

Nipron Wave

Vol.49 2017 Autumn




This is the highlight!

1 Nipron PV solution

An introduction of PV eXpander, a surplus power storage system, for the maximum utilization of limited land.
An introduction of PV Guardmyan that supports the maintenance and operation of PV power generation.

2 Case examples

An introduction of installations, for which PV Maximizer was effective.



2017 price of electricity
power 21 yen/ kWh

2018 price of electricity
power 19 yen/ kWh?



Eyeing the age of revised FIT of 21 yen, high yield sale of electricity is still possible

Photovoltaic power generation business with a room for ideas and ingenuity

I want to run a business of photovoltaic power generation but is it too late with the unit price of electricity sales reduced to 21 yen/ kWh?

I am running a business of photovoltaic power generation but should I be looking for the way out with the reduced unit price of electricity sales of 21 yen/ kWh?

**No,
it's still possible to
gain a remarkable
yield.**

Nipron PV solution

- Maximum utilization of limited land
- Enhanced efficiency of power generation
- Reduction of contribution for grid connection
- Reduction of land improvement cost
- Reduction of lead time for grid connection
- Reduction of O&M cost

Remarkable yield even with 21 yen/ kWh!

<http://www.nipron.com>

Optimum solution proposed for the PV system

<http://www.nipron.com>

1. Maximum utilization of limited land

With the PV Maximizer, it is possible to increase the amount of power generation by filling a limited space with panels.

Concentrated installation of panels

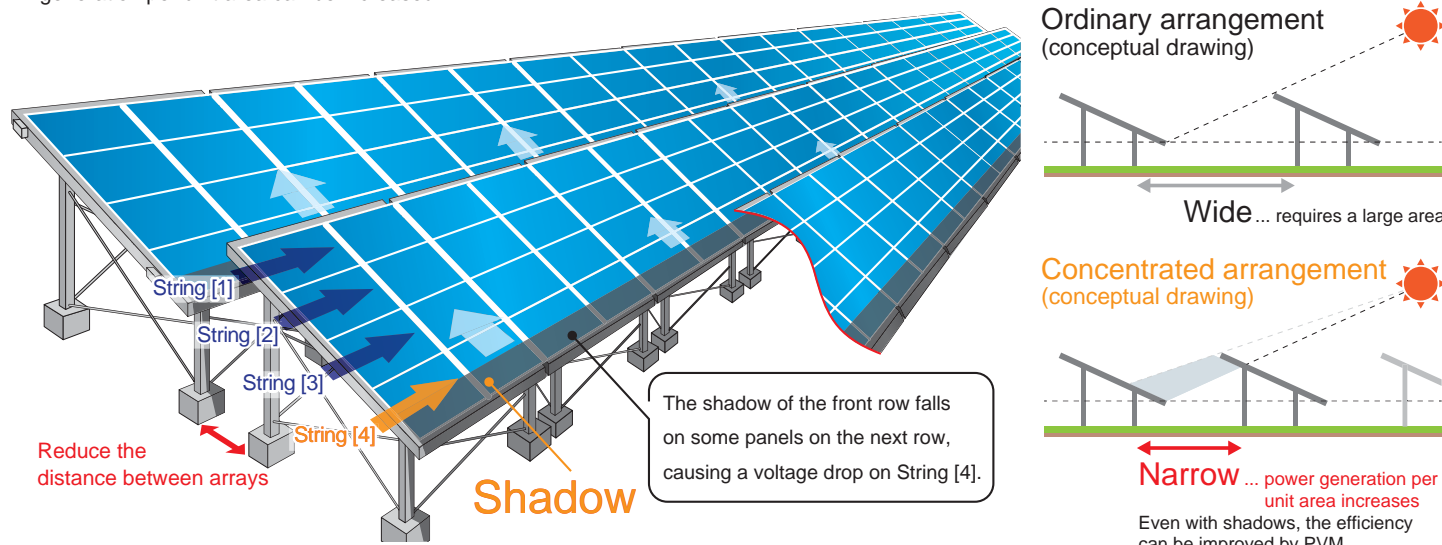
Mixed installation of different panels

Adding panels in all sides

Install panels without worrying about shadows and fractions

Concentrated installation of panels

Concentrate panels by installing them with a shorter interval of arrays. This type of installation is enabled by the PV Maximizer (PVM), which increases the power generation even if shadows were cast on the arrays. By installing a larger number of panels than expected, the power generation per unit area can be increased.

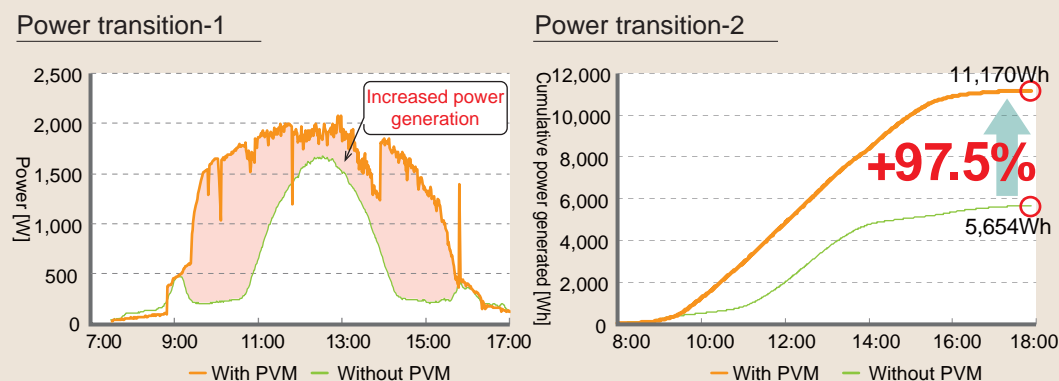


Why is it OK to have shadows cast on the panels?

How does the PV Maximizer limit the effect of shadows?

With a reduced distance between arrays, some panels may be shadowed depending on the time of day, dropping the string voltage. If this happens, the power generation drops because the voltage of other normal strings is also affected. PVM eliminates the voltage gap between strings by boosting the voltage of affected strings to the voltage of other strings while maintaining the maximum power point and makes it possible to retrieve the maximum power from the panels available for the power generation, increasing the revenue from the sale of electricity.

