

Nipron Wave

Vol. 56 2019 Summer

This is the highlight

- 1 Nipron's four major solutions**
Photovoltaic power generation is gaining attention due to ever-increasing awareness on environmental issues and invigorated secondary market. This issue introduces four solutions that enhance the value of solar power stations with their collective strength.
- 2 New products OZP-240/600P series**
PSU supporting a high peak power and optimum for motor loads with the capacity of 240 W continuous and 600 W peak power.

Nipron's four major solutions

turn photovoltaic power generation facilities into essential components of social infrastructure

Enhancing the value of power stations with integrated power



Maximize the power by compensating for shadows, unevenness and deterioration



Solar power panel



PV Maximizer
<PV Guardmyan available in the standard model>

Junction box functions

+

Function for maximizing generated energy

+

Remote monitoring function

High-precision remote monitoring and diagnosis of power generation

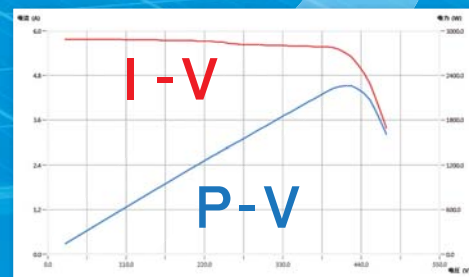
Enables a reduction of O&M cost

Reduces the manpower for regular inspection to one-tenth or less by remote monitoring and automatic error diagnosis!

Major diagnosis features

- Diagnosis by the generated power [power analysis]
- Diagnosis based on the I-V characteristic data [I-V characteristic analysis]
- AI powered failure analysis (under development)

PV Guardmyan
PV Guardmyan



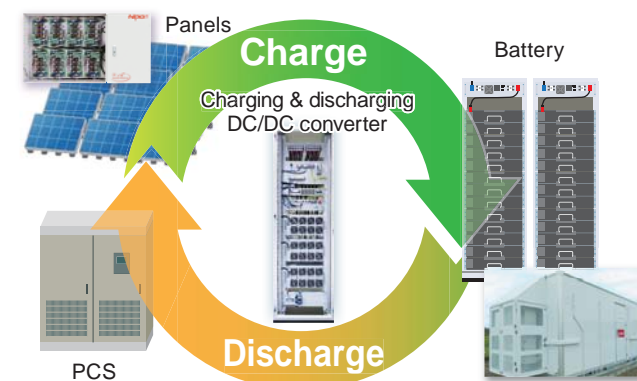
Power stations management with perfect maintenance

Leave everything about your power stations to Nipron!



Support of stabilized demand peak in power generation amount with batteries

From the power control to communication control, an all-in-one device essential for a power storage system!



Appearance of a power storage system container (image)

Neo exPander
Charging/discharging DC/DC converter for medium capacity power storage systems



