



ORIX

Answers,
Custom Fit.

ORIX Renewable Energy Management Corporation



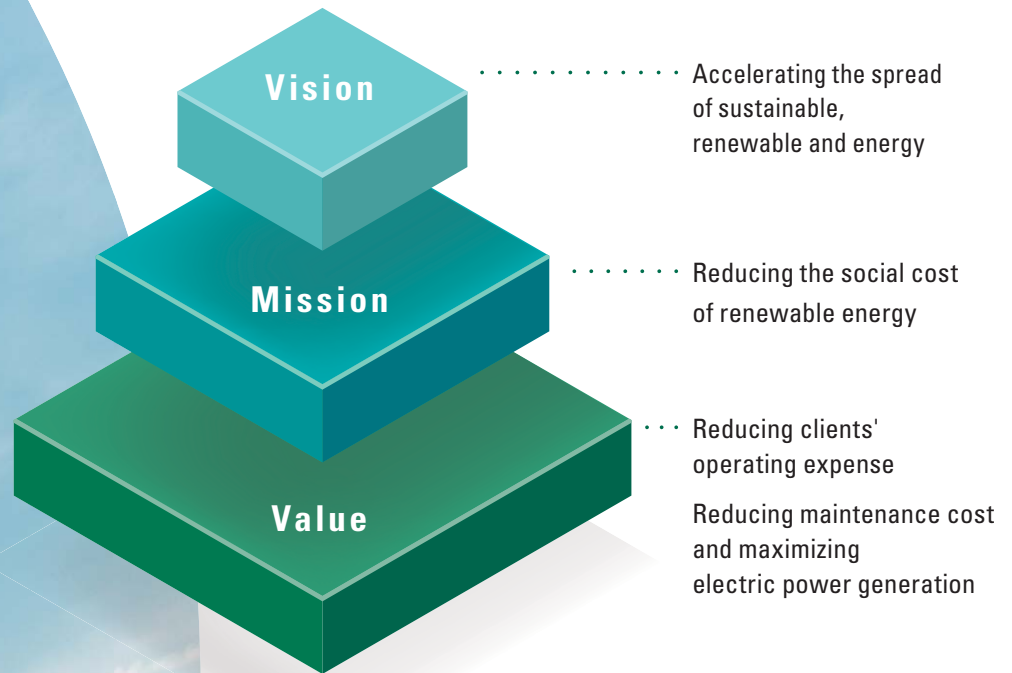


Creating a future one step ahead with energy control

Maximizing clients' revenue through the reduction
of Actual O&M cost

Working toward the reduction of social costs
in renewable energy and contributing to the development
of the Japanese energy market and "energy mix".

Corporate philosophy



Message

Aiming to fulfill our responsibilities as one of Japan's major independent power producers, ORIX Renewable Energy Management was established to operate, manage and maintain renewable energy power plants. As an AM/O&M company that manages its own electric power generation business, our company not only tries to achieve both the reduction of maintenance cost and the maximization of electric power generation, but also positions the reduction of our clients' operating expense as a core value. By forecasting and controlling electric power generation with respect to social problems, including the increased stress on interconnected grid associated with fast-growing renewable energy and the increased social burden due to the rise in the number of stand-by power generation facilities, we continuously work to alleviate the burdens of existing power producers and to reduce the social costs of renewable energy.

Competence



Engineering know-how

We are entrusted with the operation, management and maintenance of mega-solar power plants throughout Japan. With our unique know-how, we contribute to the realization of LCOE* suitable for each power plant.
*LCOE = Levelized Cost of Electricity



Stable business structure

As a 100% subsidiary of ORIX Corporation, our company has a strong financial base and is capable of providing stable services in long-term business operations.



Vendor network

We have built good, solid relationships with the EPC and many suppliers, enabling us to add significant value to our clients.

Power plant map

As of August 2020

86 power plants **450** MW

We are entrusted with the operation, management and maintenance of mega-solar power plants throughout Japan.