Shown on the right are the charts of power generation measured at a power station with conditions similar to the above. It can be observed that the power generation is doubled with the presence of PVM.



An overwhelming effect on PV systems not performing well!

<http://www.nipron.com>

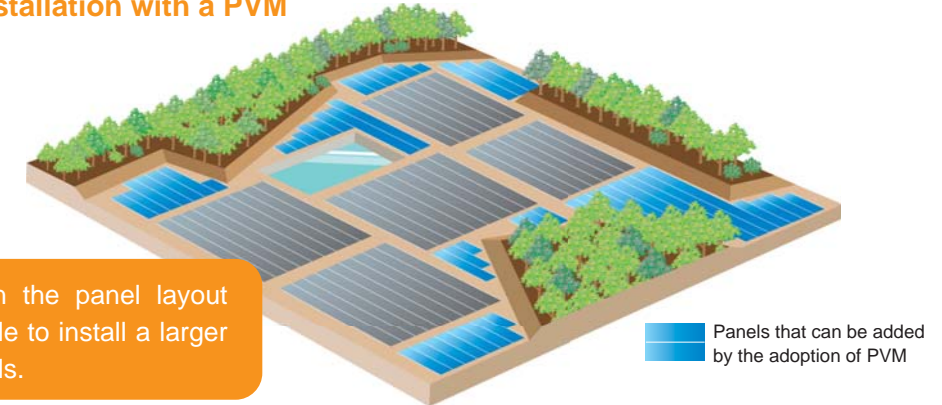
Mixed installation of different panels enabled

By using different types of panels (polycrystalline, mono-crystalline, amorphous, CIS or different makers) effectively depending on the location, an optimum power generation can be performed with a consideration to the cost-effectiveness. For example, it is possible to use low cost panels depending on the location.

Install panels without worrying about shadows and fractions

A sufficient level of power generation is possible by installing panels in a small area or places shadowed by trees or mountains, which had been neglected. Since the number of panels can be increased for the same land, the power generation per unit area can be increased.

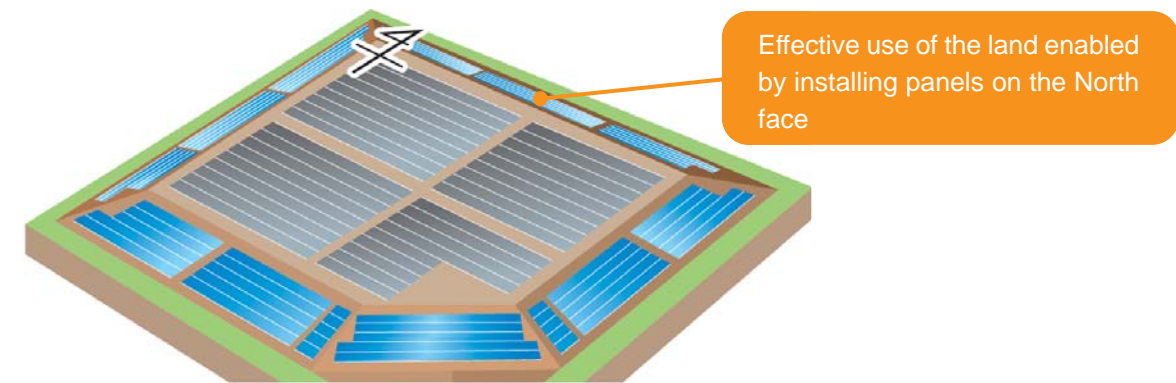
An image of installation with a PVM



The freedom in the panel layout makes it possible to install a larger number of panels.

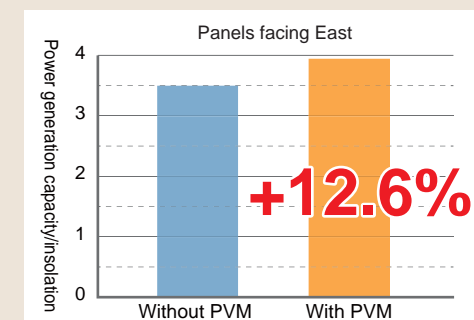
Adding panels on the slope in all sides

The common sense is not to install panels in locations with poor conditions, such as a slope facing the North, because it will have an adverse effect on the power generation in the existing panels. The connection of PVM makes it possible to maximize the power generation by minimizing the power loss on existing panels. Depending on the condition, the number of panels may be increased by 50% to 100% from the conventional design, resulting in a significant gain in the power output.

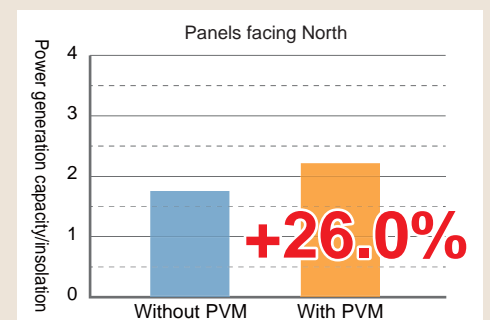


Shown on the right are the charts of power generation measured at two different types of installations, one with the PVM and another without it while panels are installed on the East and North fronts in both cases. It is observed that the power generated is increased by 12.6% and 26% on the East and North faces, respectively, with the PVM.