1 Solved by PV Maximizer!

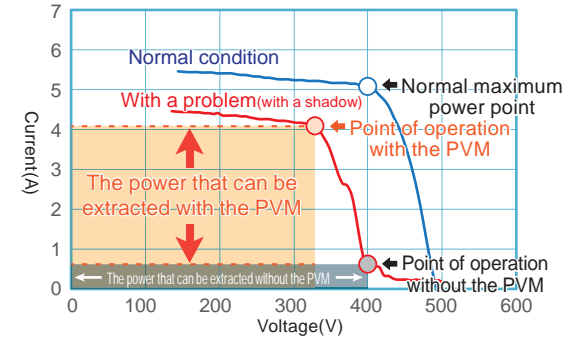
Nipron's four major solutions

Solve problems caused by deterioration of panels and unexpected shadows



PV Maximizer

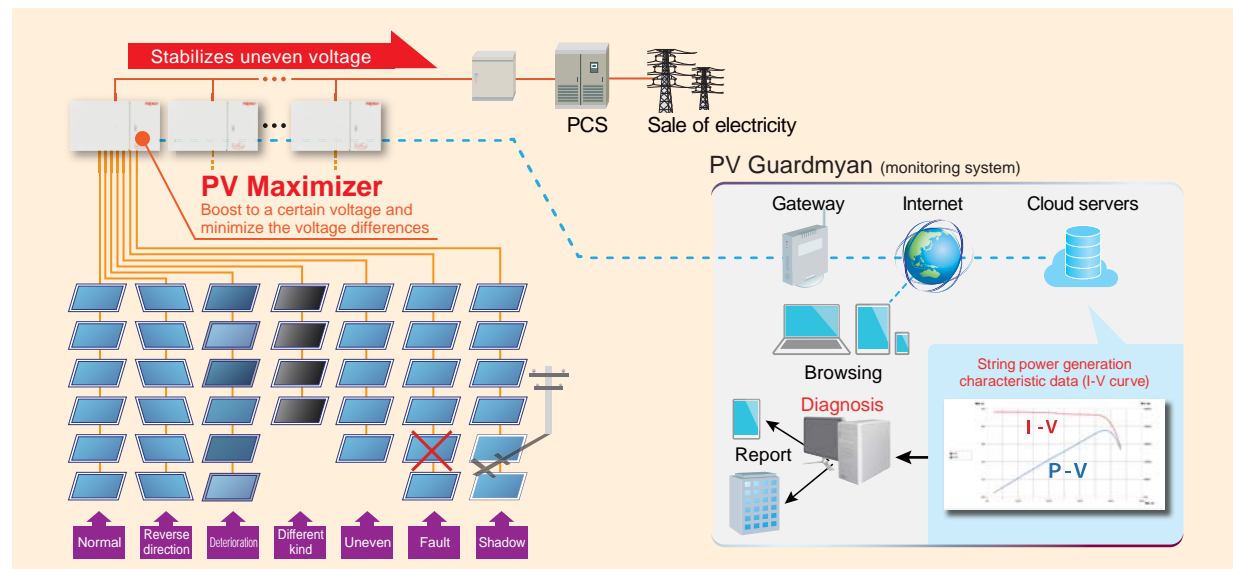
Improvement enabled by the PV Maximizer (PVM) [concept]



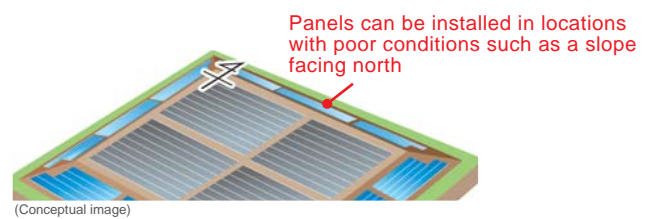
Unfold the power generation capacity Recover drop in the power

Deterioration of PV panels or shadows falling on them will lead to a drop in the voltage. This also affects the voltage of normal strings, resulting in a drop in the power generation. PV Maximizer eliminates the voltage gap between strings by increasing the fallen voltage of affected strings to the voltage level of other strings maintaining the maximum power point, making it possible to extract the maximum power from panels available for power generation and, thus, potentially leading to an increase in the revenue from the sale of electricity. It is also possible to construct a high-precision monitoring system, PV Guardmyan, that diagnoses the I-V and P-V curves of each string remotely.

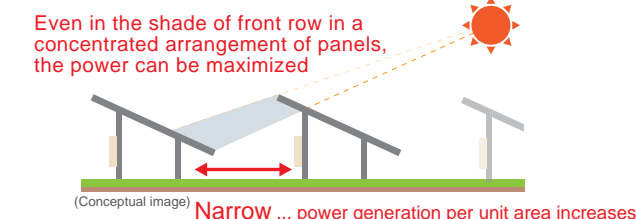
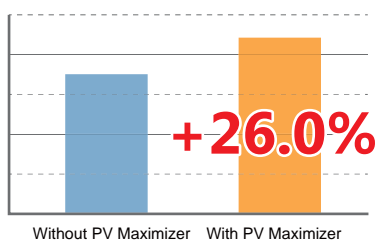
PV Maximizer system concept



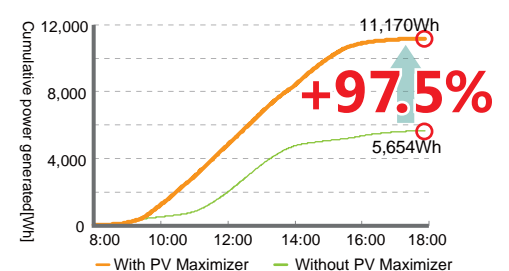
PV Maximizer brings out the best in a variety of scenes



A comparison of power generated by panels facing north (an example)



Transition of power generated (example)



The PV Maximizer enhances power generation amount across a range of applications.

