



Envision Digital | Solution Brief

Turn data into value with
**EnOS™ Advanced
Analytics for Solar**

GET THE MOST OUT OF YOUR SOLAR ENERGY SYSTEM.



Turn Data Into Value. EnOS™ ADVANCED ANALYTICS FOR SOLAR.

Leading renewable energy operators and power plants understand the need to exploit data. With **EnOS™ Advanced Analytics for Solar**, energy businesses gain an edge by eliminating unpredictability with incisive insights from vast data sets. Directly boosting production capacity, operational effectiveness, and maintenance efficiency. Improving the bottom line.

EnOS™ Advanced Analytics for Solar transforms data into real time actionable insights. Innovative technologies. Sophisticated methods. With advanced data techniques, artificial intelligence (AI), machine learning, and sophisticated statistical methods, users can analyze past and present situations, while simulating future scenarios. From descriptive to predictive. Move from descriptive and diagnostic assessment of equipment performance and failures, to predictive and prescriptive recommendations on what should be done to improve and optimize the lifecycle value of devices and assets.

EnOS™ ADVANCED ANALYTICS FOR SOLAR. Accelerate Value Creation.

CAPABILITIES AT-A-GLANCE

KEY BENEFITS



Visualize.

Breaks out system losses into 15 loss categories based on industry best practices – with deep dives for each. Provides plant-based and fleet-level analytics.



For the business.

Make confident decisions that maximize revenues and minimize costs. By transforming raw data into business intelligence and actionable insights.



Prioritize.

Delivers prioritized corrective action recommendations to reduce manual errors, cut labor-intensive processes, and improve efficiency.



Across business processes.

Reduce human intervention. Delivers high level automation to reduce manual errors and manpower requirements.



Report.

Generates automatic monthly reports to support decisionmaking.



For your people.

Empower your workforce. Gain full visibility and better control over performance and operations.





EnOS™ ADVANCED ANALYTICS FOR SOLAR. Key Features.

DELIVERING TECHNICAL SUPERIORITY.



Comprehensive Downtime Event Analysis

Gain rapid insight into the underlying causes of system and component downtimes.

What is Comprehensive Downtime Event Analysis?

EnOS™ Advanced Analytics for Solar provides an inverter by inverter analysis. Offering granular insights into causes. So you can better mitigate risk factors.

- Provide inverter by inverter analysis by compiling contiguous inverter downtimes as individual downtime events, for each inverter.
- Dissect downtime events by categories, e.g. snow fall, grid curtailment, or other causes, to get better understanding of causes.

EnOS™ ADVANCED ANALYTICS FOR SOLAR Key capabilities. How it works.



Maintain an eagle eye on your KPIs

Analyzes detailed breakdowns of system losses against KPIs.



Never miss critical information

Proactively inform key stakeholders (e.g., asset managers, operations and maintenance (O&M) teams, and insurance underwriters) on the as-built performance of photovoltaic (PV) plants.



Prioritize actions for optimal performance

Translates system under performance and component health issues into prioritized corrective actions. Optimizing asset performance. Reducing operational risks.



Optimize O&M schedules efficiently

Helps organize and schedule O&M more efficiently and cost effectively to reduce costs.