Power transition-1



Power transition-2

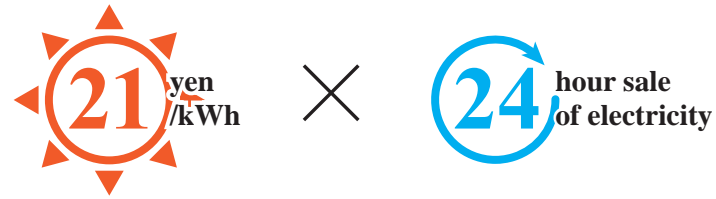


Reduce the cost of land improvement and make the most out of the land

<http://www.nipron.com>

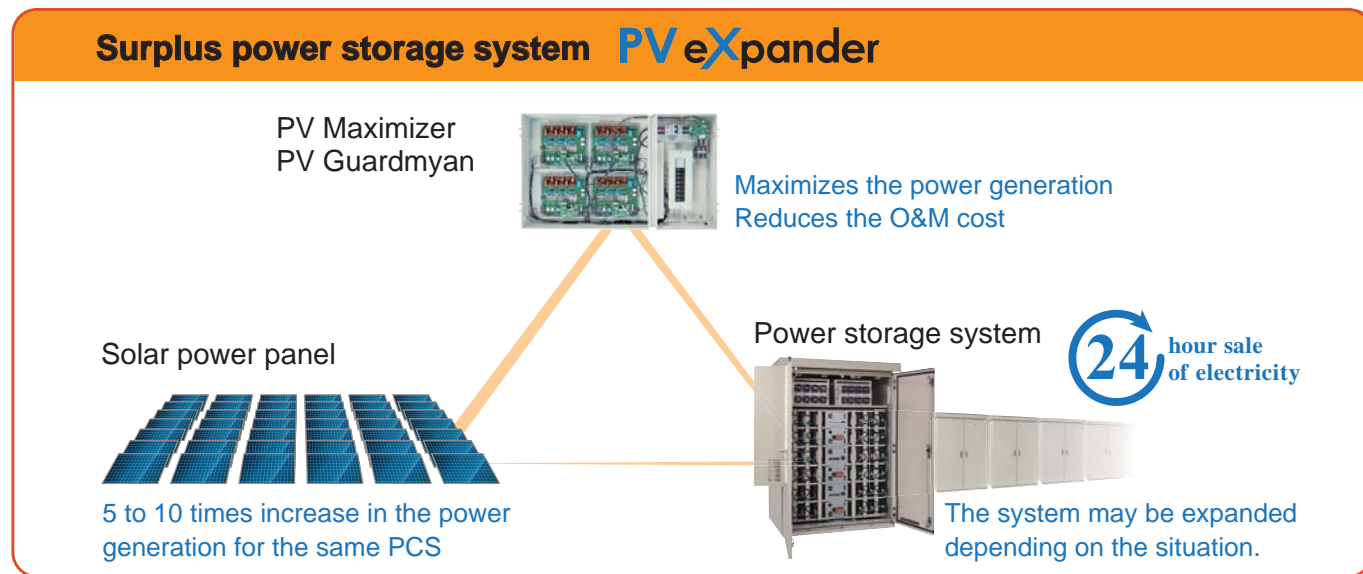
2. Reduce the cost by limiting the approved capacity

24-hour sale of electricity with five to ten times larger number of panels for the same PCS and a power storage system



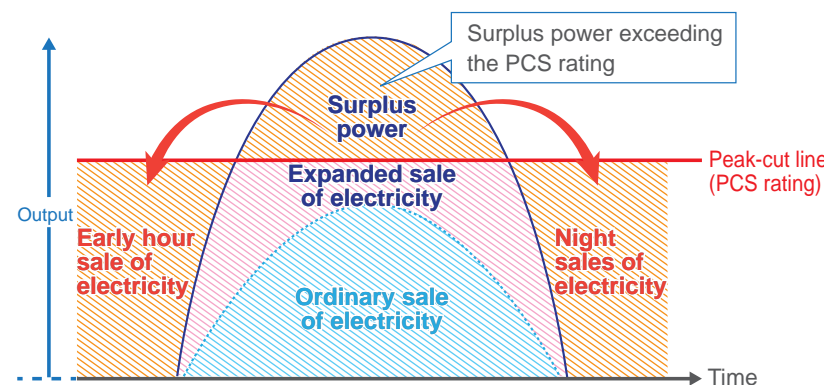
Hold down the installation cost and contribution for grid connection by overloading the PCS by five to ten times and increase the revenue from electricity sales by supplying the power around the clock by storing surplus power in batteries. It is also possible to reduce the cost of land improvement because panels can be installed on a ground with poor installation conditions by adopting the PV Maximizer.

Solve the problems of expensive cost of high-voltage grid connection and restrained power generation with the adoption of PV eXpander, power storage system.



Effective use of surplus power by storing it

In addition to the increase in the system utilization due to an increase in the power generation (expanded sale of electricity) by overloading, the surplus power exceeding the PCS capacity shall be stored in batteries and sold at night to boost the system utilization close to 100%.



Increase the revenue with a power storage system and reduce the expensive cost of grid connection

<http://www.nipron.com>

Utilizing the PV eXpander to make a low-voltage grid connection of 300 kW panels

For a low-voltage grid connection below 50 kW, it is possible to hold the initial and running costs lower than those of a high-voltage grid connection. According to the installation standard for the low-voltage, a low-voltage grid connection is allowed for a system if the capacity of the solar power panels or PCS, whichever is smaller, was below 50 kW. With the PV eXpander (PVX), a low-voltage grid connection is made for a PCS of 49.5 kW by installing panels amounting to 300 kW. However, simply doing this does not translate to a large benefit because the surplus power exceeding the PCS capacity is too large. Therefore, the surplus power shall be stored in batteries and sold at night to increase the system utilization and the revenue from the sale of electricity.

