SUNRAIL STRUCTURE©

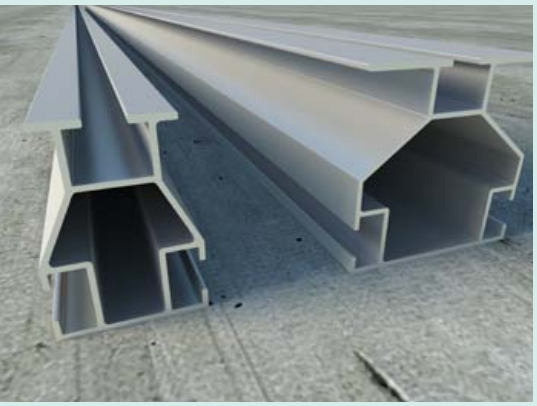
FLAT ROOF MOUNTING SYSTEM

OPSUN systems inc.

MADE IN ONTARIO

SUNRAIL STRUCTURE© FLAT ROOF MOUNTING SYSTEM

SUNRAIL STRUCTURE© EXTRUSIONS

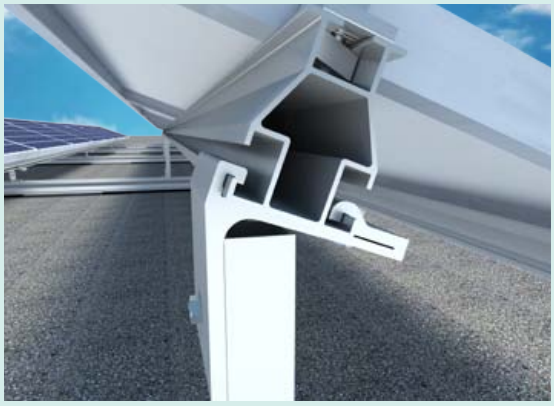


Two extrusion for maximum robustness

Opsun's proprietary SunRail Structure© extrusions compose the entire mounting system, giving contractors the same flexibility, on-site control and familiarity as wood construction beams.

- Pre-cut front and back legs add convenience, reduce waste and minimize installation time.
- The structural integrity of the SunRail Structure© mounting system permit the reduction of the ballast requirement and is nearly ballast free in some area.
- Designed for heavy snow and high wind climate.
- Optional factory preassembly available.

FULLY STRUCTURAL SYSTEM



Structurally solid, engineered, elegant

The SunRail Structure© mounting system adapts to virtually any roof, constructing around obstacles a single, very solid structural system.

- Mechanically fully structural system.
- Highest amount of aluminum per watt on the market.
- Very long rails and fully structural design allow very large spans. Loads are distributed on the whole surface of the system, eliminating risks of breakage.
- Assembly is completely intuitive and can be done with a few drill sockets and a simple power drill.
- Uses very few pieces and aluminum rails, making SunRail Sructure© mounting system one of the most simple on the market.
- 3 to 5 lbs/sq. ft.

WIND TUNNEL TESTED

- The SunRail Universal© flat roof mounting system is wind tunnel tested by a leading Ontario test facility.
- The SunRail Universal© mounting system is tested to minimize wind loads on roof and the amount of ballasting required.

Opsun masters the element of wind

- Can resist heavy winds up to **150 MPH (241km/h)**.
- Can be designed to be **hurricane-proof**.
- The SunRail Structure© flat roof mounting system's load resistance is **verified by structural engineering** firms.

Conforms to most Building Codes.

SUNRAIL STRUCTURE© FLAT ROOF MOUNTING SYSTEM

INTUITIVE AND FLEXIBLE

Flexible system design and layout

Opsun created an adaptive system that allows to build a solid structure on any roof.

- The innovative rail system allows complete freedom in design, allowing endless configurations for each project's specificities.
- Rails positioning is fully adjustable in all axis, in order to sit perfectly on building structures, even when obstacles are blocking the roof, or when roof is uneven.
- Compatible with all different panel sizes.
- Wide range of tilt angles (0°-60°).
- Pitch between rows of panels, span between rails and elevation from roof are completely variable.
- Panels can easily be omitted from array to avoid roof obstacles without sacrificing the structural resistance of the system.