<http://www.nipron.com>

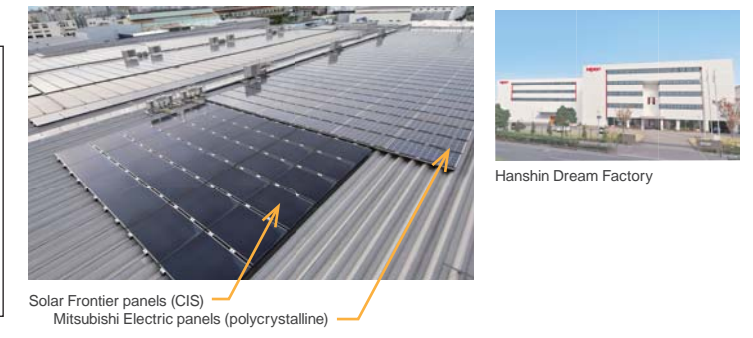
Repowering image of photovoltaic power generation with PV Maximizer

On the rooftop of Nipron's Hanshin Dream Factory, plots of PV string output and actual measurements of insolation were taken by switching ON and OFF the PV Maximizer control every 24 hours. Approximate lines were drawn for actual measurements obtained in both periods in which the control was ON and OFF to compare the power generation amount under the same insolation conditions.

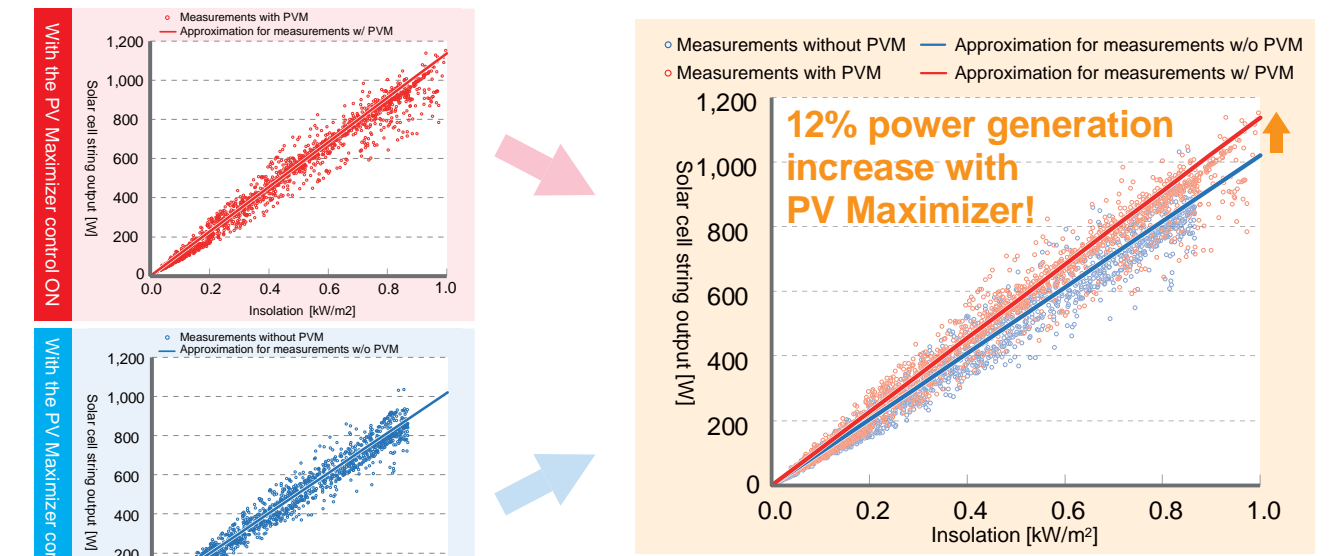
Power station overview

[Location] Hanshin Dream Factory, Nipron Co., Ltd. (Amagasaki City, Hyogo)	[Installed] 2008
[Aggregate power generation] 123.5 kW	[Test period] April 1 to 30, 2019
[Total number of strings] 104 strings	[Test period] April 1 to 30, 2019
Solar cell module made by Mitsubishi Electric (polycrystalline) Completed in September 2008	Solar cell module made by Solar Frontier (CIS) Completed in September 2015 (addition)
101.75 kW (550 panels)	21.76 kW (128 panels)

