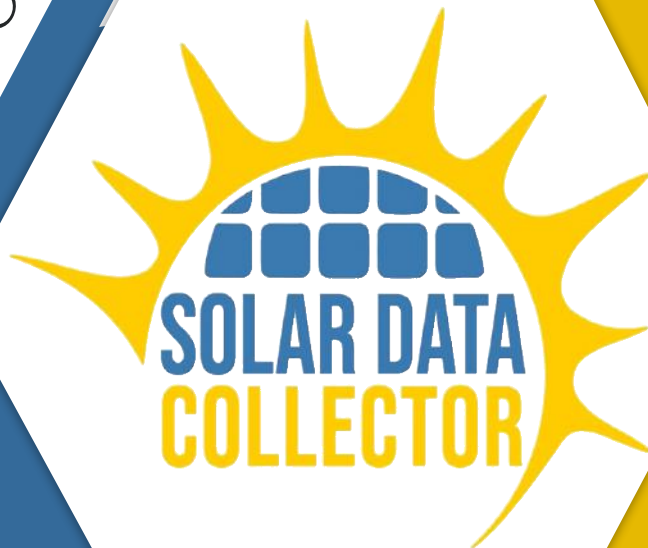


MAKE DECISION WITH CONFIDENCE!



99% Certainty
Assessment



Easy
Monitoring



Optimization

THE SUN IS POWER

SOLAR DATA HARDWARE

Portable and self-sustainable meteorological station specialized for use in the photovoltaic industry

Why?

Satellite data sources have measurement uncertainties in the **8 to 15% range**.

On-site measured data usually have a measurement uncertainty between **2 and 7%**.

Solar Data Collector can **reduce uncertainty** by more than **6%**.

The industry has historically relied on modeled data to estimate the on-site solar resource. One may question why is that the case when it is evident that on-site data are more accurate? The answer is simple, long term on-site measurements are not available for every site. So, a combination of both is used to get a lower uncertainty, comparable to that of long-term on-site measurements while still being widely available for most locations, even when long term measurements do not exist. Short-term quality measurements can be used to correct modeled data sources and improve their certainty. By comparison and validation of satellite based models, the uncertainty can be reduced by 2% to 6%.



Cloud based data storage

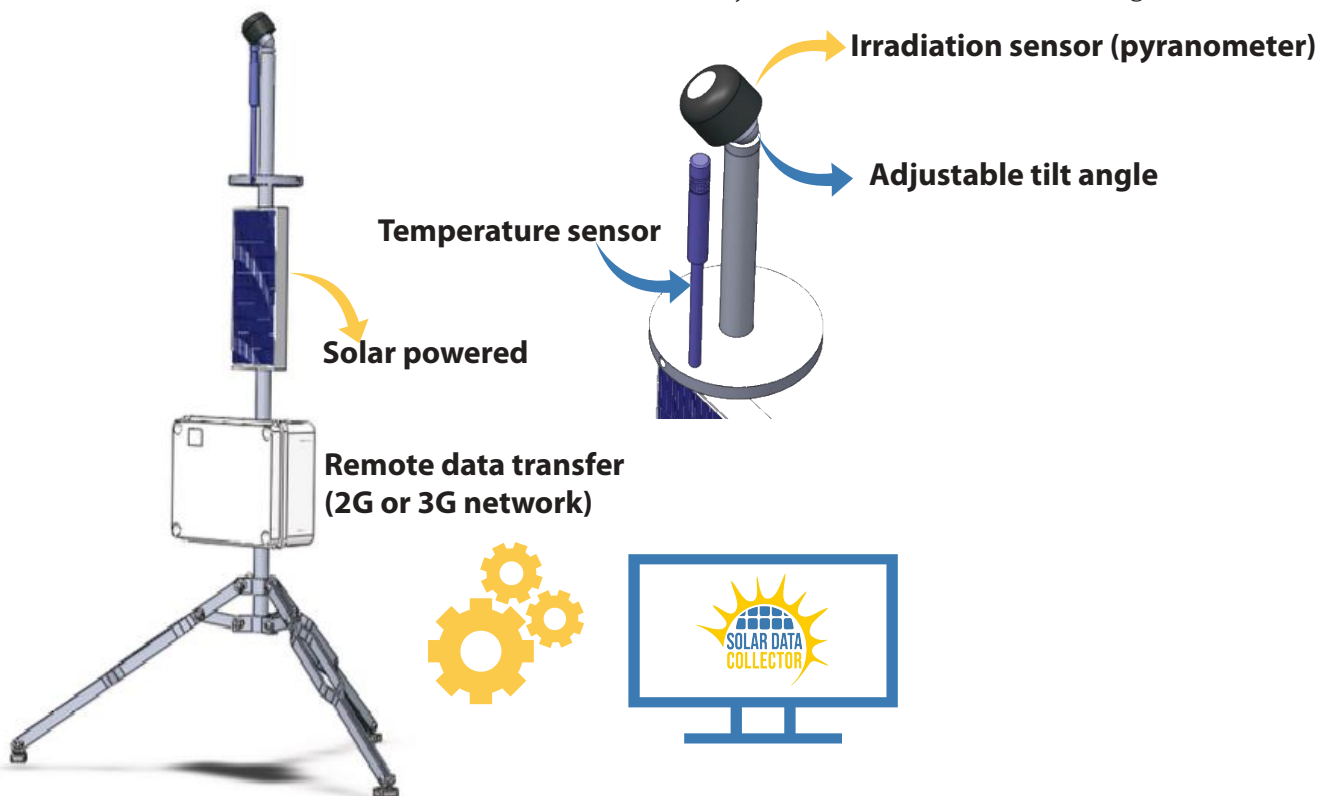
No additional IT infrastructure is needed. The product includes a platform for data storage, analysis and visualization.