MINIMAL AND INTELLIGENT

Open array to reduce the operating temperature and allow easy movement throughout the system to facilitate snow clearing and electrical maintenance.

Ballasts sit snugly on rails for reduced footprint and faster installations. Ballast trays available in option.

Rubber pads insulate rails from the roof and maximize friction, which helps against wind loads.

System conceals and protects electrical cabling in cavity along the side of the rails. Wire management solutions available.

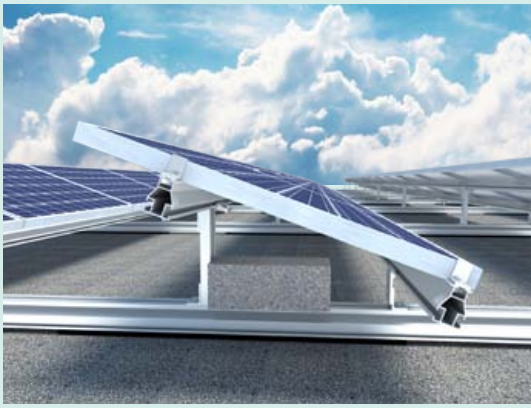
Anodized aluminum available in clear, black or colour.

Plastic end caps are available as an option for a finished look.

Ballast Trays are available as an option.

Anchored Solutions are available to reduce dead loads on roof.

COMPLETE SOLUTION



Low-profile configuration has panels near the surface of the roof

The simple and intuitive design minimizes cost due to less material. It is ideal for areas with limited snow accumulation and for applications that require systems with less height.

High-profile configuration elevates panels from the roof

Adding a third dimension to a solar system has never been so easy. In fact, most of the components are the same as the Low-profile configuration. Elevation allows panels to avoid snow obstruction in the winter, roof objects obstruction and has some positive effects on wind cooling.

Advanced grounding

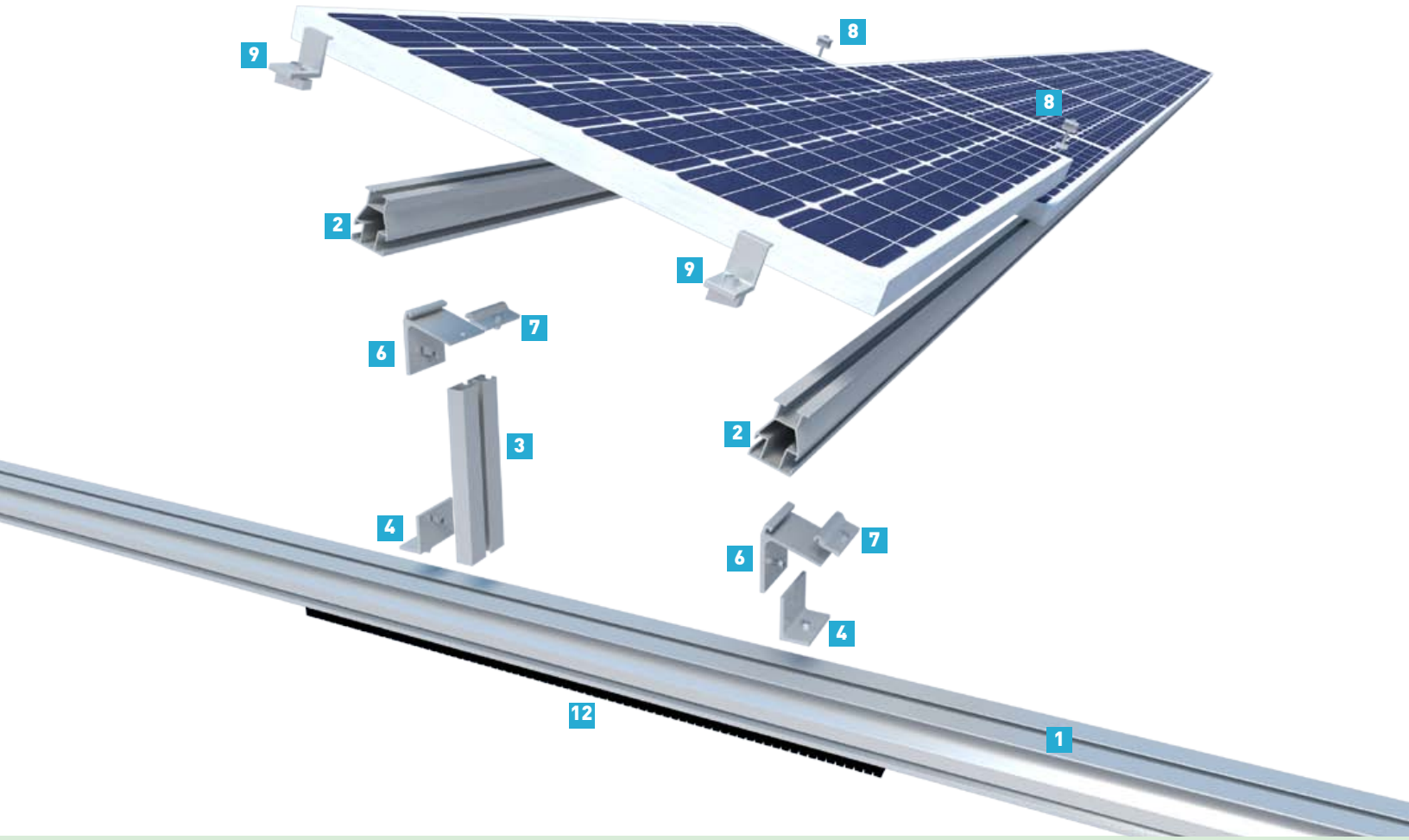
WEEB-OSF grounding solution available.

