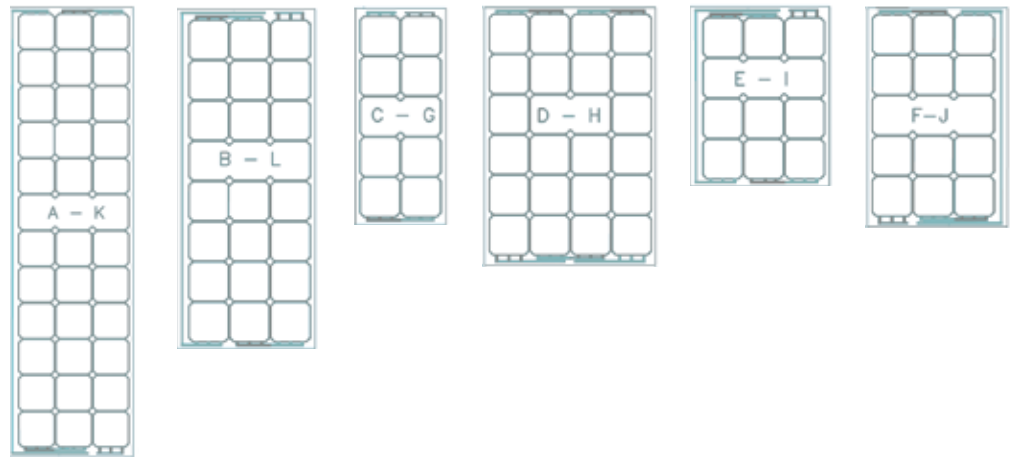


New solutions set sail.

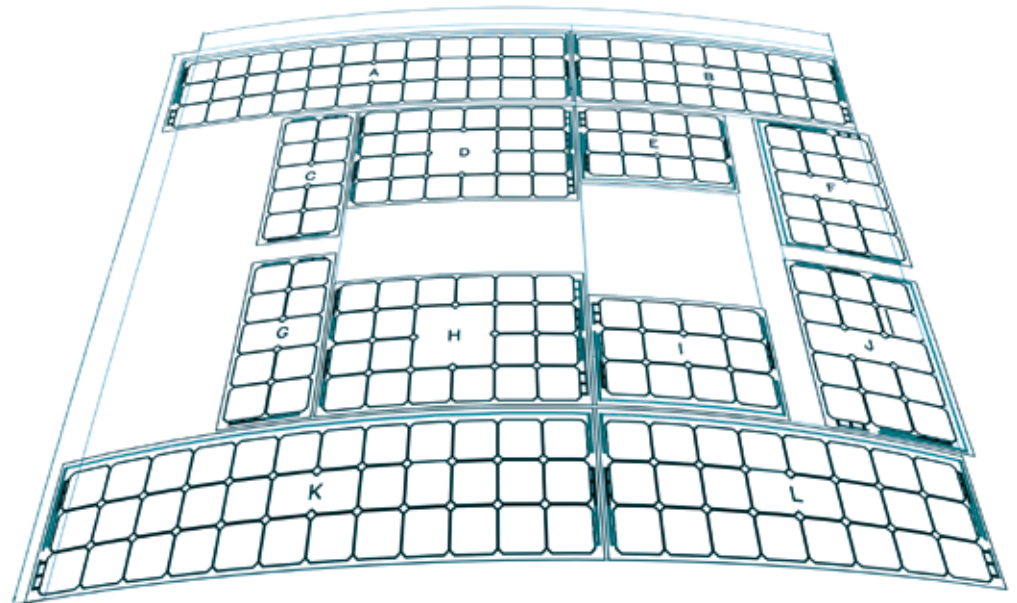
Engineering division



The Engineering division of Solbian Energie Alternative develops turnkey and new solutions with SolbianFlex panels. A highly specialized team of engineers, physicists and researchers, will be able to follow you from planning to realization.



Special project for a Kanter Yacht.
Up to 800Wp installed on the hard top.



