

Introducing the world's  
most reliable solar panel



Company presentation / Solar panels

senersun

## BUILT TO SUSTAIN

Senersun at a glance

### SENER SUN IDENTITY

#### **Quality in Senersun DNA**

Senersun is the manufacturer of the world's most reliable solar panel. Simple as that.

Every Senersun panel is manufactured in Senersun's vertically integrated factory on state-of-the-art production lines using only carefully selected components that offer performance and reliability. The long-term performance of each of our PV modules is ensured through Senersun Premium Quality Program, the most advanced quality program ever implemented by a solar panel manufacturer.

#### **European design**

Headquartered in Bordeaux, France, our products are tailored to the needs of our customers worldwide, so to fit their projects and answer tomorrow's needs. Our technical team is at the forefront of the technology thanks to interactive feedback with our localized teams. Our solar panels are a direct reference to this approach.

## BUILT TO SUSTAIN

### Why we commit on quality

*"A quality defect on a solar panel is like a hole in a car's fuel tank. Try on your car and see how far you can go."*

As a manufacturer of solar panels, we believe we have a responsibility to provide reliable products. We are convinced that, as a company involved in renewable energies, the sustainability of our products is essential, as it will help establish solar energy as a tangible alternative to fossil fuels.

### Sustainability anchored in our genes

Our solar panels are manufactured at our ISO 14001-certified factory and comply with the most stringent environmental standards.

Recycling is implemented upstream, in our factory, as the silicon broken during production of the cells is treated, and recycling programs on components have been implemented.

Putting our activity on the long-term footing, that also means thinking about what our panels will become in 30 years. Senersun is one of the first members of the French recycling program CERES, which will enable the recycling of end-of-life solar panels.

### Building trust on a sustainable structure

The structure of our company enables Senersun and its branches not to bear our factory's financial risks.

This means that Senersun's liability is immutable over time; our solar panels will be covered throughout their lifetime, no matter what.

### Senersun's ID card



<b>Company name:</b>	Senersun
<b>Headquarters:</b>	Bordeaux, France
<b>Creation date:</b>	2009
<b>Core activity:</b>	Manufacturing the world's most reliable solar panels
<b>Capacity:</b>	150MW
<b>Rewards:</b>	Ranked n°1 in STS-Certified's Testing Campaign 2011 and 2012

Introducing  
**THE WORLD'S MOST RELIABLE**  
solar panel

## PRODUCT OVERVIEW



### Tailored for every need

We have developed a wide line of premium quality solar panels, tailored for the needs of every customer worldwide, be it for a large-scale PV plant, a residential installation, or a standalone application. Our PV modules range from 95 to 305Wp, relying on polycrystalline and monocrystalline technologies.

### A direct reference to our commitment

Because only one broken cell in a single solar panel can reduce a whole PV system's performance by up to more than 30%, we see it critical to deliver only defect-free solar panels.

And because no other solar panel manufacturer commits on such quality level\*, Senersun applies to each and every of its solar panels the most advanced quality control program ever implemented by a PV module maker: Senersun Premium Quality Program (SPQP).

In 2012, STS-Certified reported more than 13% of defect rate based on more than 200,000 solar panels tested, from the largest to the smallest manufacturers.

## INTRODUCING SENERSUN PREMIUM QUALITY PROGRAM

### Pushing forward the boundaries of industry standards

Existing safety and quality standards are necessary but they do not suffice to guarantee the long-term performance of solar panels. Senersun has therefore developed exhaustive quality standards that cover the whole scope of quality on a solar panel, from the determination of what is a micro-crack to the assessment of the packaging.

### More than 50 points of control

Senersun Premium Quality Control lies on the compliance of more than 50 points, all of which are strictly defined by our quality standards. These points of control notably include: packaging, construction, dimensions, connections, sealing, soldering, module appearance, electrical characteristics, cell quality, etc.

### Standards applied to every solar panel

Senersun commits to apply its industry-leading quality standards to EVERY solar panel. The compliance of our solar panels with our standards is ensured through a careful selection of the components, best practice during production, thorough testing during and after assembling, and third-party inspections.