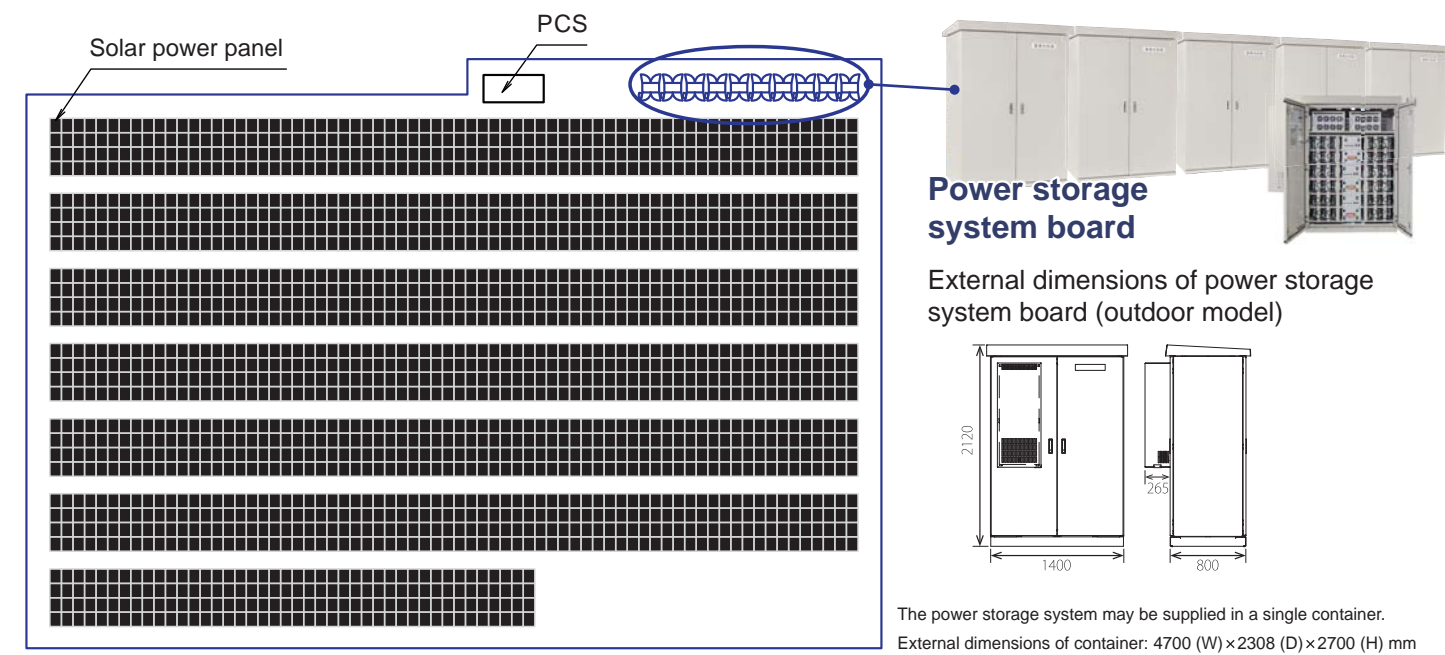
Solar power station with a low-voltage grid connection

- In comparison with the high-voltage grid connection, **The application is easier.**
- Lower initial cost**
- In comparison with the high-voltage grid connection, **Lower contribution for the grid connection**
- Reduced running cost**
- Appointment of a fulltime chief electrician is not required.**
- In comparison with the high-voltage grid connection, **Power generation can be started relatively earlier.**

PCS: Approximately 49.5 kW
Solar power panels: Approximately 300 kW (six-times overloading)
Battery capacity: Approximately 400 kWh

Area of land required for the installation of 300 kW

→ **Approximately 3,300 m²**



Connection between the extra-high-tension grid and the high-voltage grid is also supported.

The PVX supports not only the connection between the high-voltage grid and the low-voltage grid, but also the construction of a large-scale system of extra-high-tension panels of less than 2 MW with a high-voltage grid connection and stores surplus power.

Advantage of the extra-high-tension and high-voltage grid connection

- Avoid the extra-high-tension grid connection, which has been designated for bidding
- Obtain a unit price of electricity sales more advantageous than bidding**
- In comparison with the extra-high-tension grid connection, the contribution for the grid connection can also be
- Significantly reduced**

Increase the sale of electricity with a continuous operation up to 24 hours

<http://www.nipron.com>

3. Reduction of O&M cost with a precision monitoring

The O&M (operation and maintenance) obligation required by the revised FIT law is supported by a highly accurate, remote string monitoring

Accurate remote monitoring service PV Guardmyan *PVGuardmyan*

Although the photovoltaic power generation was known to be maintenance-free, the revised FIT law prescribes the obligation of O&M for the operator. The PV Guardmyan (PVG), an accurate remote string monitoring system, enables a precision remote monitoring while restraining the cost. With the PVG, it will be possible to make an early restoration of the system and perform preventive maintenance to reduce the loss of sales of electricity and limiting the O&M cost.

Remote monitoring is essential for the safe operation of the system and protection of the revenue.

With no remote monitoring system:

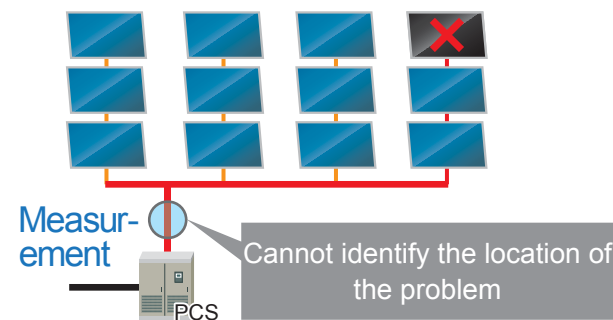
- Repeated maintenance is difficult for a power station located a far
- Minor losses will be overlooked
- Measurement is time-consuming and expensive

With a simple monitoring system:

- False alarms issued due to the lack of precision
- Problems may be detected but finding the cause is difficult
- Money and time need to be spent to identify the cause of a problem

Ordinary monitoring system

Because of a bulk control by the PCS, only the current can be monitored, leaving a concern for the accuracy. In addition, the types of panels and PCS suppliers supported may be limited.



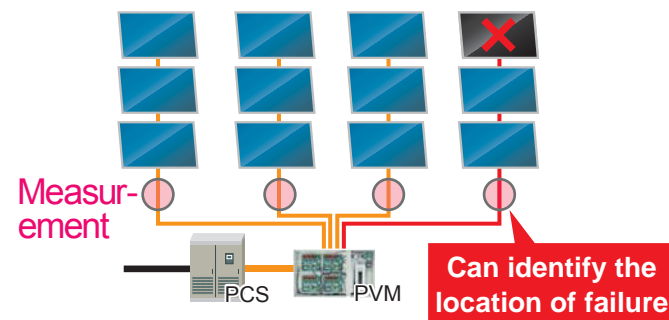
With the cause unknown and the need for a large amount of cost and time, **The loss of opportunity can be expensive**

The PV Guardmyan resolves all problems!

- Fully automated diagnosis utilizing AI
- In-depth inspections made easy by the remote and automatic characteristic curve diagnosis
- Daily diagnosis with the remote inspection
- Features an automatic mailing system in case of an emergency

Monitoring by PV Guardmyan

Diagnosis with the I-V curve is possible by monitoring the current and voltage of each string. It is also possible to identify the string with a problem immediately.