A + K	
Length	1580 mm
Width	440 mm
Cells number	12 x 3 = 36
Wp	206 W

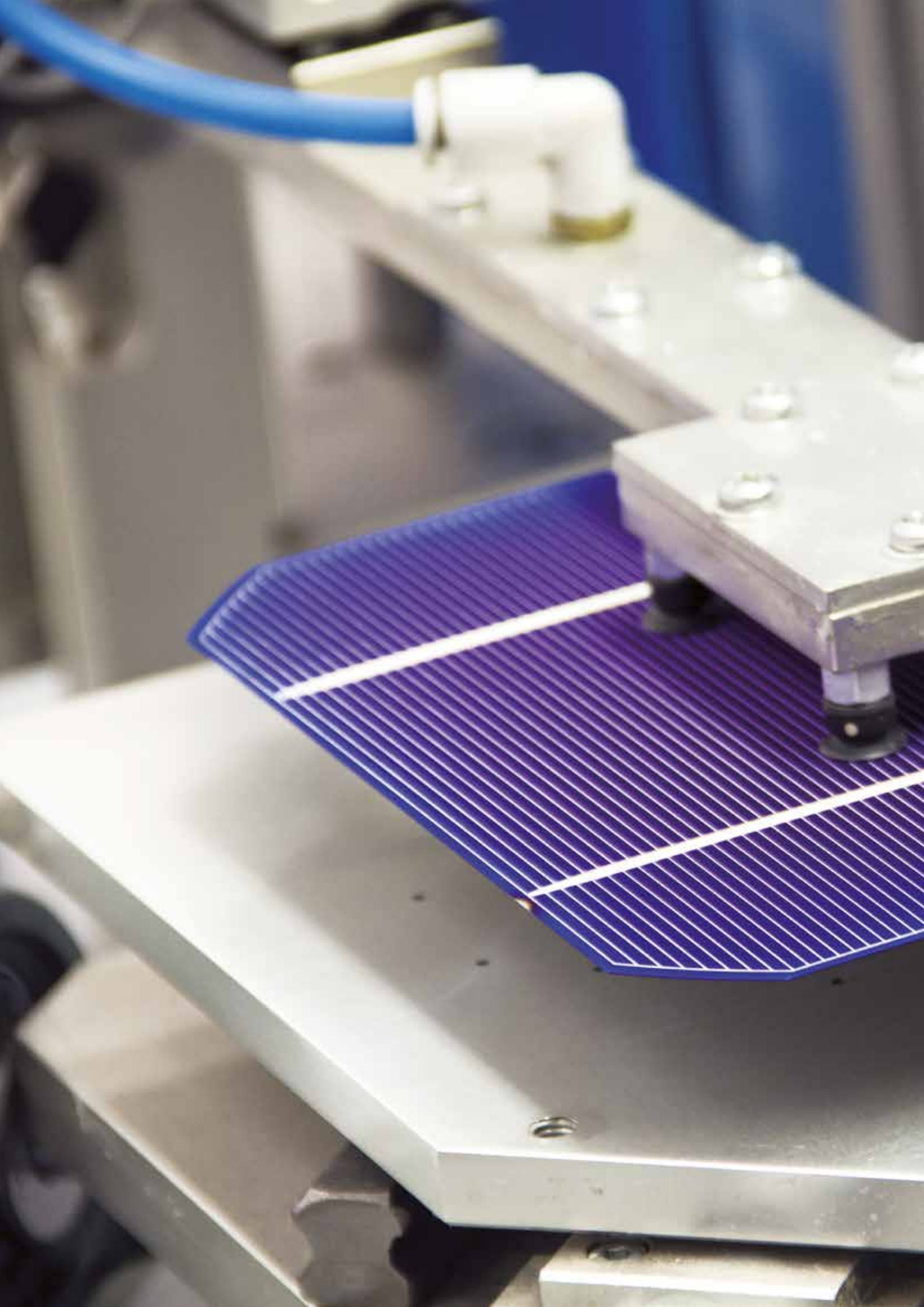
B + L	
Length	1070 mm
Width	440 mm
Cells number	8 x 3 = 24
Wp	150 W