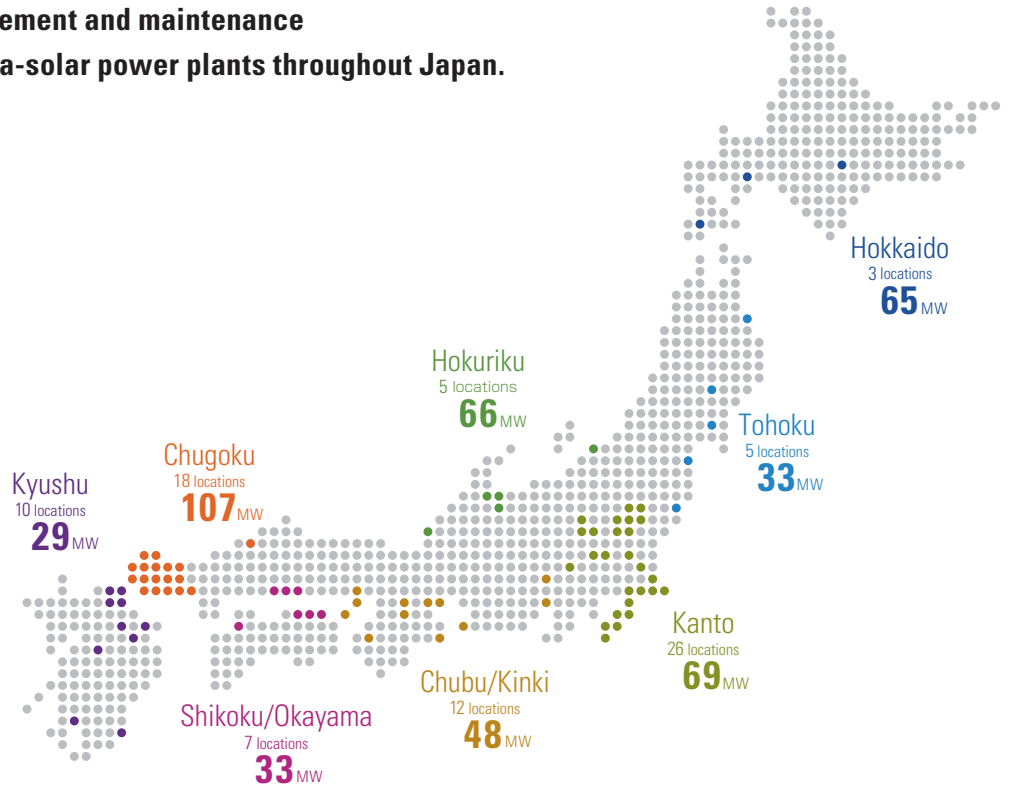
Remote monitoring

24 hours a day,

365 days a year

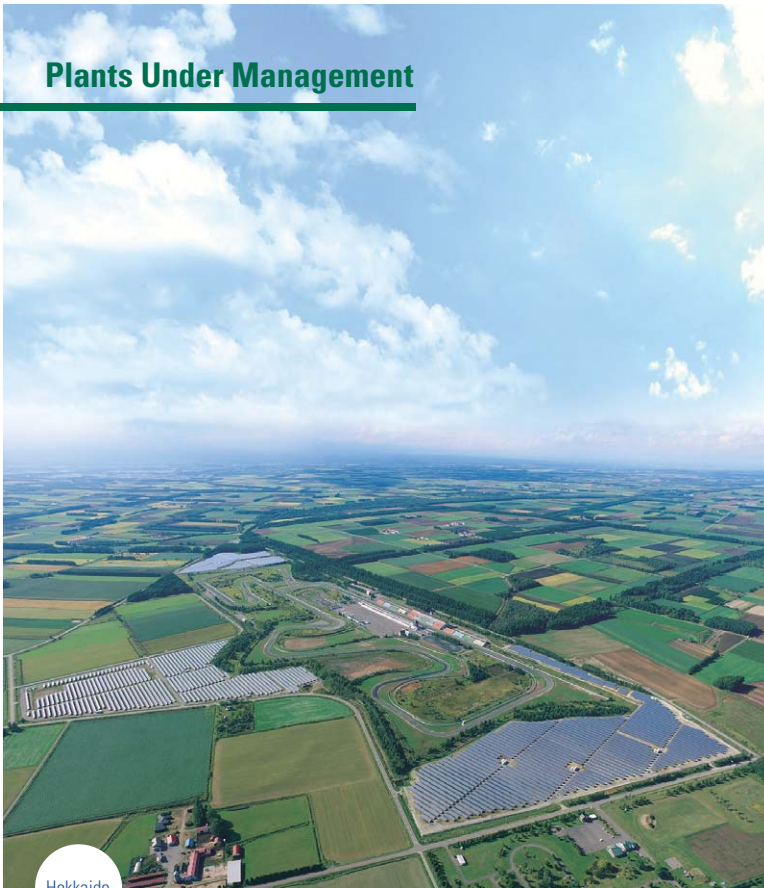
ORIX Renewable Energy Management Corporation takes on the O&M business operations of 450 MW-worth of mega-solar power generation at 86 sites across Japan and remotely monitors them 24 hours a day, 365 days a year.