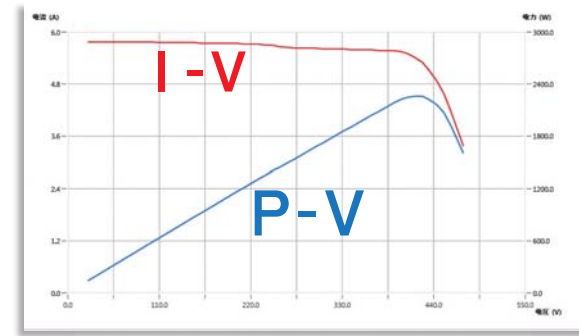


With the cause known, it is possible to respond quickly to **Minimize the loss of opportunity**

Automatic diagnosis utilizing AI <http://www.nipron.com>

Accurate monitoring with a system unique to Nipron

Common monitoring system only monitors the current. For this reason, it is necessary to have a specialized contractor perform manual measurements of each string on site if the I-V and P-V curves (characteristics) need to be obtained. However, since the PVG adopts a unique monitoring system, an accurate monitoring using the I-V and P-V curves is possible from a remote location. Since the measurement data are accumulated on a cloud server, it is also possible to compare past and present conditions to determine the drop in the power due to aging.



- The accuracy of monitoring is high because the I-V and P-V curves can be obtained remotely and early detection of problems is enabled.
- It is possible to monitor the power generation over the Internet.
- The power generated, temperature and insolation can also be checked.

Is the I-V curve necessary?

There are problems that can only be determined by obtaining the I-V curve

The diagnosis of a photovoltaic power generation system shall be done by measuring the open-circuit voltage of each string after shutting down the system. However, since the voltage is present as long as the panels are connected even if the resistance had been increased due to poor soldering or deterioration, there will be no change in the open-circuit voltage and it is impossible to find problems. To perform an accurate diagnosis, it is essential to obtain the I-V curve by measuring both the current and voltage. Because the PVG is capable of monitoring the system accurately without stopping it, a diagnosis using the I-V curve can be performed daily.

Power generation problem diagnosis feature

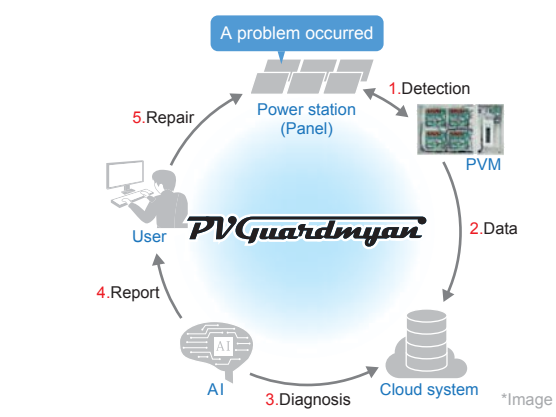
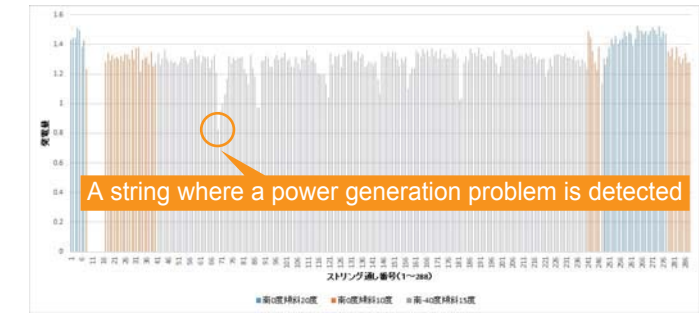
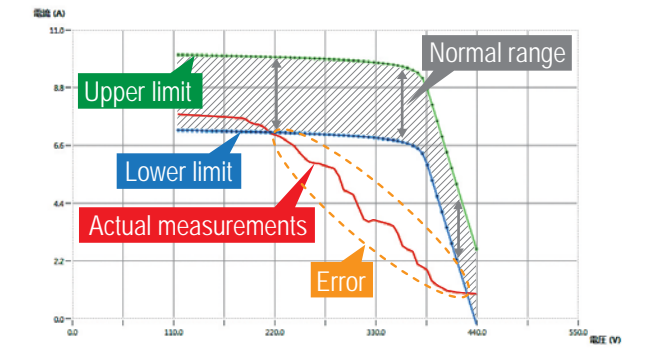
By monitoring the PV panel performance remotely and quantitatively in multiple dimensions, there is also a plan to enable a diagnosis on a cloud server utilizing AI based on the configuration and environments of the power generation system.

Major diagnosis features

- Diagnosis based on the amount of power generated (power generation analysis)**
→ Identification of erroneous strings by comparison of power generated
- Diagnosis from I-V curves data (I-V characteristics analysis)**
→ Diagnosis of erroneous strings by I-V curves analysis
- Failure analysis utilizing AI (under development)**
→ Learning data accumulated on a cloud storage and performing diagnoses suitable for each system