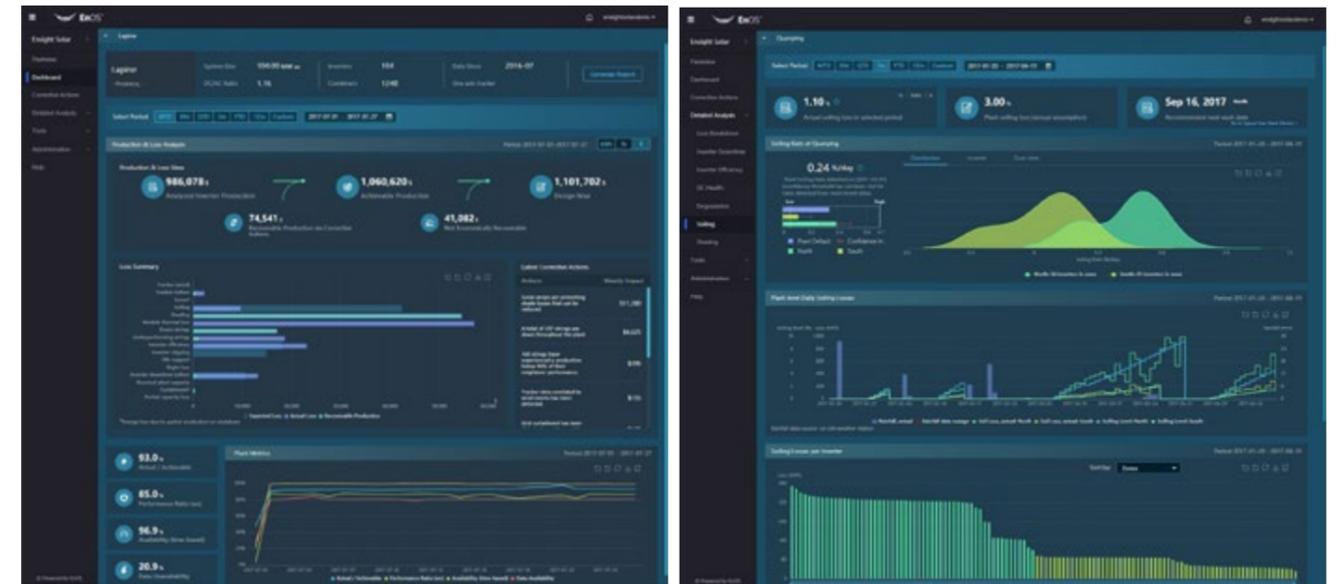
Improve asset performance and health

Support the long term performance and health of PV assets.



Uncover revenue potential

Discovers new revenue potential from assets.





Detailed System Loss Breakdown

Gain unprecedented level of insight into losses.

What is Detailed System Loss Breakdown?

EnOS™ Advanced Analytics for Solar offers an indispensable set of analytic tools that automatically break down system losses into 15 categories. Providing unmatched insight into the impact of those losses.

- Develop better mitigation strategies with unparalleled insight into losses.
- Evaluate losses across 15 categories, including losses caused by tracker errors, soiling, shading, inverter downtime, string underperformance, curtailment etc.



Corrective Action Recommendations

Resolve plant issues cost efficiently and easily.

What is Corrective Action Recommendations?

EnOS™ Advanced Analytics for Solar automatically determines the corrective actions are the most effective and cost efficient. So you can resolve anomalies that can cause future equipment problems.

- Propose corrective actions based on results of the detailed loss breakdown analysis.
- Update corrective action list daily to no irregularities are missed.
- Channel plant operators to high value business areas (e.g. plant strategy and operations) instead of deciding what to do next.



Wash Optimization Analysis

Optimize system wash schedules based on accurate soiling detection.

What is Wash Optimization Analysis?

EnOS™ Advanced Analytics for Solar dynamically assesses soiling losses throughout a system based on advanced inverter by inverter soiling rate detection algorithms. It estimates the next most cost effective date to wash the system, so you maximize uptime and lower costs.

- Get the most cost efficient washing schedule based on system performance and soiling conditions.
- Optimize wash schedule for specific zones within a system to accommodate diverse designs and soiling characteristics.



Data Quality Assurance

Ensure effective analytics with the highest data quality.

What is Data Quality Assurance?

Data quality is vital for accurate, effective analytics. Our advanced analytics engine automatically detects and corrects missing or invalid data. Ensuring KPIs and loss breakdown analysis results are accurate.

- Detect data irregularities with sophisticated and robust automated data filters.
- Ensure data accuracy with inclusion/exclusion of specific operating conditions.
- Identify weather data outliers automatically.



ORIX Renewable Energy Management Mainstreams Renewables with Maintenance Transformation

What is a dynamic renewable energy company doing to
mainstream clean energy in Japan?

Employ an intelligent preventive maintenance strategy for
82 distributed utility-scale solar farms.

Japan's largest solar asset manager transforms solar asset productivity.