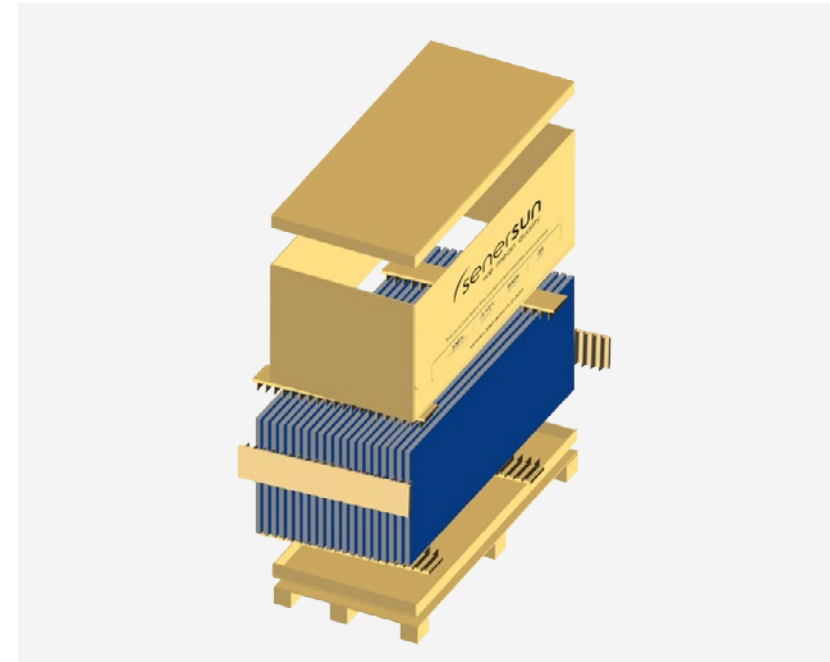


Fig. 1: Senersun packaging: the panels are placed vertically to increase the protection offered by the packaging. A system prevents the panels from falling when the box is opened and/or when a panel is taken from the box.\*

\*Packaging method may vary for EU-made PV modules.

## INTRODUCING SENERSUN PREMIUM QUALITY PROGRAM

### Quality during production

Our solar panels are manufactured according to strictly defined processes to ensure the utmost quality of every panel leaving the factory's doors. Throughout production, our solar panels are submitted to a first series of intensive tests, including 2 EL tests (before and after lamination). This stringent in-house QC enables us to detect quickly potential defects and save time during production, while reducing the waste of materials. All the tests are performed on high-end equipment.

The production of every of our solar panels strictly follows Senersun quality standards.

Our factory is regularly audited by an independent laboratory (STS-Certified). During these inspections, qualified experts control the production of our solar panels to make certain of the compliance of our products with our quality standards.\*

\*Not applicable for EU-made solar panels.

### Verification after production

After production, Senersun solar panels are submitted to another series of tests at our factory. They notably undergo Electroluminescence (EL) and Flash tests, hence guaranteeing the performance of the panels on the short, mid and long term.

### 100% third-party testing available\*

After production, each Senersun solar panel can be sent to STS-Certified's testing facility, where every characteristic of the product is checked on each panel, from cell quality (100% EL test), performance (100% Flash test + analysis of the curve), to technical and visual quality. Components and packaging are also controlled. The panels approved by STS-Certified are labeled as such for a better traceability.



STS-Certified's testing center

### A fourfold warranty

Senersun solar panels' reliability is ensured through a fourfold guarantee:

- 10-year product warranty
- 25-year linear performance warranty
- Errors & Omissions insurance policy contracted with Zurich Insurance
- Positive tolerance of each panel

In addition to these extensive guarantees, an exclusive 100% third-party validation by STS-Certified is available.\*

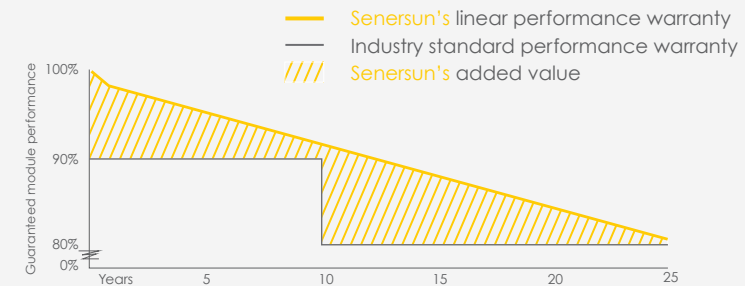
### A quality recognized worldwide

We make premium quality solar panels, constantly proving that they perform better and durably. This quality has been recognized by the world's major laboratories including SGS, TÜV Rheinland, Underwriting Laboratories.

During production, we use only certified and/or A-grade components to ensure the utmost reliability of each panel leaving the doors of our factory.