We are setting up areas, each of which consists of 10 to 20 power plants and offices, in eight locations in Japan (scheduled to be completed by March 2022). Our engineers work together in teams in each area to manage the plants in their own areas.



Locations of plants are for illustrative purposes only.

Plants Under Management



Hokkaido

ORIX SARABETSU - TOKACHI MEGA SOLAR SPEEDWAY Solar Power Plant
Started operating on January 4, 2016 in Sarabetsu-mura, Kasai-gun, Hokkaido

21,967 kW



Niigata Prefecture

NIIGATA YOTSUGOYA Solar Power Plant
Started operating on July 1, 2018 in Yotsugoya, Nishi-ku, Niigata-shi, Niigata

55,610 kW

We guarantee speedy and credible maintenance by making the full use of our human resources, inventory and nationwide network.



Human resources

Many qualified personnel and high-quality services

Most of our employees are chief electrical engineers, who we deploy all over Japan.

Our qualified personnel

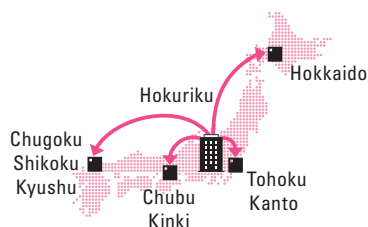
Name of qualification	No. of employees
Chief electrical engineer (1st class)	2
Chief electrical engineer (2nd class)	20
Chief electrical engineer (3rd class)	28



Inventory

Warehouses across the country and reassuring quantity of inventory

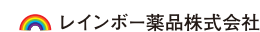
Inventory kept in such warehouses includes modules, measuring instruments, junction boxes, and many other spare parts and components. Even in the event of an unexpected problem, we guarantee to reduce the downtime and minimize the loss of power generation.



Network

More than 150 partners

We have built a network of domestic and international suppliers, ensuring our quick response to various situations.



Wakayama Prefecture

KINOKUNI COUNTRY Solar Power Plant
Started operating on December 1, 2017 in Kishigawa-cho, Kinokawa-shi, Wakayama

7,300kW



Hyogo Prefecture

MINAMI AWAJI Mega Solar Power Plant
Started operating on February 2, 2015 in Amanishi-machi, Awaji-shi, Hyogo

4,704kW

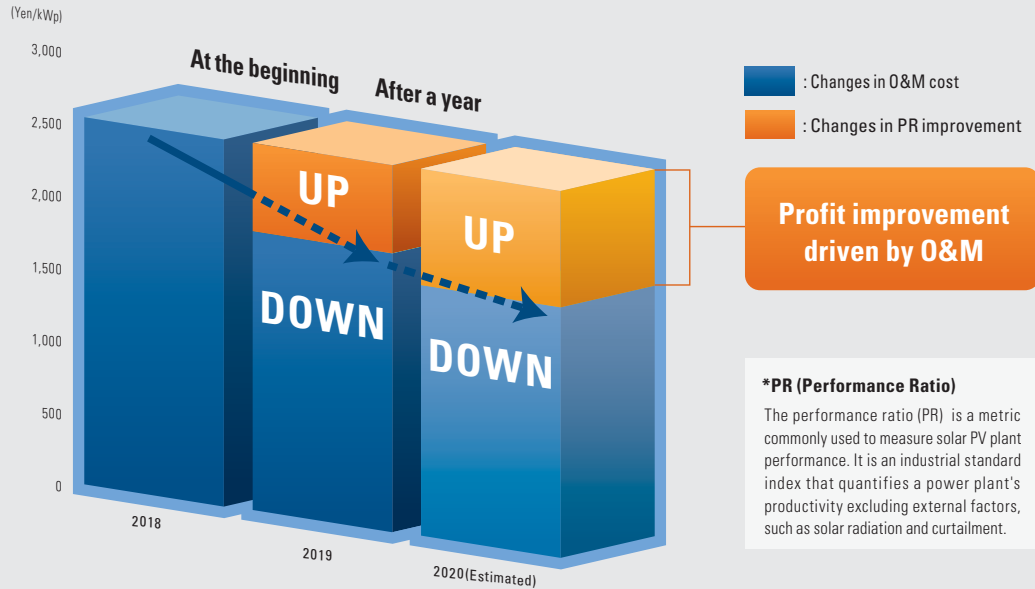
**Implemented preventive-maintenance to avoid risks at a power plant.
Through optimized O&M, we succeeded in keeping down a decline
in power generation attributed to aging degradation.**

