FLEXIBLE PHOTOVOLTAIC PANELS
Solbian has been operating in the Marine photovoltaic sector since 2007 producing innovative photovoltaic panels with particular characteristics of flexibility, lightness and high efficiency. Solbian panels are particularly suitable for sailing boats, electric mobility, caravans and motorhomes, trekking, tents and shelters, emergency buildings and for building integrated photovoltaics.

Solbian factory is located in the Turin area and is equipped with an automated production line.

Honors
Solbian has obtained the ISO 9001, ISO 14001, OHSAS 18001 certifications, respectively for the quality management system, environmental certification system and management system for health and safety at work.

WHY INSTALL A SOLBIANFLEX PANEL?

- Because it is a FLEXIBLE panel with high-efficiency crystalline silicon cells that can adapt to curved surfaces, such as the deckhouse of your boat.
- Because it is an ULTRALIGHT panel. Only 2.1 kg per square meter, compared to more than 12 kg for traditional panels.
- Because it offers different installation solutions. From STRUCTURAL ADHESIVE that will make it part of your boat to STAINLESS STEEL EYELETS enabling easy installation and removal.
- Because it comes with a WIDE RANGE OF ACCESSORIES designed and manufactured for the marine industry and for easy installation.
- Because it has an exceptional testimonial, GIOVANNI SOLDINI, who has tested SolbianFlex panels under extreme conditions.
PRODUCTION PROCESS

Soldering
The cells connection through an automatic stringer. In special cases, the refinement of the strings is done by hand by highly specialized personnel.

Lamination
The lamination process takes place under vacuum at high temperatures. The polymerization of the plastic materials ensures the product quality and its long operational life.

Final Test
Each photovoltaic panel is electrically tested and inspected. SolbianFlex products are identified by a production computerized management system.

Offices
The staff is constantly trained to ensure the highest professional standards.
SP series uses special monocrystalline silicon cells with an efficiency greater than 22.5%. SunPower™ back-contact cells represent the most advanced available technology on the market, and makes the SP Solbian panels the highest-efficiency flexible panels.

Product warranty: 2 years

- Walkable
- Flexible
- Weather resistant
- Most efficient
- Easy installation with tenax, zip, screws, adhesive, steel eyelets

<table>
<thead>
<tr>
<th>DATA</th>
<th>SP-137</th>
<th>SP-125</th>
<th>SP-112L</th>
<th>SP-112Q</th>
<th>SP-100</th>
<th>SP-50L</th>
<th>SP-50Q</th>
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<tbody>
<tr>
<td>Peak Power (+/-5%) - Pmax</td>
<td>137 W</td>
<td>125 W</td>
<td>112 W</td>
<td>112 W</td>
<td>102 W</td>
<td>51 W</td>
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<tr>
<td>Rated Voltage - Vmp</td>
<td>24 V</td>
<td>22 V</td>
<td>20 V</td>
<td>20 V</td>
<td>18 V</td>
<td>9 V</td>
<td>9 V</td>
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<tr>
<td>Rated current - Imp</td>
<td>5.7 A</td>
<td>5.7 A</td>
<td>5.7 A</td>
<td>5.7 A</td>
<td>5.7 A</td>
<td>5.7 A</td>
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<tr>
<td>Open Circuit Voltage - Voc</td>
<td>29.1 V</td>
<td>26.9 V</td>
<td>24.3 V</td>
<td>24.3 V</td>
<td>21.8 V</td>
<td>10.9 V</td>
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<tr>
<td>Short Circuit Current - Isc</td>
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<td>6 A</td>
<td>6 A</td>
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<td>855 mm</td>
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<td>1109 mm</td>
<td>601 mm</td>
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<tr>
<td>Width</td>
<td>546 mm</td>
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<td>800 mm</td>
<td>546 mm</td>
<td>292 mm</td>
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<tr>
<td>Thickness</td>
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<td>2 mm</td>
<td>2 mm</td>
<td>2 mm</td>
<td>2 mm</td>
<td>2 mm</td>
<td>2 mm</td>
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<tr>
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<td>2 kg</td>
<td>1.8 kg</td>
<td>1.7 kg</td>
<td>1.7 kg</td>
<td>1.5 kg</td>
<td>0.8 kg</td>
<td>0.8 kg</td>
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SL90L - SL90Q - SL80
SL40L - SL40Q

SL series uses monocrystalline silicon cells with an efficiency greater than 18%, embedded in special polymers that protects them from mechanical stresses and weathering. Solbian quality at the best price.