Concepts of diagnosis feature

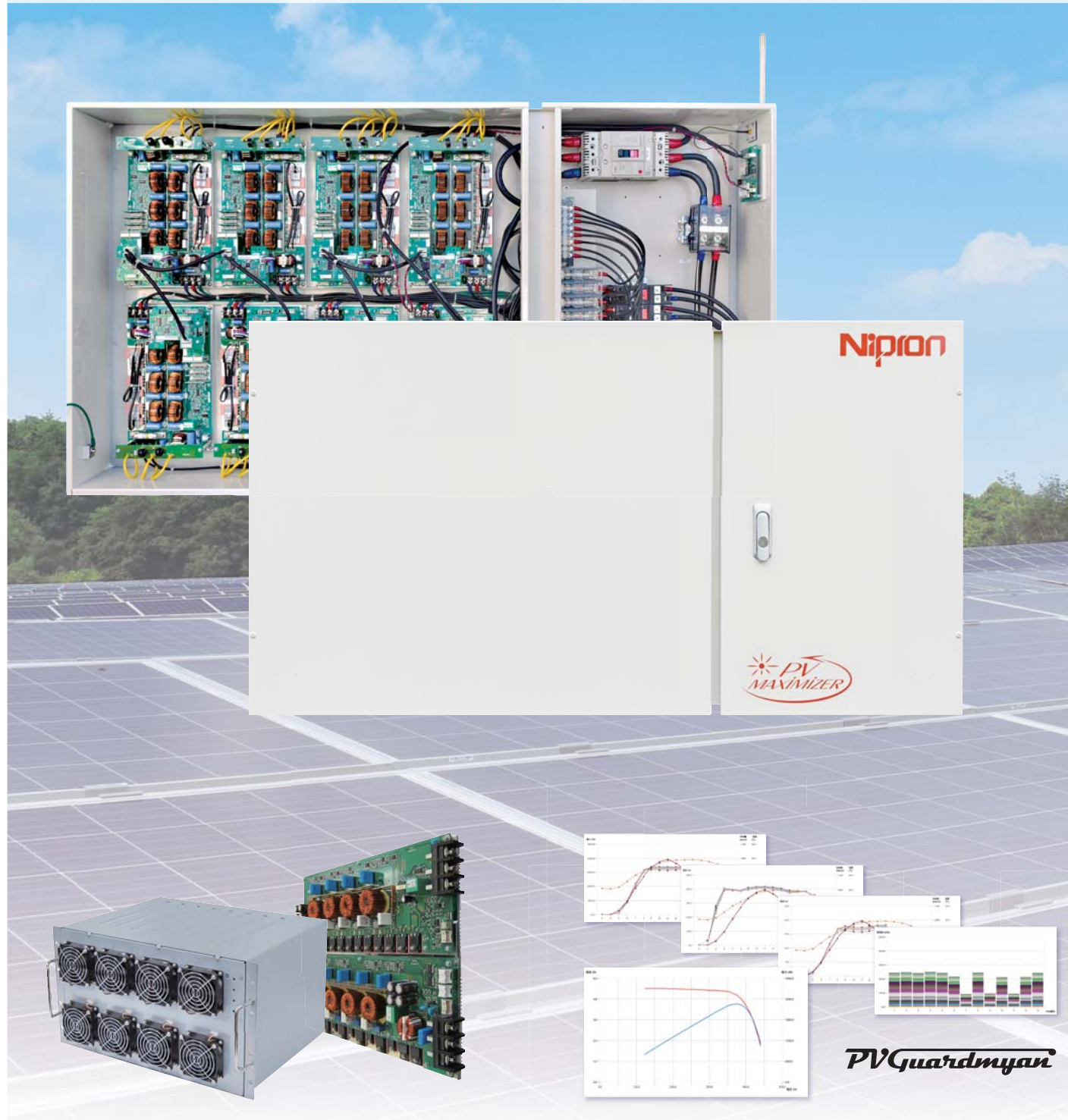
- By analyzing the I-V curves and, if an abnormal measurement was found, it is diagnosed that there is a problem in the string. (Under development)
- Because the power generation is monitored string-by-string, it is easy to determine the string with a trouble. (Under development)



Automatic, daily and remote acquisition of PV characteristic curves <http://www.nipron.com>

Installation examples

There are many installations of the PV Maximizer, Green Best Mix power supply (GBM) and PV Guardmyan. The customers have a variety of problems, such as shadows cast on the panels, inability to install panels due to uneven numbers of panels between strings, desire to use panels different from existing ones, etc. Presented below are some examples of solving such problems by installing Nipron products.



PV Maximizer to enhance the efficiency of power generation <http://www.nipron.com>

Kowa Inc.

Yamabe-gun, Nara Prefecture



PV Maximizer



PV Guardmyan, wireless communication device



Products supplied
PV Maximizer
PV Guardmyan

1400kW PVM PVG

1.4 MW system installed a new in spaces left in an existing mega solar power plant

Kowa Inc. is a company that runs Meihan Sports Land, an auto-race circuit in Nara Prefecture. In the second and third phases of building a power station, where available space was limited, the customer had adopted Nipron's proposals of new and additional installations using the PV Maximizer.

Yamakoh Co., Ltd.

Ujitawara-cho, Kyoto



PV Maximizer



Power control GBM



Products supplied
PV Maximizer
Green Best Mix power supply

238kW PVM GBM

Exceeding the limit of connected capacity of power conditioner, 200% super-overloading achieved by the combination of the PV Maximizer and a Green Best Mix power supply

As a company that deals in environment-related materials, Yamakoh Co., Ltd. continues to make their products more environment-friendly products and, at the same time, is also aggressive in introducing photovoltaic power generation. They have adopted our proposal of super-overloading in constructing their plant No.2.

"M" Company

Northern district in Mie Prefecture



Aerial photo of the power station



Maximizer



Products supplied
PV Maximizer
PV Guardmyan

270kW PVM PVG

Effective use of narrow slopes
Panels installed on the slopes surrounding the area

This customer has adopted Nipron's proposal for additional installation utilizing the PV Maximizer in empty spaces, which were left because of poor conditions for the panel installation, including those facing the North. In addition, the company also adopted the PV Maximizer for existing panels to implement an accurate string monitoring utilizing the product.

PV Maximizer offers a healthy power generation with panels installed on all sides <http://www.nipron.com>

GAT Co., Ltd.

Niimi City, Okayama Prefecture Installation: Makitech Japan Corporation



Products supplied
PV Maximizer

283kW PVM

Panels installed on a land with poor conditions by utilizing the PV Maximizer.

Because the PV Maximizer performs an optimum control (MPPT control) for each string, it is especially effective in installing panels on a land with poor conditions, such as a slope facing the North or a ground susceptible to shadows.

The adoption of PV Maximizer was a result of the customer's appreciation of its effectiveness.

“A” Company

Miyoshi City, Hiroshima Prefecture



Products supplied
PV Maximizer

536kW PVM

A low-voltage solution that realizes benefits of a high-voltage system in a low-voltage installation and reduces the costs of equipment and electric works.

A low-voltage solution was adopted to obtain the benefits of a high-voltage 1,000 V system with a low-voltage 600 V system by utilizing the PV Maximizer.

Hannan Sangyo Co., Ltd.

Awaji City, Hyogo Prefecture



Products supplied
PV Maximizer

61.5kW PVM

Expand the profit from electricity sales by added installation of different panels

Hannan Sangyo undertakes the business of electricity sale with photovoltaic power generation. They adopted Nipron's proposal for adding CIS panels for an existing power station using mono-crystalline panels.