More than ten years of operation as a rooftop photovoltaic power generation



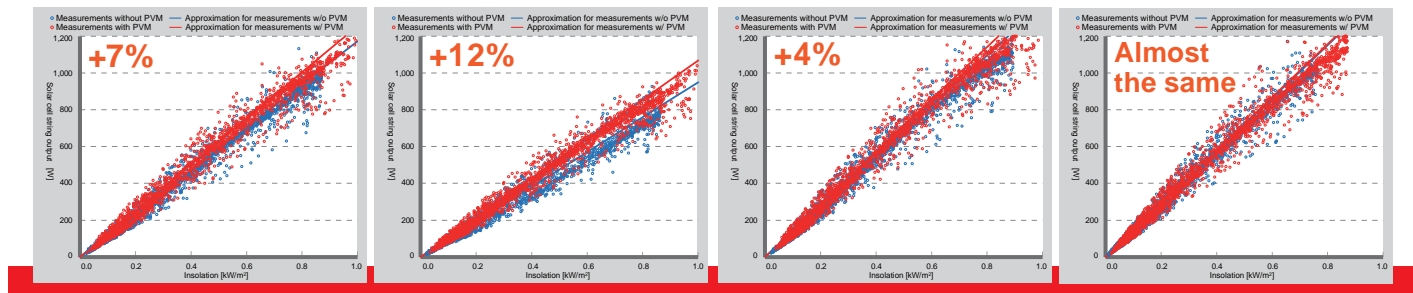
A case example of improved power generation with PV Maximizer (for typical strings)



For a site more than ten years old since installation, fluctuations in the string characteristics due to accumulation of changes in the conditions, defacement, etc. are compensated by the PV Maximizer to maximize the power.

A case example of improved power generation with PV Maximizer (Examples of other strings)

Results are different depending on the string conditions. Especially after an extended period of use, there is a significant gap for each string in the effect due to varying string conditions and it is assumed that PV Maximizer is especially effective for strings with relatively low output.



Average for the sites, +3% (excluding addition section of different panels and sections with measurement errors)

These are examples based on measurements obtained in field tests performed by Nipron and calculations performed under a certain condition using such measurements. It should be noted that it is not guaranteed that the same results will be obtained in all environments and conditions.

"Repowering" with PV Maximizer for enhanced power generation amount

<http://www.nipron.com>

2 Solved by PV Guardmyan! Nipron's four major solutions

High-precision detection of drops in the power generation to remedy the risk of lost opportunities

PV Guardmyan PV Guardmyan

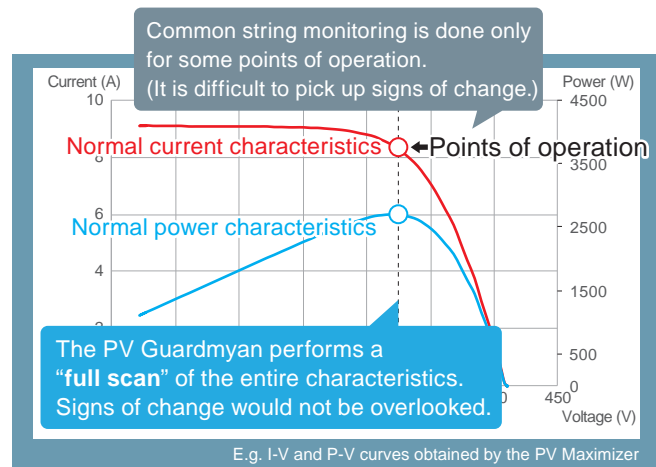
Easy to find problems High-precision constant monitoring

Trouble-free I-V curve automatic measurement

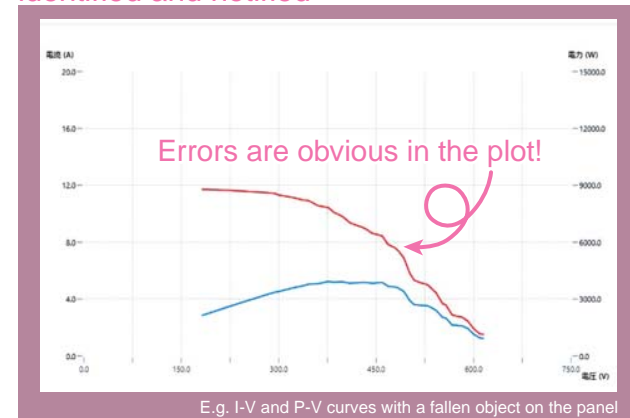
	Common string monitoring	PV Maximizer & PV Guardmyan
Constant monitoring	Low sensitivity because of monitoring based only on the electric current, of which fluctuation is small.	High sensitivity because of monitoring based on the maximum output power, of which fluctuation is big.
I-V curve measurement	Measurement is done by an operator by bringing measuring instrument on-site.	Using the "full scan feature," an automatic measurement is performed for the entire system at an arbitrary time of the day (default setting: three times a day).