All in one solution

Integration with the platform for PV monitoring and assessment.

The data from the device can be immediately used for analysis, assessment or monitoring.



SOLAR DATA SOFTWARE

Software and data for every phase of the lifetime of a PV plant!

Solar Data cloud based web application offers data and insight to support every phase of the lifetime of a photovoltaic plant, from initial assessment, to monitoring and forecasting energy yield.

Try out ----> app.solardata.net

Data included

The software uses weather data from satellite and ground sources, all available with no additional configuration needed.

Cloud and web based

The platform can be accessed from any web enabled device. Computationally intensive tasks are run in the cloud, making complex simulations possible without the need of complex computer systems.

The screenshot shows the Solar Data Collector software interface. The top navigation bar includes 'ASSESSMENT / MONITOR / OPTIMIZE / EDIT USER' and 'BUY PACKAGES'. The main content area is divided into five steps: 1. Location, 2. Modules (highlighted), 3. Inverters, 4. System Design, and 5. Shading And Losses. A table lists various solar modules with columns for Name, Technology, Bifacial, Maximum power, Temperature coefficient, and Module area. Below the table, there are sections for 'Physical Characteristics' and 'Name' with input fields for various parameters.

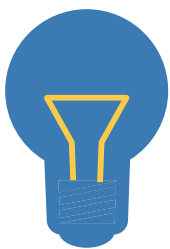
Name	Technology	Bifacial	Maximum power	Temperature coefficient	Module area
A10Green Technology A10J-S72-175	monoSi	No	175.0914	-0.5072	1.3 m ²
A10Green Technology A10J-S72-180	monoSi	No	179.928	-0.5072	1.3 m ²
A10Green Technology A10J-S72-185	monoSi	No	184.7016	-0.5072	1.3 m ²
A10Green Technology A10J-M60-220	multiSi	No	219.876	-0.5196	1.624 m ²
A10Green Technology A10J-M60-225	multiSi	No	224.9856	-0.5196	1.624 m ²
A10Green Technology A10J-M60-230	multiSi	No	230.1288	-0.493	1.624 m ²
A10Green Technology A10J-M60-235	multiSi	No	235.008	-0.493	1.624 m ²
A10Green Technology A10J-M60-240	multiSi	No	240.5376	-0.493	1.624 m ²
A2Peak Power POWER ON P220-6x10	multiSi	No	219.978	-0.46	1.633 m ²
Aavid Solar ASMS-165P	multiSi	No	164.85	-0.519	1.301 m ²

Physical Characteristics

Module Width	0.825	cm
Module Height	1.576	cm
Module area(m2)	1.300	m ²
Number Of Cells	72.000	
Temperature coefficient adjustment	16.419	

Name A10Green Technology A10J-S72-180

Technology	monoSi
Nominal efficiency	13.841 %
Maximum power (P _{mp})	179.928 W _{dc}
(P _{mp}) temp. coefficient	-0.507 %/C
(P _{mp}) temp. coefficient	-0.912 W/C



Energy yield simulation



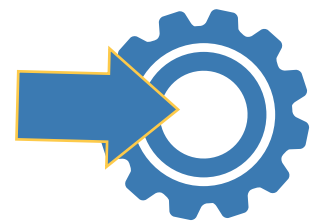
Automatic data import



Data visualization and analysis



Forecasting



Integration

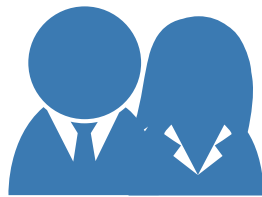
DECISION WITH CONFIDENCE!