## WARRANTY AND CERTIFICATIONS

### 25-year linear performance warranty



Senersun guarantees that its solar panels will produce at least 97% of the rated power output during the first year. From the second year onward, the power will not decrease by more than 0.7% of the rated power per year.



Fig. 1: Senersun linear performance warranty

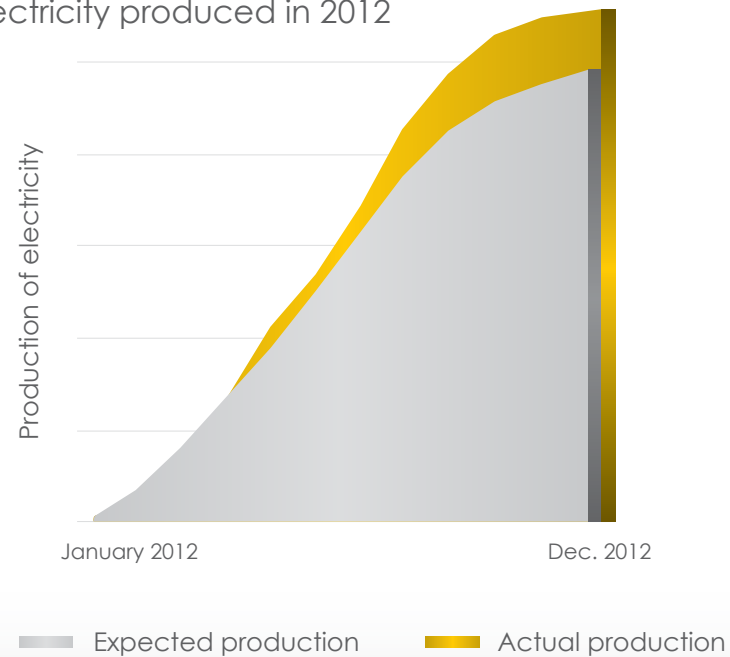
\*Not applicable for EU-made solar panels.



## HIGHER PERFORMANCE IN THE FIELD

**+13.43%**

of electricity produced in 2012



## ENJOY THE DIFFERENCE

Choosing quality pays off



## HIGHER PERFORMANCE IN THE FIELD

### Higher-than-expected performance in the field

Based on observations made at an 11.75 kW installation located in Belgium, Senersun panels proved to perform better in real-life conditions. Annual performance measurements at the installation show that **Senersun panels produced 13.4% more** in the field than expected.

The installation where measurements were undertaken features 50 Senersun SSP60C solar panels, which delivered a total of 11.1 MWh in 2012, representing 13.4% more than the 9.8 MWh expected for the same year.



Data recorded with Solar-Log™ WEB  
Solar-Log™ WEB enables the visualization of the values recorded by the inverter.

According to Météo Belgique ([www.meteobelgique.be](http://www.meteobelgique.be)), the annual insolation in Belgium was below average in 2012 (1528.7 hours against 1544.6 hours in average).

Performance observed in 2012: beyond expectations

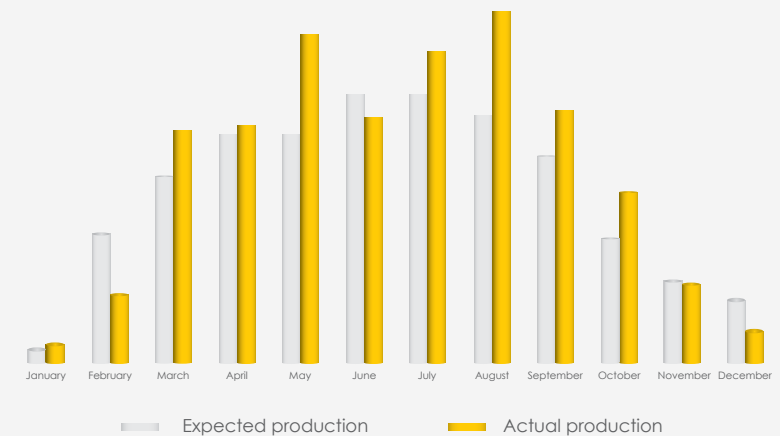


Fig. 1: Expected production of electricity vs. actual production generated by Senersun panels in 2012, observed at an 11.5kW installation in Belgium.



A question about us? Please contact us at [info@senersun.com](mailto:info@senersun.com).

[www.senersun.com](http://www.senersun.com)