An automatic measurement of I-V curve is done simultaneously for the entire system 365 days a year. Signs of change would not be overlooked.

There are many problems that could be found by performing an in-depth inspection with the I-V curve measurement. There is the statement "it is desirable to perform the I-V curve measurement regularly as a part of the maintenance work (an excerpt from 11.3.4.3)" also in the Guidelines of Photovoltaic Power Generation System Maintenance and Inspection (JM16Z001).



Errors detected automatically, locations identified and notified



Major diagnosis features

Diagnosis of power generated

[Power generation analysis]

→ Identification of erroneous strings by comparing power generation

Diagnosis based on the I-V curve data

[I-V characteristic analysis]

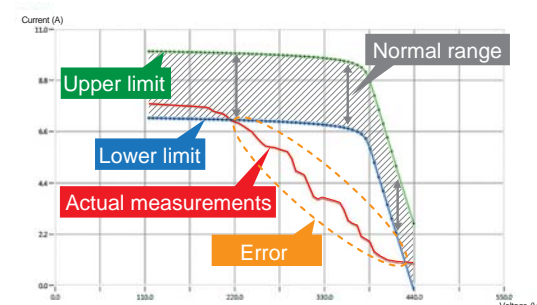
→ Diagnosis of erroneous strings by analyzing the I-V curve

Failure analysis utilizing AI (development in progress)

→ Learning from data accumulated on the cloud, a diagnosis appropriate for each system is performed.

The image of diagnosis feature

Analyzing the I-V curve, the system interprets that an error is present in the string if measurements outside the normal range were found.



The PV Guardmyan high-precision monitoring system issues an alert when low power output is detected.