Real Estate Management Center Co., Ltd.

Hakodate City, Hokkaido



Products supplied
PV Maximizer

182.58kW PVM

Added installation in small empty spaces by taking the advantage of PV Maximizer

A proposal for adding panels in empty spaces, for which the installation of panels was withheld because of uneven numbers of panels, utilizing the PV Maximizer was adopted.

THE-FARM Co., Ltd.

Ryugasaki City, Ibaraki Prefecture



Products supplied
PV Maximizer
PV Guardmyan

1874kW PVM PVG

The PV Maximizer and PV Guardmyan introduced in a new solar power station of approximately 1.9 MW.

The PV Maximizer and PV Guardmyan were adopted to enhance the power generation efficiency of the solar power station, reduce the loss of opportunity with the accurate monitoring system and reduce the O&M cost.

SAKURA Internet Inc.

Ishikari City, Hokkaido



Products supplied
PV Maximizer

200kW PVM

A stable supply of power to a system with HVDC

SAKURA Internet runs a large-scale data center in the city of Ishikari, Hokkaido. The data center uses a high-voltage DC (HVDC) power supply system and the PV Maximizer was employed to boost and stabilize the DC voltage obtained in the solar power station and supply it to the HVDC system.

PV Guardmyan brings about a revolution in O&M

<http://www.nipron.com>

PV Maximizer is also suitable for HVDC power supply systems

<http://www.nipron.com>

Report of exhibition

Report of Exhibition of INT'L SMART GRID EXPO OSAKA

Nipron participated in the 4th International Smart Grid EXPO OSAKA, which took place at INTEX Osaka from 20th to 22nd of September.

Nipron's booth highlighted the PV Maximizer, which maximizes the power generation by reducing the drop in the performance caused by various reasons, the PV eXpander, which is a surplus power storage system enabling a continuous sale of electricity up to 24 hours, and a demonstration of PV Guardmyan, a remote monitoring system with a variety of options for measurement, automatic inspection and fully automated routine diagnosis to eliminate losses and wastes for enabling an optimum operation of power station.

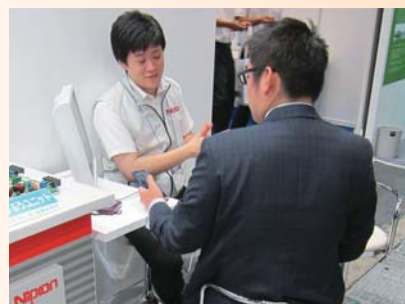
Presentations of respective products were also given every hour, catching the attention of many visitors passing by.

Also included in the exhibition were panels introducing past projects. Nipron offered a simulation of a system to whomever showing interest in the products at the simulation corner.

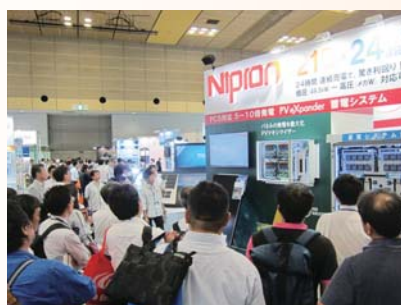
As evidenced by an increased number of inquiries received immediately after the exhibition, it was an opportunity for us to reconfirm the increased attention on the power storage system.



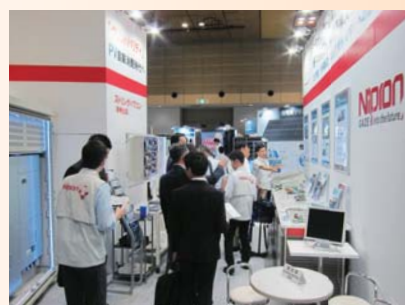
Scene of Nipron's booth



Simulation corner



Presentation



Scene of Nipron's booth

A BBQ party for new recruits

It was a fun barbecue party

On September 30, a BBQ party was held in the Hattori Ryokuchi Park to acquaint eight new recruits (six humanities majors and two science majors), who are expected to join the company next April, with Nipron employees. Unlike the days before, the day was exceptionally nice with cool breeze. The newcomers of this year prepared for the BBQ and treated the new recruits to grilled meat and fried noodles to welcome them. It was the first occasion for the new recruits to meet each other and they had a good time chatting over the schools they come from, their hobbies, and so on. Some were busy asking questions about the work and orientation to senior employees and everybody seemed to be looking forward to the initiation in April, next year.



New recruits and employees

Senior employees infusing energy to the party



Chatting over the food

Looks like a fun talking to senior employees

Newcomers of the year made the preparation

Some brought their own fire starters



Newcomers preparing for the party

Everybody was happy



The scene of the party

A diversity of power supply unit is available. First of all please telephone us. <http://www.nipron.com>

President talks! TOP sales corner.

26th Utility of PV Maximizer: A 5–10% increase in power generation when retrofitted to an existing installation

I wondered why the amount of power generated had increased in this situation, so I will suggest theoretical reasons from numerous installation examples and from the data we acquired. Many existing solar power stations are designed with a centralized power conditioner. Recently, we have seen the adoption of an increasing number of distributed power conditioner systems using small power conditioners in the 25 kW to 50 kW range in order to achieve increased power generation. This is similar to the principle of maximizing the power generation of each panel by providing a PV Maximizer (PVM) for each string, which can result in finer control of MPPT (maximum power point tracking). Although distributed systems have recently become more popular as a result, providing a PVM for individual strings results in centralized power conditioner; however, the distributed type, which is inferior to PVM, differs depending on the group. Generally speaking, centralized power conditioners are mostly in the range of 500 kW to 1000 kW, and in order to achieve centralized MPPT control with one power conditioner for 30 to 50 strings (16 to 20 panels directly connected in series) with this one unit, MPPT control equalizes the power generated by each string. Therefore, a string generating a large amount of power is extended to a low-power string and suppressed. On the other hand, if a PVM is provided for all strings, even if various circumstances cause variations in the amount of power generated, operation is managed so as to draw up all energy in order to maximize the power generated by each string. As a result, the total amount generated is not suppressed and the difference is provided. At this time, although we have been asked to explain whether reciprocal interference occurs between the power conditioner MPPT and the PVM MPPT, we provide the MPPT control method on the PVM side and have demonstrated results with many central-type PCS manufacturers, so there should be no problem.