Changes in O&M cost

<Example of a result of this effort>

Through our reconsideration of the O&M menu, inspections that utilize digital technologies, and thorough environmental improvements for each power plant, one year after the initiation of our business commission, we successfully improved the PR value* by 4%.

Business record from ORIX Corporation

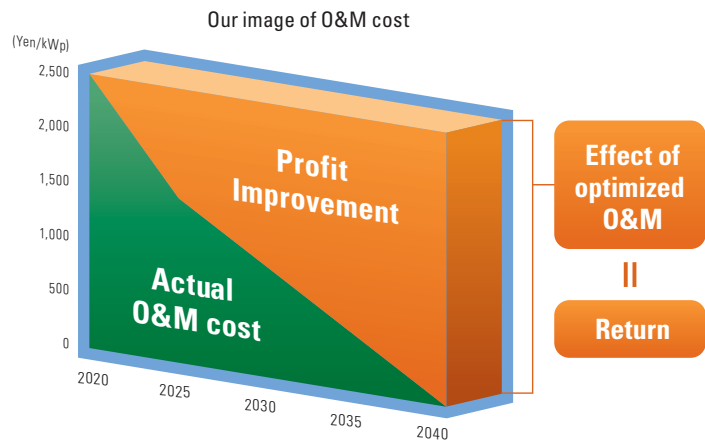
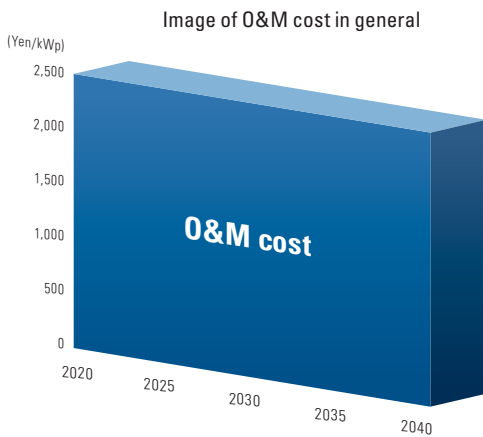


Our unique model

Aiming at Actual O&M cost of 0 yen by maximizing power generation

We reduce the Actual O&M cost and achieve the optimization of total costs through improving power selling profit.

Idea of Actual O&M cost : **O&M cost** - **Profit Improvement** = **Actual O&M cost**