Solar Data Application offers services for energy yield assessment of prospective photovoltaic plants, with high certainty of up to 98%. Increased certainty correlates with reduced risk of investment, a higher financial viability and a greater confidence about the expected outcome. Every location has specific energy potential which is dependent on the climate, geographical position of the location, topology, nearby buildings or objects that may shade the modules, sunlight duration and others. To make the most out of the available solar energy, many parameters need to be optimized. Solar Data makes the process fast and data driven, enabling higher efficiency and higher profit.

Services

- Solar resource assessment study
- Pre-feasibility and feasibility study for a prospective PV plant
- Energy yield simulation with up to 98% certainty
- PV plant technical specification optimization
- ROI analysis
- Large database of PV plant components with included specification

The assessment service is available as:



APP.SOLARDATA.NET

part of the software or as expert guided consultancy services.

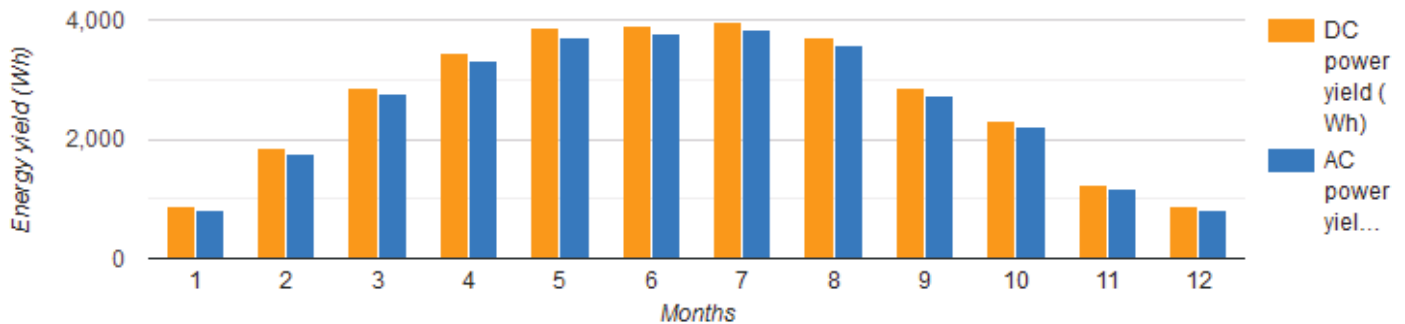
The screenshot shows the 'ASSESSMENT' section of the Solar Data Collector software. The top navigation bar includes 'ASSESSMENT / MONITOR / OPTIMIZE / EDIT USER' and 'BUY PACKAGES'. The main interface features a progress bar with five steps: 1. Location, 2. Modules, 3. Inverters (active), 4. System Design, and 5. Shading And Losses. Below the progress bar is a table of inverter specifications:

Name	CEC efficiency	European efficiency	Maximum AC Power	Maximum DC Power	Operating power consumption	Night power consumption	Minimum MPPT DC voltage	Nominal DC voltage	Maximum MPPT DC voltage
Load All Inverters									
ABB: MICRO-0.25-I-OUTD-US-240 [240V]	95.704	94.858	250	259.492	2.240	0.075	30	40	50

Below the table are two 'Datasheet Parameters' sections. The left section includes 'Sandia Coefficients' (C0, C1, C2, C3) and 'Number of MPPT inputs'. The right section includes parameters like 'Maximum AC Power', 'Nominal AC voltage', 'Maximum DC Power', 'Nominal DC voltage', 'Maximum DC voltage', 'Maximum DC current', 'Minimum MPPT DC voltage', 'Maximum MPPT DC voltage', 'Power consumption during operation', and 'Power consumption at night'. The interface also includes a sidebar with navigation options and a footer with 'EDIT MODULE' and 'System Design' buttons.

Energy yield

Change charts



✓ 98% certainty

The use of several data sources and state-of-the-art models enables unprecedented accuracy and certainty.



Lower risk

P90 statistical analysis enables to lower the risk through the use of probability of exceedance values.



Maximization of cost-benefit

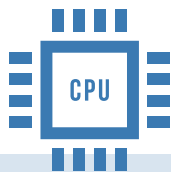
Optimization of cost-benefit through prioritizing different metrics such as: ground coverage ratio, energy yield per square meter land, energy yield per kWp and others.



System sizing helper

Tools that guide the creation of a preliminary technical specification, making sure components are compatible with each other.