- ✓ **82**
utility-scale solar
plants connected
- ✓ **Maximized**
Solar Energy Production
- ✓ **Accelerated**
Renewable Energy Goals
- ✓ **Minimized**
failures and downtime
- ✓ **Enhanced**
Value Proposition
to Customers

ABOUT ORIX RENEWABLE ENERGY MANAGEMENT CORPORATION

ORIX Renewable Energy Management Corporation (OREM) is the subsidiary of ORIX Corporation (ORIX), a diversified financial services group headquartered in Japan. OREM runs the operation, management, and maintenance of power plants that use renewable energies such as solar power.

With 1 GW of solar energy assets, including utility-scale, commercial and industrial, ORIX is the largest solar asset manager in Japan. It also develops and operates its own rapidly growing fleet of solar farms that currently generate 702 MWp in utility, including Niigata Yotsugoya Power Plant (55.6 MWp), Shiriuchi Mega Solar 20M Power Plant (24 MWp), and Hirono-Cho Mega Solar Photovoltaic (PV) Plant (24.3 MWp). ORIX's OR Yamaguchi Mine Solar Power Plant (56.4 MWp) is scheduled to commence operations in October 2021.

ORIX RENEWABLE ENERGY MANAGEMENT'S CHALLENGE.

To contribute to Japan's national goal of increasing its renewables mix to 24% by 2030, OREM wanted to implement innovative technology that can further increase the productivity of its solar assets.

“ With Envision Digital's end-to-end solution and expertise, ORIX Renewable Energy Management can provide total customer support - from proposals to implementation to maintenance, which in turn helps our customers optimize energy use and reduce costs.”

*Kazuhisa Yurita,
Executive Vice President / Chief Strategy Officer,
ORIX Renewable Energy Management Corporation*

WHAT ORIX RENEWABLE ENERGY MANAGEMENT IS WORKING TOWARDS.

Envision Digital helped ORIX Renewable Energy Management contribute to sustainability agenda.

- **Power utility-scale solar farms with innovative digital capabilities.**
Envision Digital will deploy EnOS™ AIoT platform, together with EnOS™ Advanced Analytics for Solar and EnOS™ Monitoring for Solar to OREM's utility-scale solar farms across 82 sites in Japan.
- **Optimize power generation capacity with better visualization capabilities.**
With 360-degree view into OREM diverse portfolio of distributed assets, OREM's operations and maintenance (O&M) teams will be able to better visualize power generation conditions to optimize production capacity.
- **Acquire insights into failure indicators and recommendations for corrective action.**
Advanced analytics algorithms, which detects anomalies and predicts system underperformance while delivering smart remedial actions, will help OREM preemptively maintain the long-term efficiency and health of its PV assets.
- **Respond faster in malfunctions with remote operational monitoring.**
EnOS™ Monitoring for Solar's real-time remote operational monitoring capabilities across distributed PV sites also help OREM's O&M team rapidly respond in malfunctions to reduce downtime and maximize power generation capacity.

AIoT Leader. For Energy. Beyond Energy.

To learn more about EnOS™ Advanced Analytics for Solar and please contact enquiries@envision-digital.com.



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Envision Digital is focused on bringing technology solutions to the sustainability challenge . Its world-class AIoT technology helps governments and companies across the world accelerate progress toward a net zero future and improve their citizens' quality of life. Having established itself as a leading solutions provider for intelligent renewable energy generation, consumption efficiency and smart flexible storage, it has extended its capabilities beyond energy to enable and optimise applications notably in smart cities, smart buildings and estates, smart infrastructures, e-mobility and smart plants.

EnOS™, Envision Digital's proprietary AIoT operating system, connects and manages more than 100 million smart devices and 200 gigawatts of energy assets globally, while its growing ecosystem of more than 350 customers and partners spans 10 industries and includes Accenture, Amazon Web Services, GovTech Singapore, Keppel Corporation, Microsoft, Nissan, PTT, Sonnen, Solarvest and Total. The company has around 700 employees and 12 offices across China, France, Japan, Germany, Norway, the Netherlands, the United Kingdom, and the United States, with headquarters in Singapore.

Turn data into value.

SCALE INNOVATION WITH ENVISION DIGITAL