C + G	
Length	683 mm
Width	285 mm
Cells number	2 x 5 = 10
Wp	62 W

D + H	
Length	815 mm
Width	540 mm
Cells number	6 x 4 = 24
Wp	150 W

E + I	
Length	564 mm
Width	440 mm
Cells number	4 x 3 = 12
Wp	74 W

F + J	
Length	689 mm
Width	440 mm
Cells number	3 x 5 = 15
Wp	94 W





How to CREATE SOLAR ENERGY

In the picture: the photovoltaic cell is processed in the automatic stringer through a pneumatically driven mechanical arm.

What comprises the photovoltaic set

Panel

Walkable, extraordinarily flexible, able to adapt to curved surfaces, such as the deck of a boat.

Cables

For the wiring, provided on the basis of the yardage needed

Regulator

Perfect combination between the solar generator and the battery to be charged.



Connectors

Absolutely waterproof, they carry out safe electrical connections and easily removable.



Production process

The professional of Made in Italy quality.



WELDING

The cells welding takes place via a automatic stringer, or by hand, through highly skilled staff, to fulfill the needs of products customizing.

LAMINATION

The lamination process takes place under vacuum at elevated temperatures.

The plastic materials polymerization ensures the quality of the product and its durability.

FINAL TEST

Each solar panel is electrically tested and inspected.

The SolbianFlex products are tracked through a management information system of production.

Charge regulators

Optimal solar energy management in any condition.



Solbian offers some of the most advanced charge controllers of the market, for the optimal solar power management in any condition. The golden rule of the nautical suggests that the best solution is "a panel, a regulator", but it can be achieved just when you create the perfect match between the solar generator and the battery which must be recharged.

Boost DC/DC Converters with MPPT optimization system (Maximum Power Point Tracking) are those chosen and tested by professional sailors, to get all the energy from the sun as possible.

WESTERN&CO

Western & Co. has produced charge controllers for more than 25 years in Italy.

Both PWM charge controllers and MPPT have special integrated features, like: integrated diode block, automatic detection of battery 12V - 24V, protection against deep battery discharge, overheating, polarity reversal and overload protection.

Furthermore, different electrical load management programs, selectable by the user, make them versatile solutions for every use. A large display shows the operation status of the controller, both with simple and intuitive icons and the display of all the most important electrical values, like the current and the voltage of the panels, the instantaneous solar energy power, charging of the battery and the load power usage.

The Western & Co. charge controllers are suitable for both lithium batteries and lead-acid batteries.



WRM15 (15A 12/24 V)

This regulator model uses MPPT algorithms and ensures that the panel works at the maximum power allowed by the actual lighting conditions. With maximum voltage of 15A it can handle panels with a 225W maximum power for 12V batteries and up to 450W for 24V batteries.



WMARINE10 (10A 12/24 V)

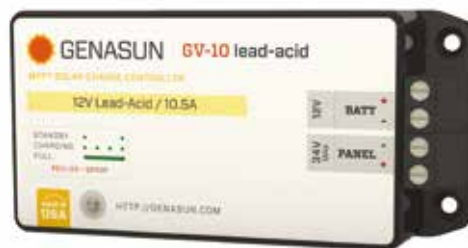
MPPT buck-boost charge controller able to handle panels with a nominal voltage that may be higher or lower than that of the battery.

It provides the flexibility needed in special installations where the choice of the panels is dictated by the typical space content of marine applications.

GENASUN

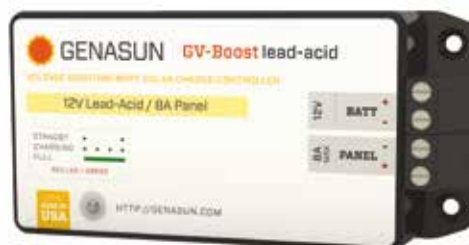
Genasun was founded in 2005 by a MIT engineers group.