<http://www.nipron.com>

3 Solved by Perfect full O&M! Nipron's four major solutions

The burden of maintenance and the risk of drop in the power generation solved



Perfect full O&M

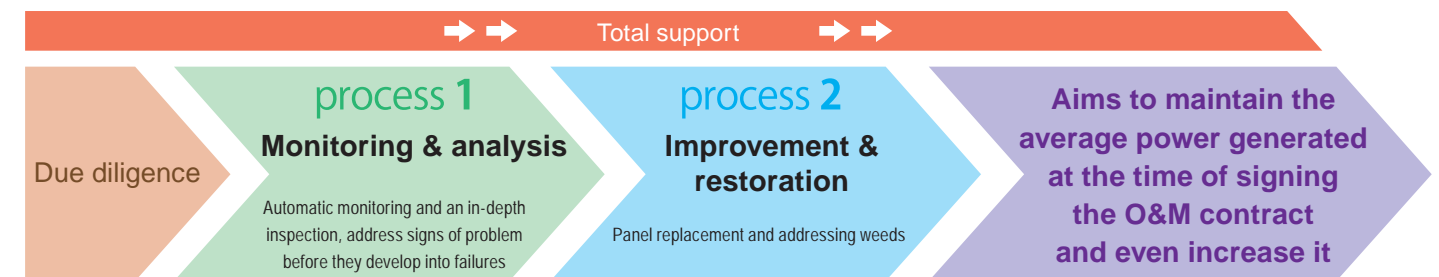
Maintenance-free is a reality now

Supports offered in every step from monitoring to restoration

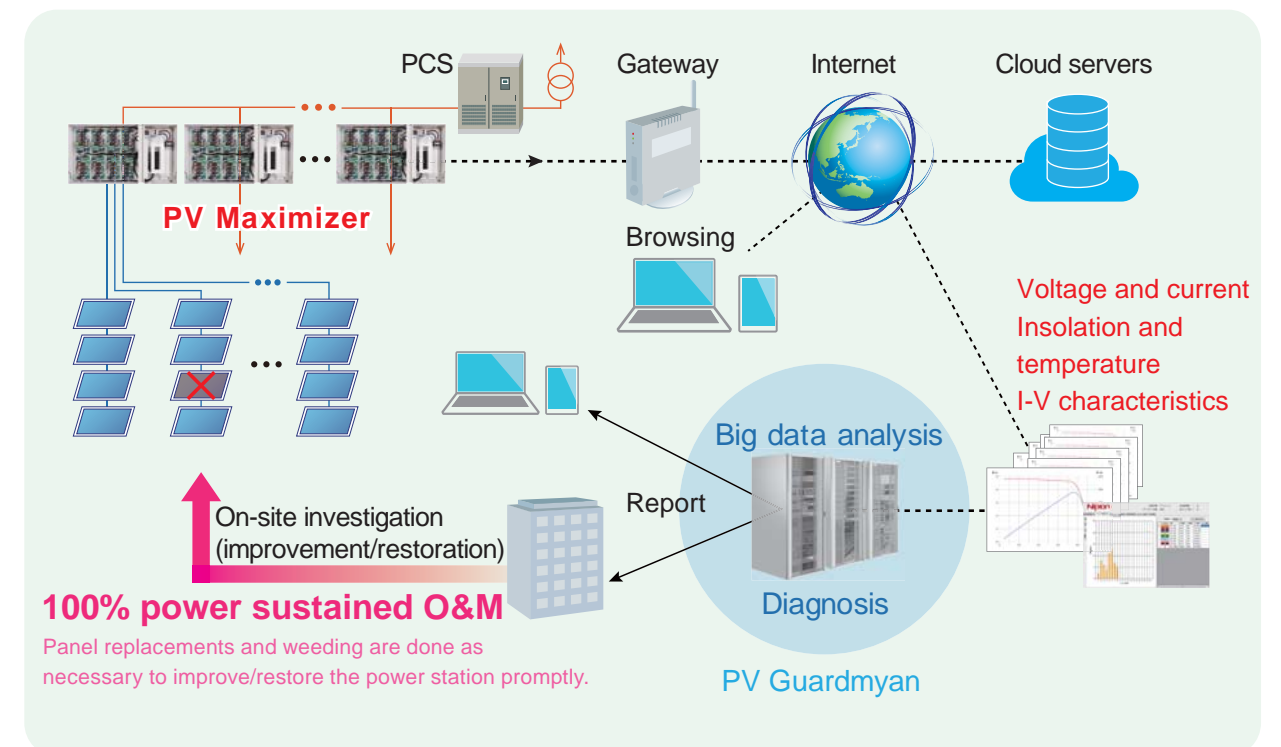
Enables a stable and long-term operation

Power station improvements are also offered

If power stations were left unattended in poor power generation performance, there will be a significant negative effect on the revenue of electricity sale. The "100% power sustained O&M" is a novel service aiming at sustaining and even increasing the average power generated at the time of signing the O&M agreement, in addition to the monitoring and O&M services for early detection of power generation problems and prompt restoration and action utilizing the monitoring and analysis capabilities of PV Guardmyan. It liberates producers of photovoltaic power generation business from the power station maintenance, which is a demerit of the business.



Leave everything about the power station to Nipron with Perfect full O&M!
The value of power station will be enhanced by the quality maintenance service.



Nipron's Perfect Full O&M fully protects power generation amount.

<http://www.nipron.com>

4 Solved by Neo eXpander!

Get rid of barriers for the introduction of power storage system

Neo eXpander

Supports a variety of applications	Optimum for the sale of surplus power and in-house power consumption
Easy to handle	Power storage systems can be built easily
Superior expandability	A scalable system allowing future additions

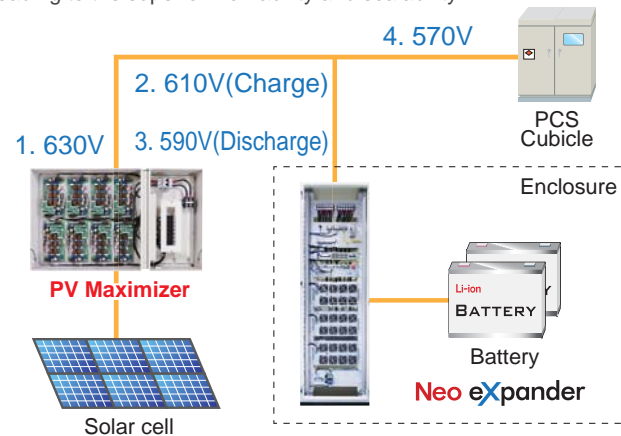
Realizes a DC link power supply system with a high efficiency and expandability