Self-grounding solution available.

SALES@OPSUN.COM

WWW.OPSUN.COM

SUNRAIL STRUCTURE© FLAT ROOF MOUNTING SYSTEM



SPECIFICATIONS

- Structural engineer stamped.
- Made in Ontario to meet OPA domestic content requirement.

Typical weight per surface:	Mounting only: 3.8-5.7 kg/m^2 (0.7-1.2 lb/ft^2) With PV: 8-13 kg/m^2 (1.7-2.7 lb/ft^2)
Ground Rail weight:	2.36 kg per meter
Cross Rail weight:	1.335 kg per meter
Regular Tilt Angle:	15, 20, 25 and 30 degree
Panel layout:	Landscape or portrait
PV panel compatibility:	Any panel with a 35-50mm frame
Maximum rail length:	24ft
Rail material:	6005-T5 aluminium with mill finish
Clamp material:	6005-T5 and 6061-T6 aluminum
Bolt material:	Stainless steel
Finish:	Mill finish or anodised (black or color)
Maximum wind load:	150mph
Panel height from roof :	12" to 18''
Contact Surface:	3 or 4 rubber pads per ground rail

Required Tools

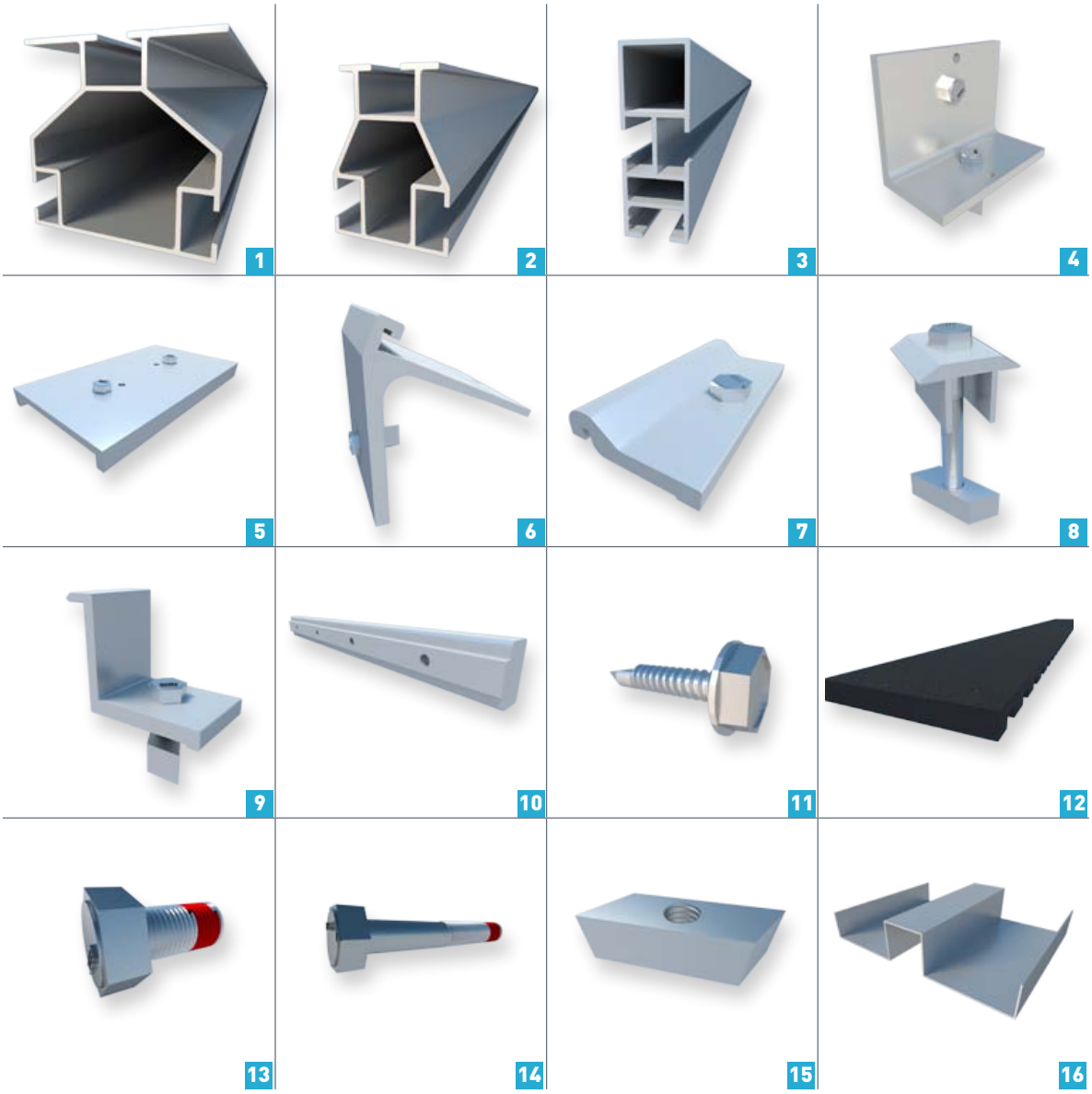
- 9/16 socket wrench
- Impact drill
- 5/16 socket wrench for drill
- Number 19 drill bit
- Heavy duty cutter
- Trestles
- Chopsaw with aluminum blade

10 year warranty

ETL LISTED c US UL 467

MADE IN ONTARIO

COMPONENT LIST



OPSUN SUNRAIL STRUCTURE©

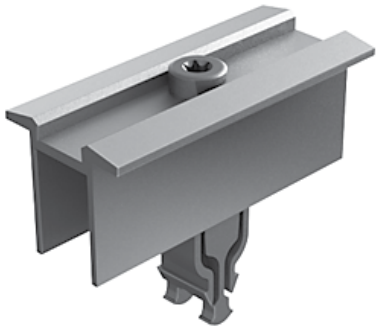
All ordered clamps come with their respective bolts and locks.