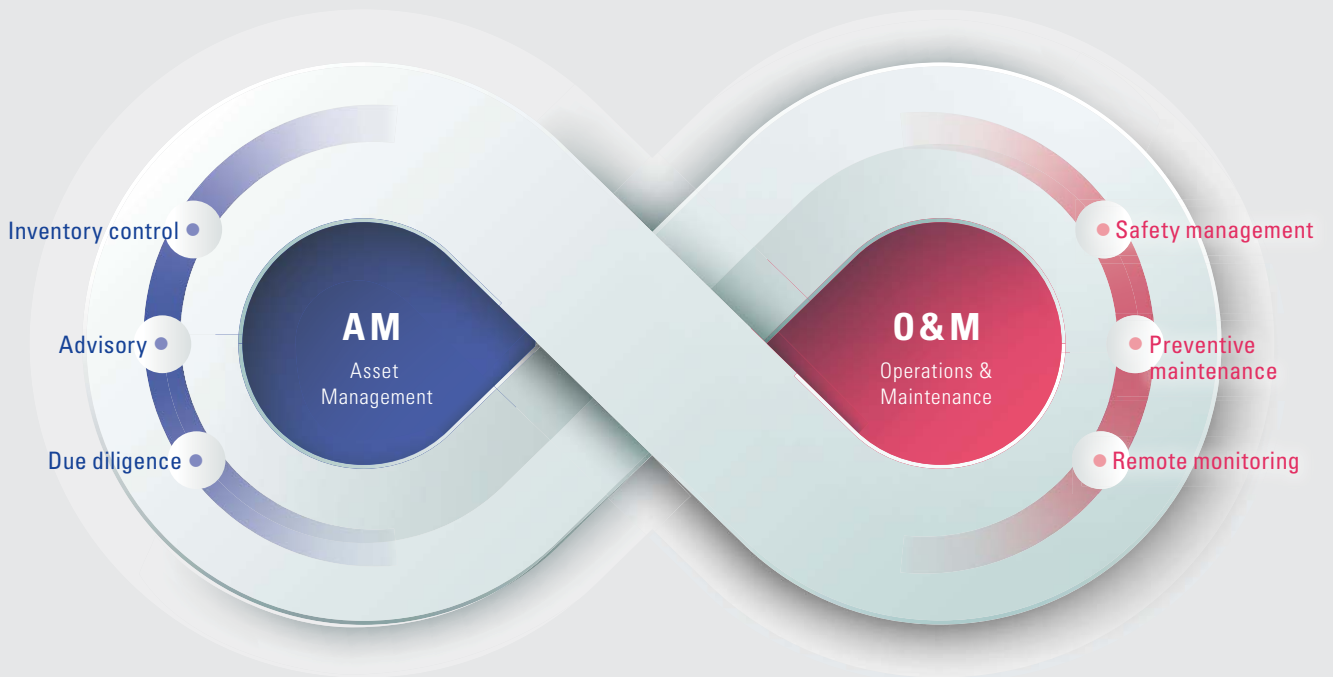


**O&M expenditure as a cost?
Satisfied with bare minimum maintenance menu?**

Keeping the maintenance menu at bare minimum for a short-time benefit will eventually lead to a steep decline of power generation. Implementation of optimum O&M will produce a power selling profit improvement effect and lead to the reduction of your actual O&M cost. Hence it is a smart way to improve your profitability from a long-term perspective.

Actual O&M cost of 0 yen.

As an AM/O&M company that manages an electric power generation business with our own group, we optimize AM and O&M to maximize the customer revenue through a total service that reduces maintenance and operation costs and maximizes power generation.



*CAPEX: Capital expenditure / OPEX: Operating expense

Range of services

From construction through acquisition of a power generation facility, we provide optimized proposals depending on customer's business phase.

Business phase	Details	Availability
 <p>Construction</p>	<ul style="list-style-type: none"> ● Acquisition of land rights (ownership/right of lease) ● Acquisition of FIT certification ● Discussions with electric power companies on Power Purchase Agreement ● SPC establishment ● Calculation of the power generation amount ● Due diligence <ul style="list-style-type: none"> Validation of EPC construction specifications and EPC agreement Validation of module/PV inverter warranty ● Construction management ● Document control 	<ul style="list-style-type: none"> × × × × × ○ ○ ○ × ×
 <p>Finance</p>	<ul style="list-style-type: none"> ● Negotiations of financing conditions ● Contract preparation ● Management/maintenance of collateral ● Covenants (DSCR/LTV) management 	<ul style="list-style-type: none"> × × × ×
 <p>Asset Management AM Operations & Maintenance O&M</p>	<ul style="list-style-type: none"> ● Inventory control ● Technical services ● Structuring ● Thorough checks of business plans ● Safety management ● Preventive maintenance/repair maintenance ● Reporting/remote monitoring ● Cashflow management ● Neighborhood management 	<ul style="list-style-type: none"> ○ ○ ○ ○ ○ ○ ○ ○ × ×
 <p>Acquisitions</p>	<ul style="list-style-type: none"> ● Due diligence <ul style="list-style-type: none"> Inspection of power plant performance Formulation of CAPEX/OPEX plans Validation of module/PV inverter warranty 	<ul style="list-style-type: none"> ○ ○ ○ ○

We develop a broad range of services that can meet customer's diverse needs, offering integrated services under unified management based on the know-how accumulated at power plants developed and managed by the ORIX Group.