TECHNOLOGY USED



COMBINATION OF DATA-SOURCES:

Satellite imagery and on-site measurements data from satellite imagery updated daily, validated and corrected to meet high certainty requirements by our team of experts. On-site measurements can be obtained by nearby meteorological stations or be performed using a Solar Data station that can be installed on site.

HIGHLY ACCURATE SIMULATION MODELS

The models used for simulating energy yield are implemented by NREL. The methodology used for data processing is recommended by NREL and IRENA.

STATISTICAL ANALYSIS

Some banks and organizations require reports with higher levels of confidence. The tool generates reports with P50 and P90 confidence levels for maximum certainty.

INCREASE OPERATIONAL EFFICIENCY!

Many factors can affect the power yield of the system during its lifetime, some of them include: soiling of the modules, module degradation (photovoltaic modules lose efficiency over time and produce less electricity), inverter efficiency, system components' faults. Even a single faulty PV module can substantially affect the whole string of modules and if not treated, cause more damage to the system and other components.

Good inverters have protection mechanisms in place, to limit the possibility of self-damage, but those mechanisms work in a way which reduces the power output. This leads to a necessity to continuously monitor key parameters about the system's health.

Services

Performance assessment

Immediate fault detection: Compare actual vs optimal power yield

Automated calculation of metrics:

Soiling, Temperature degradation, Inverter efficiency, PV module efficiency, Performance ratio, deviation from nominal operation, self-sufficiency, energy flow metrics and others.

Automated alerting based on customizable conditions

Energy flow monitoring

Energy yield prediction

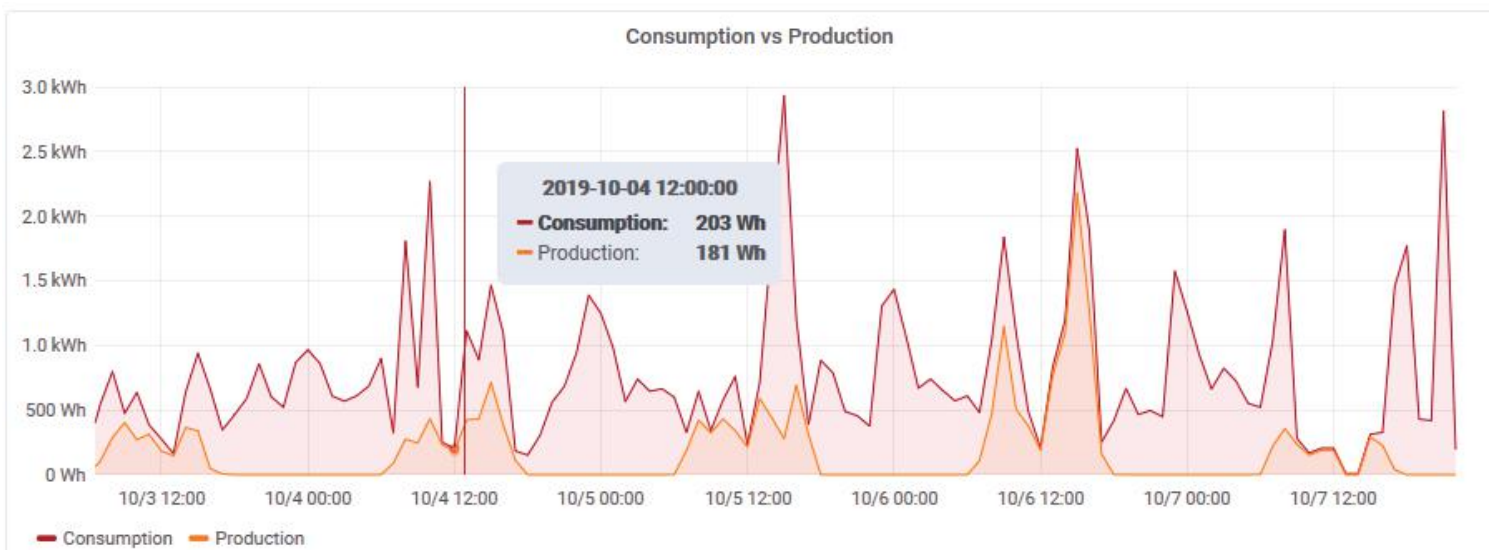
BENEFITS

Maximize system availability through fast fault detection

Optimize consumption curve

Plan energy yield by forecasting

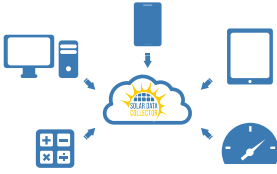
Locate system inefficiencies and causes





Direct integration with inverters

The platform continuously gathers metrics from the inverters for energy yield, health and efficiency.