1	**SRS4-24ft**	SRS4 (SunRail Structure) extrusion beam
2	**SR3.5-24ft**	SRS3.5 extrusion beam
3	**SR-24IN**	SR extrusion beam (post)
4	**SR-CC**	SR corner clamp
5	**SR-UL1**	SunRail U link; type 1
6	**SR-C-SRS-20D**	SR to SRL clamp; 20 degree*
7	**SR-SC**	SR side clip
8	**SRL-UC2**	U-clamp; type 2
9	**SRL-ZC50-ER**	Z-clamp End-row (38, 40, 42, 45 or 50mm)
10	**SRL-RL5**	SRL rail link; type 5
11	**SDS-SS-12-1**	Stainless self drilling screw 12-1"
12	**SR-RP1**	SR rubber pad 4 x 48"
13	**BL-SS-0.75**	Stainless steel ¾" bolt with Loctite
14	**BL-SS-2.5**	Stainless steel 2-1/2" bolt with Loctite
15	**LN1-SS**	Stainless steel lock nut
16	**SRS-BT1**	SunRail Structure ballast tray

* Clamp model available for 15, 20, 25 and 30 degree

INTEGRATED GROUNDING SOLUTION

OPSUN CLICLOC©



SAVE MONEY AND TIME

Integrated grounding is the future. Opsun now has a fully custom ClicLoc that makes grounding a simple, easy task.

- **UL and CSA** approved
- **Clicks** on the rail and slides into place
- **Completely grounds** the panel to the rail
- **One piece** serves as both the clamp and the grounding solution
- **Fully tested** to be as strong as all other Opsun components
- **One tool** fixes into place
- **Requires less copper** conductor overall

OPSUN WEEBS ALSO AVAILABLE

The Opsun WEEB brings many benefits to a mounting system, while being **low-cost**:

- **UL and CSA** approved
- **Engineered** for outdoor use over long periods of time
- **Prevents** galvanic corrosion
- **Requires less copper** conductor overall
- **Easy to use**

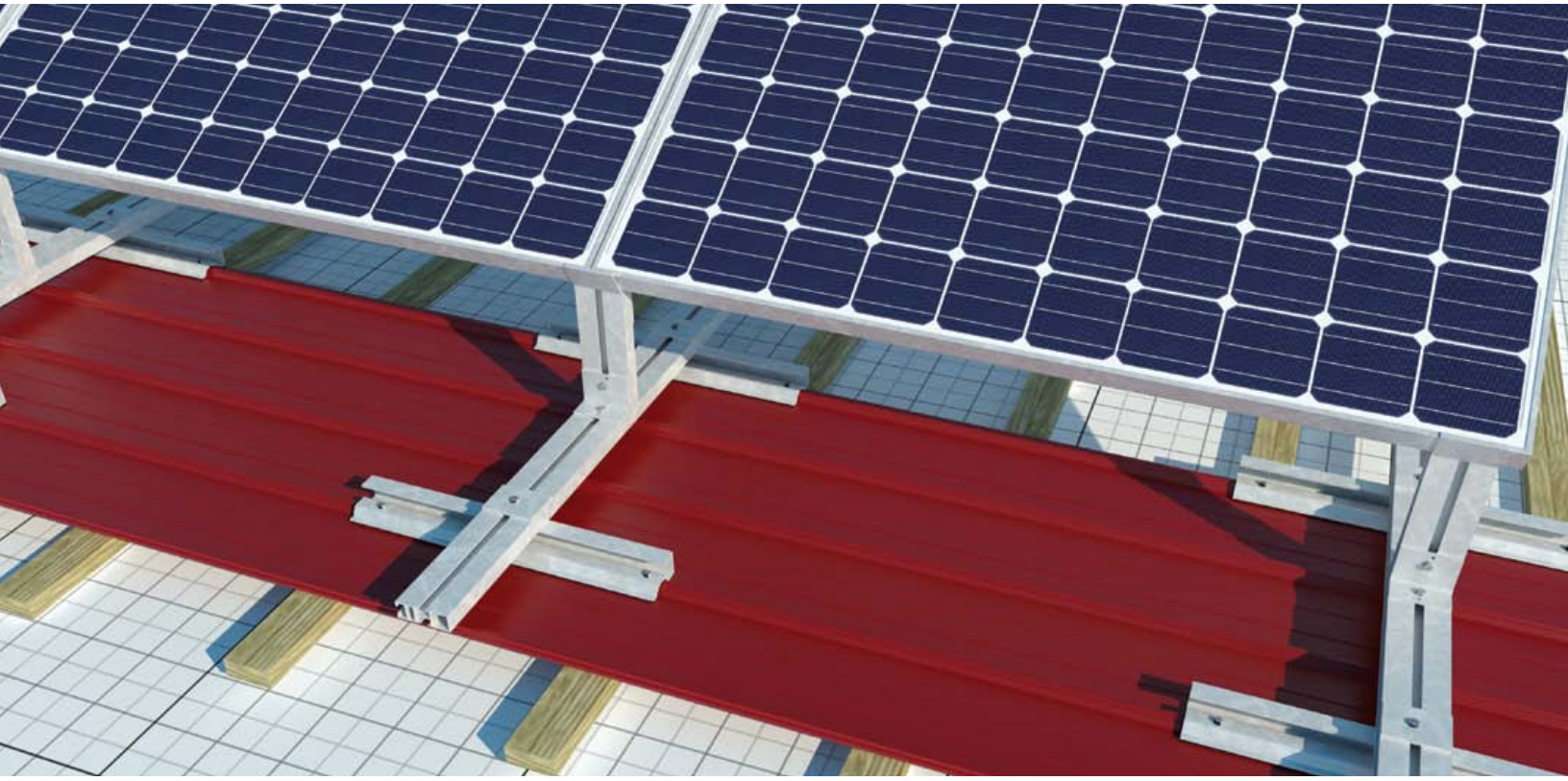
Project success with three simple steps.