Genasun regulators are product in USA and reach a conversion efficiency greater than 99%. They are equipped with Maximum Power Point Tracking (MPPT-C): smart electronics that fit to changing light conditions 1200 times faster than the standard regulator MPPT, ensuring the achievement of all the energy that hits the panel. The Genasun charge controllers are suitable for both lithium batteries and lead-acid batteries and are all tested for the nautical industry.



GV-10 (10,2 A - 12 V)

Designed to maximize the usable energy from a panel of 80-140W. The MPPT high speed in the GV-10 is so effective that reduces the system cost per watt. This is the right choice if the power is a critical factor



GV-BOOST (8A 12/24/36/48 V)

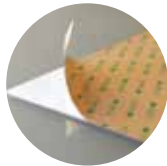
Among the more efficient regulators on the market, they raise the voltage even in small solar panels until charging batteries up to 48V.

Connections and fixing options



Junction Box

SolbianFlex panels can be supplied with the junction box to allow connection with the charge controller. Solbian provides a complete kit with cables and connectors for easy installation.



Structural adhesive

The flexible SOLBIANFLEX panels can become an integral part of the boat by means of a special double-sided structural adhesive. The electrical connection can be made with the Junction Box or direct connection with the positive and negative poles of the panels (connection with rear strips).



Stainless steel eyelets

They can be fixed on the edges of the panels to allow easy installation and removal. This solution allow you to fix the panel with ropes or screws.



Tenax

Tenax, a special kind of eyelets, make easier the attachment and removal of the panels. They are suitable for installation on canvas as well as on hard surfaces.



Zipper

A zipper can be sewn onto the panel, allowing a removable installation, especially on the bimini.

A high-angle photograph of a brown Volkswagen California van parked on a paved surface. The van's roof rack is open, and a large, rectangular solar panel is mounted on it. The solar panel has a grid of cells and is secured with straps. The van's rear door is also open, and the interior is visible. The text "Frequently ASKED QUESTIONS" is overlaid on the image in a white box.

Frequently ASKED QUESTIONS

Charge controller and electrical connections

What is a charge controller and when do you need to buy one?

The charge controller is a photovoltaic system isolated essential element. Its main function is to provide the correct current and voltage to the batteries, to recharge them properly. A solar charge controller is more than just a device; indeed, in addition to charging the batteries, also optimizes the production of energy. Solbian offers a wide range of solar regulators, including the latest tools able to stop charging when the battery is completely full or prevent malfunctions that could lead to damage over time. Many of our controllers are provided with Maximum Power Point Tracking (MPPT) technology.

Why is MPPT technology so important in the nautical sector and what is it exactly?

The MPPT is a technology used by the charge controllers and similar devices to obtain the maximum possible power from one or more panels. This is particularly important when the solar radiation on the panel is not uniform or stable, as is usually the boats. Using the fast MPPT technology, you can get the maximum power that the solar panel can provide in all conditions of solar radiation. Using a controller with MPPT technology, it is possible to increase the production energy up to 30%.

The panel SP50 has an output voltage equal to 9V. How can I charge my battery to 12 V?

In this specific case, it is necessary to install a regulator "Step-up" (or Boost), which is able to increase the voltage to the value necessary to properly charge the battery. Genasun and Western regulators can be used in this case, also to charge the batteries 24 and 48V.

The regulator 15 and the WRM-WMarine10 have a display. What information do they show?

The most important information is the charge level of the battery, the instantaneous power of the panel, the input current and output and the total energy production.

How many charge controllers do I need if I have to install two or more panels?