Construction

Due diligence

- ▶ Validation of EPC construction specifications and EPC agreement
- ▶ Validation of module/PV inverter warranty

Asset Management

Inventory control

- ▶ Equipment/consumables management
- ▶ Equipment/consumables procurement

Technical services

- ▶ Agent service and support for key components' warranty contract
- ▶ Support for insurance claims

Advisory operations

- ▶ Structuring
 - Thorough checks of AM/O&M agreements and validation on scope of service
 - Thorough checks and validity diagnoses of insurances/guarantee agreements
- ▶ Thorough checks of business plans
 - Thorough checks and validity diagnoses of CAPEX/OPEX plans

Operations & Maintenance

Safety management

- ▶ Support for preparing security regulation
- ▶ Annual inspection based on the security rules
- ▶ Selections of chief electrical engineers
- ▶ External appointment (commission to Electrical Safety Inspection Association)
- ▶ Support for reporting based on the related laws
- ▶ Coordination support with the regulatory authorities and electrical power companies

Preventive maintenance/repair maintenance

- ▶ Weeding/tree cutting
- ▶ Patrols
- ▶ Module cleaning
- ▶ Diagnosis of module problems
- Solar maintenance
- IV tester
- Drone aerial photography (Solar power plant diagnostic service)
- ▶ Snow removal
- ▶ Minor repairs
- ▶ Troubleshooting
- Spare parts replacement
- Emergency service and response service with in a certain period of time

Reporting/remote monitoring

- ▶ Monthly report
- ▶ Annual report
- ▶ Monitoring of power plants 24 hours a day, 365 days a year with an AI (artificial intelligence) integrated monitoring system

Acquisitions

Due diligence

- ▶ Inspection of power plant performance
- ▶ Support for formulation of CAPEX/OPEX plans
- ▶ Validation of module/PV inverter warranty



Weeding (using grass cutters)



Module cleaning



Module replacement



Diagnoses of module problems



Diagnoses of module problems



Drone aerial photography



Solar power plant diagnostic service



AI (artificial intelligence) monitoring

Highly experienced O&M company equipped with construction management know-how under any environment. The company we can rely on with the long-term contract both in terms of O&M expertise and its service cost.

As an interconnection requirement, installation of storage battery, as a means to adjust power output, was imposed by the electric power company, ORIX Renewable Energy Management Corporation (OREM) participated in the project as an O&M company from a stage several months before the completion of the construction. OREM not only took care of the O&M service scope and budget, but it also played an advisory role for the building of an asset management system that could maximize the power plant operator's long-term profit. Specifically, OREM has provided the CAPEX plan, designed the after-sales service agreement with storage battery and PV inverter manufactures and prepared spare parts for kept components.

Moreover, at the request of the business owner, OREM sent several engineers to the site of the power plant for two weeks at the time of completion of the power plant construction. By linking the field investigation results and data analyses in the headquarters, the company conducted a screening test of the EPC construction specifications and offered advice on additional construction. Since the power plant began operating, OREM has continuously been involved in this project in cooperation with the business owner to meet the challenges in removing heavy snow falls and optimizing user parameter of the storage batteries.

— Please tell us about episodes from the development through to the operations.

Mr. Sugawara In the development phase of this project, we had a heavy fall of snow much more than we expected. This caused serious damage to the existing facilities, which prompted us to change the specifications significantly. This was one of our reasons for asking OREM to be our O&M company, because OREM has extensive knowledge and know-how about measures to deal with heavy snow in Hokkaido, where we have our power plant. It has been less than a year since the power plant started operating, but we have never had any serious problems, including accidents and disasters. We expect OREM to keep providing us with efficient preventive maintenance, and even if we have a serious accident or disaster, I think OREM will take the necessary measures promptly for us.



Mr. Hiroshi Sugawara

Power & Renewables Power Development Department
Idemitsu Kosan Co., Ltd.



Hokkaido SHIRIUCHI MEGA SOLAR 20M Power Plant

— Are there any differences between OREM and other O&M companies?

Mr. Sugawara Well, I think OREM is not simply concerned about prices and services, but I understood the company to have a corporate attitude toward improving the long-term service level. For example, a breakdown of a power conditioner generates an additional cost to send the manufacturer's engineers to the site, in general. However, OREM's field engineers are well trained to replace and repair PV inverter independently. Moreover, OREM purchases spare parts and components in advance, despite the limited budget. As I saw OREM strives to pursue O&M's role in reducing their clients' downtime in a honest manner, I felt their philosophy conforms with ours, which is to regard renewable energy business not only profit-making but also as a public business directed to support infrastructure. Furthermore, even during the negotiation on after-sales service agreement with the manufacturers, OREM not only pursued advantages and disadvantages from commercial perspective, but also patiently sought a point which is operationally feasible at the manufactures' end with a minimum risk.