Product warranty: 2 years

• Walkable
• Flexible
• Weather resistant
• Good quality/price-ratio
• Easy installation with tenax, zip, screws, adhesive, steel eyelets

<table>
<thead>
<tr>
<th>DATA</th>
<th>SL-90L</th>
<th>SL-90Q</th>
<th>SL-80</th>
<th>SL-40L</th>
<th>SL-40Q</th>
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<td>90 W</td>
<td>80 W</td>
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<td>40 W</td>
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<tr>
<td>Rated Voltage - Vmp</td>
<td>18 V</td>
<td>18 V</td>
<td>16 V</td>
<td>8 V</td>
<td>8 V</td>
</tr>
<tr>
<td>Rated Current - Imp</td>
<td>5 A</td>
<td>5 A</td>
<td>5 A</td>
<td>5 A</td>
<td>5 A</td>
</tr>
<tr>
<td>Open Circuit Voltage - Voc</td>
<td>22 V</td>
<td>22 V</td>
<td>20 V</td>
<td>10 V</td>
<td>10 V</td>
</tr>
<tr>
<td>Short Circuit Current - Isc</td>
<td>5.5 A</td>
<td>5.5 A</td>
<td>5.5 A</td>
<td>5.5 A</td>
<td>5.5 A</td>
</tr>
<tr>
<td>Lenght</td>
<td>1236 mm</td>
<td>855 mm</td>
<td>1109 mm</td>
<td>1109 mm</td>
<td>601 mm</td>
</tr>
<tr>
<td>Width</td>
<td>546 mm</td>
<td>800 mm</td>
<td>546 mm</td>
<td>292 mm</td>
<td>546 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>2 mm</td>
<td>2 mm</td>
<td>2 mm</td>
<td>2 mm</td>
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<tr>
<td>Weight</td>
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<td>1.7 kg</td>
<td>1.5 kg</td>
<td>0.8 kg</td>
<td>0.8 kg</td>
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</tbody>
</table>

Out of production in 2014
SX series panels use “full square” monocrystalline silicon cells with efficiency larger than 19%. The new connection technology makes SX panels especially resistant to impacts and less sensitive to shading. High energy yield and high reliability.

Product warranty: 2 years

- Ultra-thin copper wires
- Especially resistant to impacts
- Less sensitive to shading
- Full square monocrystalline silicon cells

<table>
<thead>
<tr>
<th>DATA</th>
<th>SX-54</th>
<th>SX-72L</th>
<th>SX-72Q</th>
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<td>Peak Power (+/-5%) - Pmax</td>
<td>54 W</td>
<td>72 W</td>
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<tr>
<td>Rated Voltage - Vmp</td>
<td>6.5 V</td>
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<tr>
<td>Rated Current - Imp</td>
<td>8.3 A</td>
<td>8.3 A</td>
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<td>Open Circuit Voltage - Voc</td>
<td>7.5 V</td>
<td>10 V</td>
<td>10 V</td>
</tr>
<tr>
<td>Short Circuit Current - Isc</td>
<td>9 A</td>
<td>9 A</td>
<td>9 A</td>
</tr>
<tr>
<td>Lenght</td>
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<td>725 mm</td>
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<tr>
<td>Width</td>
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<td>364 mm</td>
<td>680 mm</td>
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<tr>
<td>Thickness</td>
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<td>2 mm</td>
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</tr>
<tr>
<td>Weight</td>
<td>0.9 kg</td>
<td>1.2 kg</td>
<td>1.2 kg</td>
</tr>
</tbody>
</table>
CP series panels use special monocrystalline silicon cells with an efficiency greater than 18%, incorporated in polymers with high strength. These materials make the panels flexible, walkable, and 1/6 heavy compared to traditional glass panels.