In the nautical sector the best solution is "a panel, a regulator", which is necessary to achieve the best energy efficiency in all conditions. Solbian will provide all the necessary support to choose the best setup. In any case, it is important to highlight some important points. Serial connection. Increase the tension of the panels (voltage = total individual panels voltages sum) holding constant the current (only the panels that generate the same current, ie with the same type of cells, may be connected in series). This type of panels, however, suffers from problems of shading, since even a single shaded panel can cause a significant reduction in the efficiency of all the series. Parallel connection. It can be made between panels that generate the same voltage. In this case, the generated current increases (total current = individual panels current sum), while the voltage remains the same for each panel. The

parallel connection makes the panels independent from relative shading, but the increase in power can be a problem for the power grid. In each case a single MPPT regulator used with more parallel connected panels provides a lower yield compared to the solution “a panel, a regulator”

Some examples

A SP50 (or a SX72) panel needs a Step-up charge controller. The WMarine10 or Genasun GVB are suitable because they increase the voltage to the correct value for the batteries. Two SP50 panels connected in series generate, at their maximum power point, 18 V and 5.7 A. The right choice is a WMarine10. The GV 10 regulator is the best alternative if you want to choose a Genasun model. Two SP100 panels connected in series require a WRM15. The same controller can be used with three SP100 in parallel or - always realizing a parallel connection - with two panels CP125. More details on: [www.solbian.eu / images / stories / pdf_it / panels-regolatoriITA.jpg](http://www.solbian.eu/images/stories/pdf_it/panels-regolatoriITA.jpg)

Choose a panel with the rear strips or with Junction Box?

Panels with the rear strips are used to avoid external wiring on the boat deck. You need to drill holes in the deck to make the electrical connections under the platform. The panel is fixed on the deckhouse by the use of a double-sided tape or other type of glue. Solbian's suggestion is to have a qualified to do this type of installation. The use of the Junction Box (JB) is preferable if you want to make a removable installation or in other cases where there is not a rigid substrate to paste the panels, for example on the bimini. The junction box ends with waterproof standard photovoltaic connectors (MC3 and MC4). Each Junction Box contains one or more bypass diodes.

What is a bypass diode?

It is an electronic device capable of reducing the problems of shading and minimize the risk of cells overheating. It is usually located in the JB. For the most powerful panels that have to be applied without JB, Solbian uses a new bypass diode which must be laminated into the module during the production. This latest innovation provides customers with increased production of energy and the maximum safety of use.

How to make the electrical connections and what materials do I need?

In case of installation with rear strips, you need to solder electrical wires of suitable size (2.5 - 4 mm² depending on length) and isolate these junctions by shrink wrap. We also suggest the use of silicone to protect the point of exit of the strips from the back of the panel. Then, the output cables will reach the charge controller and the batteries. In the case of panels with JB, you need connectors and the cable to reach the charge controller (on request, Solbian provides cables and connectors).

Choose the appropriate installation

How can you do an installation with adhesive? What are the advantages and disadvantages?

The panels with double-sided adhesive are designed for permanent installations. This is a choice widely used by boat suppliers and has the advantage of a clean and safe wiring that makes the theft impossible. The removal of the panel can be made using, for example, a thin steel cable. In this way, however, is likely to damage the panels. To get the sheets about the used adhesive, please contact Solbian. The intervention and support of technical staff is strongly recommended to avoid damage to the panels.

What is an installation with metal eyelets? How to use them? What are the tenax?

The panel is provided with eyelets designed for removable installations. The panels with eyelets must be connected to the Junction Box. This solution is often adopted by the end customer that prefer not to drill holes in the boat. The tenax, widely used in the marine industry, are a special type of eyelets that make the attachment and the removal of the panels easy. Solbian provides keys for fixing tenax on deck or on the bimini.

What is a zip installation?

The panel provided with zippers is designed for removable installations. The zippers are applied during production. Thanks to zippers is also possible to connect several panels together.

Is it possible to buy a panel without any type of installation?

It is certainly possible. All our products are versatile and allow us to meet the needs of customers. Solbian technicians are available to discuss special requests and product customization.

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