— What do you expect from OREM for the future?

Mr. Sugawara What power generation business operators expect from an O&M company should include legal compliance (for example, appropriate maintenance and operation), realization of long-term stable power generation (appropriate preventive maintenance), and maximization of power generation amount (prompt and appropriate corrective-maintenance and appropriate field maintenance plan). Although the daily operation is plain and simple, I expect OREM to steadily carry out rational measures from an economic perspective. I know that OREM has undertaken many AM/O&M business operations in mega-solar power plants from ORIX Corporation, which is the parent company of OREM. Therefore, the company should be capable of meeting our high expectations in the future too. In the process of the spread of renewable energy throughout Japan from now on, I expect OREM to develop new O&M services, such as appropriate response to the curtailment instructions from the electric power company.

**Advanced O&M. A company with unique ideas.
Realizes innovative ideas and
continuously offers added value
to power generation business owners.**



Mr. Hideyuki Sakurai

Renewable & New Energy Sales Department
Renewable Energy & New Technology Division

**TOSHIBA MITSUBISHI-
ELECTRIC INDUSTRIAL SYSTEMS
CORPORATION**



TMEiC is a leading manufacturer of inverters for photovoltaic power generation (hereinafter PV inverter) in Japan, and ORIX is one of our major customers. In cooperation with OREM, we are now providing after-purchase-PV inverter service at 70 of ORIX's mega-solar power plants with AC capacity of more than 250MW (as of August 2020). TMEiC's PV inverter provide industry-leading generating efficiency and a wide MPPT control voltage range, which contributes to the maximization of power generation.

As a leading manufacturer in Japan, TMEiC has promptly established a maintenance service system, and we have introduced ORIX Corporation's extended warranty service with a periodic inspection, which ensures the reliability of our PV inverter. Accordingly, TMEiC takes the necessary actions responsibly, even in the event of an unexpected PV inverter outage until the system is restored.

OREM, our after-sales service partner, sends selected engineers to TMEiC every year, and TMEiC provides them with training on the primary response. Because of this training, OREM's engineers can give a primary response on site in the event of an unexpected PV inverter outage. Moreover, by procuring and managing common spare parts in warehouses, OREM provides added value; that is, the minimization of power plant downtime for power generation business owners. This corporate attitude is unique and shows that OREM regards the maximization of power generation capacity as the core service value, and that it always thinks about how to maximize the power generation amount without relying solely on the manufacturers. I believe this OREM's corporate stance also attracts us, manufacturers. Generally, it is said that the power generation amount decreases gradually due to factors such as the aging degradation of the modules, but OREM responds to this by carrying out cost-effective measures using big data. Judging from OREM's advanced approach toward O&M, I think that it will come up with innovative ideas that TMEiC cannot think of on maintenance of PV inverter, and that it will consult with us on whether its ideas are feasible in the future. I expect that OREM will continuously embody the company's new ideas toward the maximization of power generation.

**A company that smartly achieves productivity improvements
for O&M through the integration of its own ideas and IT**

Our company provides photovoltaic power generation monitoring systems (PVU-Finder) characterized by string monitoring. As an independent power producer, ORIX has adopted our string monitoring system cater to provide string unit irradiation data, and to integrate monitoring information of different types of PV inverter. As a system integrator for the remote monitoring of power plants, our company also offers services from all aspects for the power conditioner output control required by today's electric power companies.

In the process, monitoring system is generally delivered with the specification confirmation by EPC. But in ORIX Corporation's project, OREM clearly presented us with design and specification policies to take on the operations in which passing the specification check was just the first step. Particularly in terms of system construction, OREM's request was technically challenging, such as data collection process of on-site SCADA, duplication of SCADA for robustness and improving variation of data transfer options. To meet OREM's requirements, our company tried to increase our advanced technological capabilities as much as possible to re-build the monitoring system. As a result, we were able to deliver our system to OREM. These high requirements come from their unique background, combining the IPP and O&M perspective in place. In addition to remote monitoring, OREM has already started introducing monitoring/automatic analysis software using artificial intelligence (AI). Unlike existing software, the software OREM introduced analyzes the data collected by itself and quantifies and provides information that is beneficial to users. This software provides the functionality for analyzing power generation data automatically and notifying the locations of defects and the lost profits through real-time monitoring and based on a huge number of past data logs. As I mentioned above, what differentiates OREM from other O&M companies is that OREM does not simply take care of maintenance, but it also implements a cutting-edge approach through integrating engineering, operations and IT. We will continuously strive to improve our services by transforming the monitoring and control system compatible with energy forecast and curtailments.