- Walkable
- Flexible
- Ideal for motorhomes, vans, electric vehicles, etc.
- High power
- Easy installation with tenax, zip, screws, adhesive, steel eyelets

Product warranty: 2 years
SolbianFlex panels are specifically designed for the marine environment. Furthermore, they reach high quality and reliability standards.

Generate electricity on board without any noise: all this is possible with SolbianFlex panels.

RECOMMENDED SERIES: SP, SX, SL
SolbianFlex panels are the ideal solution for energy supply in the Marine field thanks to their lightweight, flexibility and high versatility.

Giovanni Soldini was one of the first navigators to use flexible panels for ocean crossings and has actively contributed to the design and implementation of these panels.

Maserati 2013
The Maserati VOR70 boat team uses only SolbianFlex panels designed and manufactured to optimize the energy output on the available spaces.

Alessandro Di Benedetto has been the first Italian to complete the Vendée Globe what is considered to be the Everest of the seas.
- On board: SP100 and SP50

Vendée Globe 2013
Alessandro Di Benedetto with his 60 foot IMOCA class.

SolbianFlex panels are designed to resist to the marine climate corrosion. The high concentration of moisture and the presence of salt does not compromise the integrity of the panels which are subjected to long test sessions and years of ocean navigation.
Thanks to their versatility SolbianFlex panels are able to meet the needs of the most demanding shipowners. Flexible, walkable, removable or permanent solutions.

**EFFICIENCY, VERSATILITY, MANAGEABILITY, LIGHTWEIGHT, SPACE OPTIMIZATION**

**Small spaces?**
SolbianFlex panels can be assembled on the awning and bimini of your boat.

Are you looking for a product suitable for aesthetic and sophisticated installation? SolbianFlex panels are perfectly walkable.

Set your imagination free. Thanks to their versatility SolbianFlex panels can be easily installed and removed with struts prepared case by case.
Thanks to a technical department that follows step by step the creation of SolbianFlex products and an engineering division that can design complete and complex systems, Solbian Energie Alternative is a baseline for the shipbuilding industry that looks for quality products and tailored systems.

SolbianFlex panels and cruise ships: a success story for the environment.

Photo on the right: special project for a Kanter Yacht. Up to 800Wp installed on the hard top.

Do you have a zero-emissions solar Yacht in mind? SolbianFlex products can ensure great powers even in very small dimensions.
Thanks to a Certified Quality Management System, Solbian Energie Alternative is able to realize custom made products designed to fit specific needs while respecting the aesthetic value of each boat: in the best Italian tradition.

ARE YOU LOOKING FOR A PRODUCT WHICH IS EXACTLY AS YOU WANT? WE ARE ABLE TO MAKE IT.

SolbianFlex products are perfectly adaptable to any surface: even in the most unusual installations we achieve the best possible solution.
Asseaboat Solar Solutions and Solbian Energie Alternative have been working together for many years to achieve complete photovoltaic solutions for recreational boats. Thanks to this cooperation several products have been devised: SunBar monoarc, SunBar minirail, SunBar roll bar, increasingly popular on crafts around the world.

Do not you want to take up space on the boat? SunBar minirail was born to be installed on lifelines.

Do you want a permanent and light installation? SunBar monoarc has this goal.
SolbianFlex panels ensure a valuable electricity production and constrain the weight of panels installed on motorhomes. Thanks to their flexibility they can also be installed on curved surfaces such as a cab motorhome profile.

Lightness and flexibility: your motorhome needs nothing else.

**RECOMMENDED SERIES: CP**

Are you looking for a solar panel but you have a small space? SolbianFlex exclusive products can be glued directly on your cab motorhome.

Weight problems? SolbianFlex products do not exceed 3 Kg.

Do you have a pop up roof? SolbianFlex products can be fitted to any type of surface.
In recent years the demand for recreational electric vehicles has grown more and more. SolbianFlex products, thanks to their high efficiency, ensure the right amount of energy to keep the batteries charged.

RECOMMENDED SERIES: FULL SOLBIANFLEX RANGE

SolbianFlex panels with SunPower™ technology ensure significant power even in relatively small spaces.