1. Obtain full engineering support
2. Install solid, structural rails
3. Fasten panels with self grounding clamps

Accomplish reliable results fast and at a low cost

*ClicLoc is a Trademark from Fath PV Tech inc.

TOTAL ENGINEERING SUPPORT



FLEXIBLE DESIGN

Opsun does not only sell a product: each project is tailored to fit on the ground or on any structure perfectly. Optimal layout and configuration of the mounting system is determined by an engineer and a custom solution is proposed.

- **Engineers** are appointed to work on each design, customizing it to the needs of the client.
- **Electrical string design** can be done by our engineers to optimize electrical wiring.
- **Accurate configuration drawings** of the array are done and are supplied with each quote, assuring clear visual presentation of the custom design.

FULL ENGINEERING SUPPORT

Our enginners work extensively on each project to perform all the work required to certify that the system will meet any legal or engineering standards. Plans that Opsun supply are virtually the only ones required to construct a project.

- **Simulations and engineering calculations** are performed by engineers to verify the structural integrity of the system. Wind tunnel tests are used to validate that ballast calculation is compliant with the Building Code.
- **Supplied plans are ready for engineer stamping**. Opsun's plans contain almost every element required to obtain a building permit, streamlining the process, saving time and avoiding costs. Fully stamped plans can even be supplied upon request.
- **Project-specific technical drawings** with precise measurements to facilitate installation are supplied, reducing on-site costs, avoiding unexpected issues and limiting any risks to a minimum.
- Opsun's total service is a company vision, so its always **free**!

KNOWLEDGE IS POWER

Opsun's staff is comprised of solar energy experts. We can accompany any developper through the whole process of creating a solar power plant. Our team is skilled in:

- Rapid estimation of the PV potential of a site.
- 3D rendering for astonishing project presentations.
- PVSyst simulations and projections of electricty generation.
- Optimization of system efficiency.
- Geolocalization tools can be used to assess shading issues and to quickly determine building characteristics.
- Feasability assesment.

TECHNICAL SOLUTIONS

Opsun's technological innovations are customer demand-driven. Opsun's well-developed solutions to structural challenges increase the range of feasible projects.

Ask us a custom solution, and we will design it for you!

Examples of specialized applications:

- Building Integrated Photovoltaics (BIPV).
- Tilt panels on a sloped roof.
- Installation of panels on a low-pitched East-West roof.
- Minimizing ballasting, but still avoid using anchors.

INSTALLATION SUPPORT

Opsun's engineering staff is expert on everything related to solar equipment and the installation of a solar power plant.

Call us and we will lend you a hand:

- Training of installation teams and maintenance staff.
- Coaching of early installations to ensure flawless execution.
- Expert, personalized phone support for technical assistance during installations to help resolve issues when they arise.