To briefly describe the factors that contribute to variations in the amount of electricity generated by each string, these include production variations in the panel itself as well as passing shadows that can reduce high output. When applied to a mega solar facility, the direction is changed to accommodate the topography. Also, because the panels can cover a large area, they can differ in temperature as the constantly changing cooling winds shift moment by moment. This affects power generation, with the output increasing as the panel temperature decreases; if no PVM is present, problems are caused in the string with the high-temperature panel and the output is suppressed.

For example, the centralized power conditioner is equivalent to a teacher of an elementary and junior high school giving a class with many students in the classroom (equivalent to MPPT control). As for the teacher's efforts to accommodate varying intellectual levels, if the teacher were to teach at a single child's intelligence level, matching a smart child would inconvenience the many students who could not keep up; conversely, matching a child of inferior ability would cause many students to lose interest. Therefore, it is best to match the average level. As a result, however, the risk of holding back highly talented children can lead to a loss for the nation. So, providing a PVM is equivalent to providing each student with a tutor, which makes it possible to draw out the overall ability of the students and provide good guidance.

I hope the above explanation is understandable. For owners with rights to a high-rate FIT (36 yen, 40 yen, etc.), we suggest that PV Maximizers be adopted without delay in order to achieve higher profitability. Thank you very much.

Setsuo Sakai
Representative Director & President, Sales General Manager

Invitation to exhibition

Invitation to exhibition at the SEMICON Japan 2017

SEMICON JAPAN

Event date: December 13 (Wed)–15 (Fri), 2017
Venue: Tokyo Big Sight

Nipron will participate in the SEMICON Japan 2017, which will be held from 13th to 15th of December at the Tokyo Big Sight.

This is the world's largest exhibition covering the machinery and materials for the production of semiconductors. A comprehensive range of products, techniques and services concerning the manufacturing and materials of semiconductors will be presented. Nipron, with its first appearance in the exhibition, will exhibit its single output power supplies with features against instantaneous power failures and blackouts and various switching power supplies, including its range of ATX power supply units. The outlook of growth for electronics is wider than ever starting with cloud applications inspired by the growth of internet and mobile devices through to the AI/machine learning, automatic driving and IoT. Nipron hopes to offer its services to the semiconductor industry, which continues to grow as the centerpiece of electronics, with its eye on the "power supply". Do come visit Nipron's booth if you plan to be there.



UZP-220/CB03A



HPCFX-350P/BS28A

Flower arrangement at Nipron

In the Sales Head Office & Central Dream Laboratory Building, the front entrance is decorated with flower arrangement. Since these flowers are arranged by an employee of Nipron in a heartfelt manner, please take a look at them.



"When you are in trouble with power supply," please consult with Nipron. <http://www.nipron.com>

The Nipron Story, by Our President

Toward a New Era: The Importance of Maintaining Your Fighting Spirit

Hello everyone! The long summer that extended into October gradually gave way to cooler temperatures, and the days eventually became easier to bear. In July, we marked the start of our 37th business year; the happiest event was achieving a record number of orders on an almost monthly basis. And in October, we continued our performance by reaching a peak of 7 billion yen in annual turnover (against a target of 6 billion yen). These orders included conventional products as well as our new large power supply units, with sales more than 30% higher than the preceding year. Moreover, our PV eXpander (a photovoltaic power storage system from our line of "Green Power (GP)" power supplies) has seen a significant increase in orders since June. Monthly sales have reached the level of 100 to 200 million yen. Although concerns about productivity are being raised, our many years of hardship have proved fruitful, and all the parties concerned are very happy at this turn of events. The members of the GP project are ecstatic at this success, exhibiting bright faces and speaking in vibrant, cheerful voices.

On the front page of the Nihon Keizai Shimbun of October 6, 2017, I noticed an article titled "Footsteps of the Era of Business Closures." It indicated that 1.27 million small and medium-sized companies have no fixed succession plans. The article indicated that the Ministry of Economy, Trade and Industry had noted a sense of crisis had arisen over succession difficulties leading to a deterioration in Japan's industrial base. But the opposite is happening: I believe the advancing deterioration of the industrial base is causing succession candidates to lose interest. I must also admit that I am 73 years old, and after reading the article I thought I might be joining this business closure group. Taking a different viewpoint and noting the trend of the times, I can see that this business closure "reserve army" comprises mainly subcontractors of large Japanese enterprises. The amount of subcontracting work available from these large companies has been decreasing dramatically year by year, and even large enterprises that had mistook current trends or had delayed implementation of management reforms are now in danger of corporate disintegration.

It is not unusual that the outlook remains uncertain for both large enterprises and micro subcontracting enterprises who are depending on their declining parent companies. The newspaper article notes the abnormal circumstance in which 50% of the closed businesses had been profitable, but this is because the owners of these small and medium-sized enterprises had been working harder even as the industrial structure declined. They had believed in a brighter tomorrow through long-term management efforts; they managed to ride a wild wave with effort and intelligence, somehow managing to struggle to shore. But as they approached their 70s, they lost their longstanding passion and had no successors, so I can understand if they chose to spend their remaining years with some sense of comfort. In the coming era, I doubt that a company can prevail against the rough waves of industrial change that are likely to increase in the future unless that company has a unique technology, is in a unique business segment, and does not rely on a large enterprise as its parent company; or the company has a strong organization and annual sales (exceeding 5 billion yen) that provide strength above a certain scale.

The proprietors of private one-man companies have enjoyed a strong era for private companies and for retiring after success, so they might not be joining the business closure "reserve army." I think that there are some "one-generation" professions, as seen in the retirements of sports stars, celebrities, and other prominent figures. If it is the same in every country in the world, I hope Japan emphasizes the need to create an environment in which new workers who are younger than the subject of the newspaper article will add a vitality that can create "one-generation" businesses for the new era.

At Nipron, we are living in an era of dramatic change as Japan itself also undergoes significant shifts. We continue to struggle with the creation of a lasting and vibrant enterprise, and we want to maintain our culture and pass Nipron on to posterity for the long term while maintaining a corporate culture and model of human resource development that will uphold our fighting spirit.

I very much appreciate your attention. I will be around today, and I thank you again until next time.

Setsuo Sakai
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