Even at the annual electric bicycles competition SolbianFlex panels have ensured excellent performance.
Emilia 3, the Onda Solare solar car has generated considerable interest among the audience and media, who have highlighted the use of advanced technology combined with low weight and high performances.

Solbian Energie Alternative supplied Onda Solare with its SP solar panels that made Emilia 3 a very efficient and high performance vehicle in terms of energy.
Thanks to their lightness SolbianFlex panels are the best solution for energy storage stand-alone systems.

**RECOMMENDED SERIES: FULL SOLBIANFLEX RANGE**

A field hospital equipped with flexible solar panels sewn onto a tarp.

The patented photovoltaic sheet allows the transport of several photovoltaic panels in a small space.
With the ability to withstand the extremest environmental conditions, these products have been integrated into applications installed in particularly hostile places.

**RECOMMENDED SERIES: FULL SOLBIANFLEX RANGE**

A Navy lighthouse: thanks to the absence of glass, SolbianFlex products proved an excellent remedy against vandalism.

The Gervasutti bivouac on Monte Bianco glacier. Severe destructive tests have demonstrated the reliability of these products, even at particularly prohibitive temperatures.
Solbian Energie Alternative has sponsored the Sunswift team in the World Solar Challenge Competition providing the solar panels.

The World Solar Challenge is recognized as the premier global event for solar cars. The event begins in Darwin (Australia), along the Stuart Highway for 3000 km to Adelaide.

Thanks to Solbian Energie Alternative Srl, it has been possible to equip the Dimoni 2.3-FV vehicle with two SP100 flexible panels. They allow the vehicle to proceed without batteries, therefore it’s been possible to circulate continuously thanks to sunlight.

Dimoni 2.3 participated in the Madrid EcoCity 2013.
In 2013 Solbian Energie Alternative confirms its sponsorship activities by providing its own panels for three major projects: Aclub, The Coxless Rowers and Goletta Verde.

Aquarianatura Sailing School Club is based in Livorno, it’s committed to the diffusion of maritime safety and environmental protection and plays an activity that is carried throughout the year with specific sailing courses and educational cruises.

The Coxless Rowers is the name of the all-female team that decided to take on a very big challenge: a 8,446 mile row across the Pacific Ocean, a challenge that becomes even more impressive thanks to the girls’ efforts to raise funds for Breast Cancer Care.

Finally, Goletta Verde, the League for the Environment campaign that has recently completed its journey along the Italian coasts, to combat water pollution and provide a detailed report of the Italian sea condition.
SolbianFlex panels have the IEC 61215 and IEC 61730 certifications and can be used in applications that require the architectural integration.

**RECOMMENDED SERIES: CV**

Solbian Energie Alternative is able to create tailor-made panels also for the grid-connected market.

Custom installation of 13 kWp black background panels at the reception center of the “Cave of the Salamander” in France.

Plant realized in Sweden.
Solar Decathlon is a competition which consists in challenging collegiate teams to design, build and operate solar-powered houses that proves cost-effective, energy-efficient and attractive. The Halo project showed an excellent integration of these elements, earning the third place.

The photovoltaic panels used to cover the house were provided by Solbian Energie Alternative, which worked in collaboration with the partner “Sabic”.

Halo project
GV-10 Pb & GV-10 Li (MPPT Controllers)
Designed to maximize the usable energy from a 80-140W panel. The ultra high-speed MPPT in the GV-10 is so effective it reduces your system cost per Watt. This is the right choice if mission-critical power is needed.

GV-BOOST Pb & GV-BOOST Li (MPPT Controllers)
The industry’s most efficient boost controllers. They boost lower-voltage solar panels up to charge higher-voltage lead-acid and lithium batteries, up to 48V nominal.

WRM15
This model of charge controller uses MPPT algorithms to ensures that the panel is working at the maximum power allowed by the actual light conditions. With a maximum current of 15 A it can drive panels with 225W maximum power if charging a 12V battery and up to 450W for a 24V battery.

WMARINE10
MPPT buck-boost charge controller able to drive panels with a nominal voltage than can be either higher or lower than that of battery. Allows all the flexibility needed in special installations where the choice of the panels is dictated by space constraints typical of nautical applications.