Automated data processing pipeline

Weather data, inverter data and other sources are analyzed in a multi-step process to calculate a set of metrics which are visualized on several dashboards.



No additional hardware required

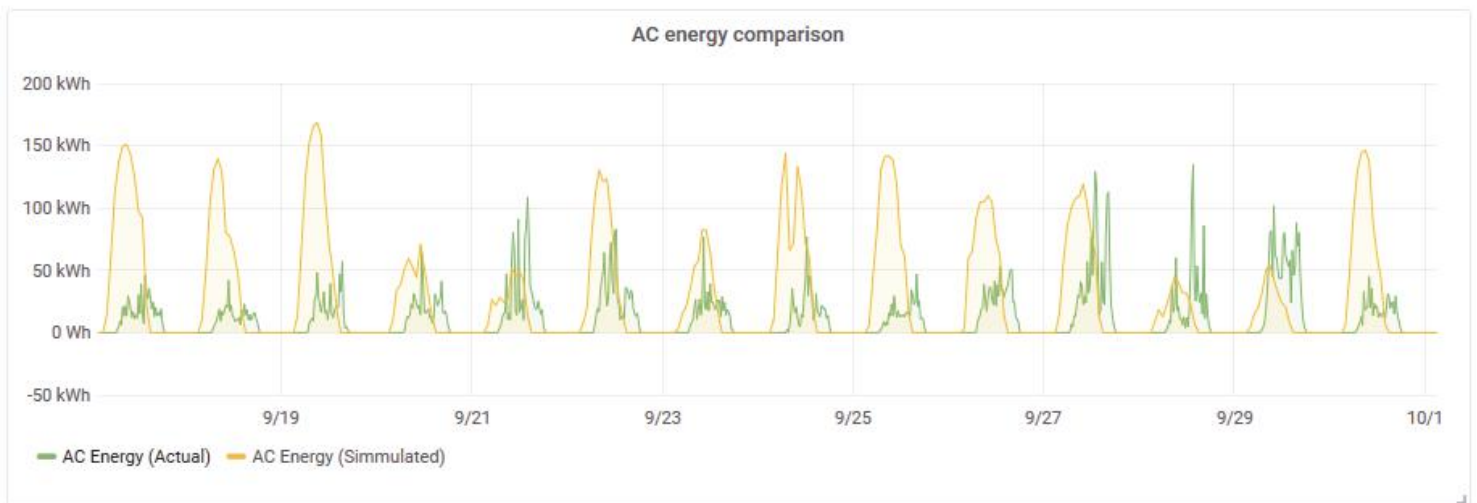
The solution utilizes the communication protocols from the inverters or the platform from the manufacturer to gather the data without the need to deploy additional hardware.



Near real-time dashboards

Visualization of the data and calculated metrics on easy to use dashboards through any web enabled device such as tablets, phones or computers.

For clients that want the maximum certainty and preciseness, integration with Solar Data proprietary meteorological station is available.



INCREASE PRODUCTION BY 5-10%!

For prospective plants, energy yield can be increased through the optimization of the technical specification.

For operational plants, early fault detection can increase the system availability.

Cleaning and maintenance periods can be optimized by advanced analytics.

For self-consumption models, the power generation curve can be optimized to match the consumption needs, or vice-versa.

BENEFITS

Cost-benefit optimization

System components comparison

Consumption and production curve matching

Maximization of ROI

The optimization service is available as part of the software or as expert guided consultancy services.



We offer exclusive consulting services directly to the technical team/owners of the photovoltaic system

Pre-construction

- Location energy potential comparison study
- Detailed energy yield assessment & feasibility study
- System sizing & component optimization
- Technical project documentation & engineering plan

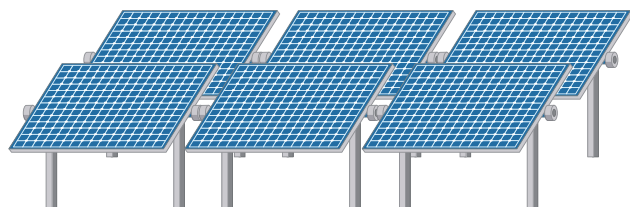


Construction

- Independent construction monitoring
- Acceptance tests

Post-construction & operations

- Fault localization & troubleshooting
- Continuous monitoring & reporting
- Integration & power curve optimization
- Energy yield & market prices forecasting



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THE
SUN IS
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WWW.SOLARDATA.NET



Skopje,
North Macedonia



+38978278775
+38977709812



www.solardata.net
contact@solardata.net