**Introduction of a greening plan through a combination
of multiple preventive measures in consideration of restrictions,
such as the characteristics of each power plant
and regional circumstances**

RAINBOW CHEMICAL CO., LTD., is a member of the Sumitomo Chemical Group. As environment improving and problem solving company, we provide a variety of products and services. All the herbicides we produce are "ordinary substances" (a general term for substances that do not fall under the Poisonous and Deleterious Substances Control Law). Because our herbicide inhibits physiological metabolism (for example, photosynthesis) specific to plants to dry out vegetation, the safety of humans and animals is ensured. Our products never contain dioxin, which is a controversial substance when we talk about Agent Orange. As a result of various toxicity tests, OREM has confirmed the safety of our products and chosen them for its use.

As weed grows and covers solar panels, the power generation amount goes down drastically. If such a situation continues over a long period of time, the power plant can become a loss-making facility and, in the worst-case scenario, a fire can break out. Using manpower for weeding management requires labor cost, and moreover, it can lead to an accident, of an electric power line cutoff. On the other hand, even the safety is scientifically guaranteed, herbicide application is often avoided given the concern of negative impact for neighboring farmers. In the mega-solar power generation business, weeding management appears the simplest issue but, at the same time, it can be the most difficult problem to solve. OREM combines multiple measures, including clover seed dispersal, pyrroligneous acid dispersal, the use of grass cutters, and human efforts to formulate an appropriate weeding management plan. As a result, the company has established a greening plan that takes into account the community and natural surroundings. Furthermore, although the safety of all of our products are guaranteed, OREM took a step further to take into account of each plant's characteristic and restrictions to set a range of herbicide application, and moreover, it also uses chemicals and repellent substances as chemical protection to minimize damage caused by wild birds and animals. In power plant business management that requires long-lasting stability, OREM establishes methods tailored to the environment of each mega-solar power plant. The company not only ensures a good amount of power generation, but it also successfully maintains greening environments while controlling external factors, including weeding and keeping cost low.



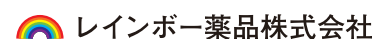
Mr. Takayuki Goto

System Solution Department
Development Management Division
ONAMBA Co., Ltd.



Mr. Kazuhiro Suzuki

Green Management Department
Sales Management Division
RAINBOW CHEMICAL CO., LTD.



Quality policy

Our company shall continuously offer the highest quality services that will improve client satisfaction with our identity and added value.

To achieve the objective, we shall ensure the following themes:

- 1 . We shall enhance the security of our clients' facilities and aim for service quality that maximizes their business income.
- 2 . Every employee in our company shall strive to meet requests from interested parties, including our clients, and they shall observe related laws, regulations, and requirements.
- 3 . We shall review your business operations systematically based on the PDCA cycle and conduct improvements continuously.
- 4 . With improving client satisfaction, improving in-company environments, and improving employee skills as our three major themes, we shall build and operate a system for practicing objective management effectively.
- 5 . To make it possible to maintain and improve quality continuously, we shall work to ensure profit above a certain level.
- 6 . Through continuously developing human resources, we shall achieve corporate quality that contributes to the maturation of the renewable energy industry.

Corporate profile (As of August 2020)

Company name	ORIX Renewable Energy Management Corporation
Foundation	June 2018
Headquarters	2nd floor, Nakojikiba Building 4-12 Kiba 1-chome, Koto-ku, Tokyo, 135-0042 Japan TEL. 03-6666-7501 FAX. 03-6666-7502
Number of employees	70
Description of business	Asset management, operation, and maintenance of mega-solar power plants
Local Offices	Kanto Office : Togane-shi, Chiba Chubu/Kinki Office : Okazaki-shi, Aichi Shikoku Office : Ayauta-gun, Kagawa

Official website <https://www.orix.co.jp/orem/>



FS 725035