[Product specifications]

Type	Quick-charging type		General-purpose type	
Rated charging power	75.0 kW	112.5 kW	50.0 kW	75.0 kW
Rated discharging power	25.0 kW	37.0 kW	50.0 kW	75.0 kW
Major applications	Low-voltage grid connection PV power storage, off-the-grid systems		ZEB, in-house PV power consumption	
Battery voltage range	250 VDC - 512 VDC			
Max. DC link voltage	700 VDC			
I/O insulation	Not insulated			
External dimensions (WxDxH)	700 x 781 x 2200 + 50 mm base			

[System concept]

This is a very efficient system as solar cells and batteries, which are both sources of DC power, are connected directly without DC-AC power conversion. Since the DC voltage has a property to be output from the higher voltage to the lower voltage, a variety of operational patterns can be implemented by the voltage setting. Because of its autonomous distributed operation with shared DC voltage information, communication between devices is not necessary, leading to the superior workability and scalability.



Multitude of applications in the market, such as the sale and in-house power consumption (ZEB) of surplus power from photovoltaic power generation

Large number of medium to large-scale power storage systems implemented in the market (Many installations throughout Japan from Hokkaido to Kyushu)

Nipron, who has a proven track record, will support the power storage construction by the customer. (Technical support with FAE and provision of application notes are also negotiable) Please do not hesitate to consult us.

[Supported batteries (as of July 2019)]

- Toshiba lithium-ion batteries
- LG Chem lithium-ion batteries

Supported models will be added as appropriate

(Consult us for further information on the models)



External view of the power storage system container



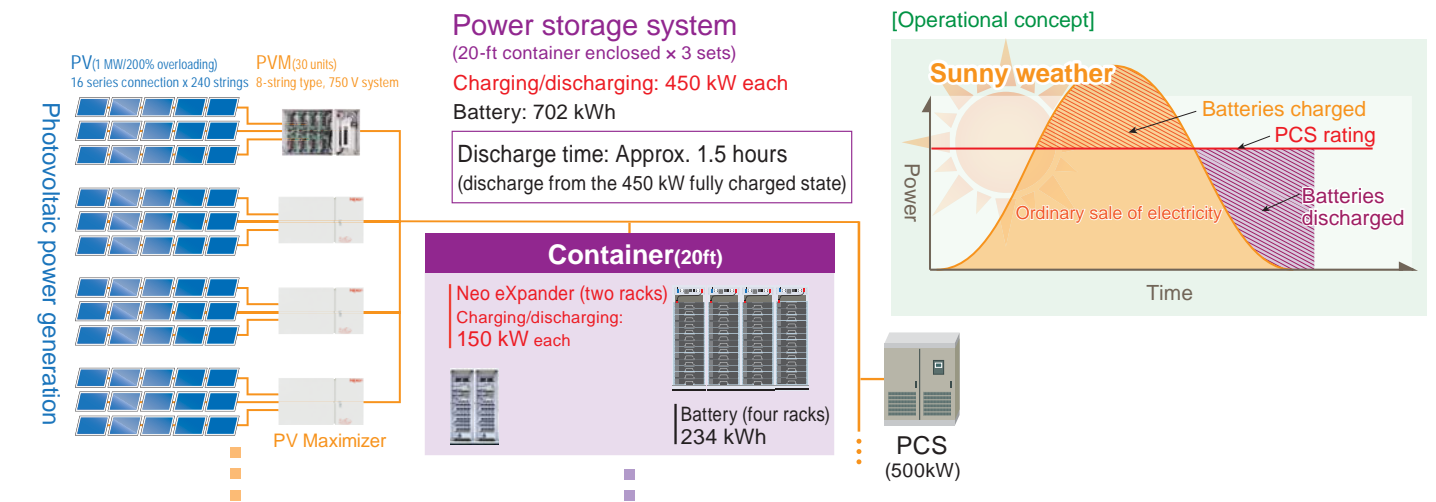
Interior view of installations in the container

Neo eXpander — an essential component of power storage systems

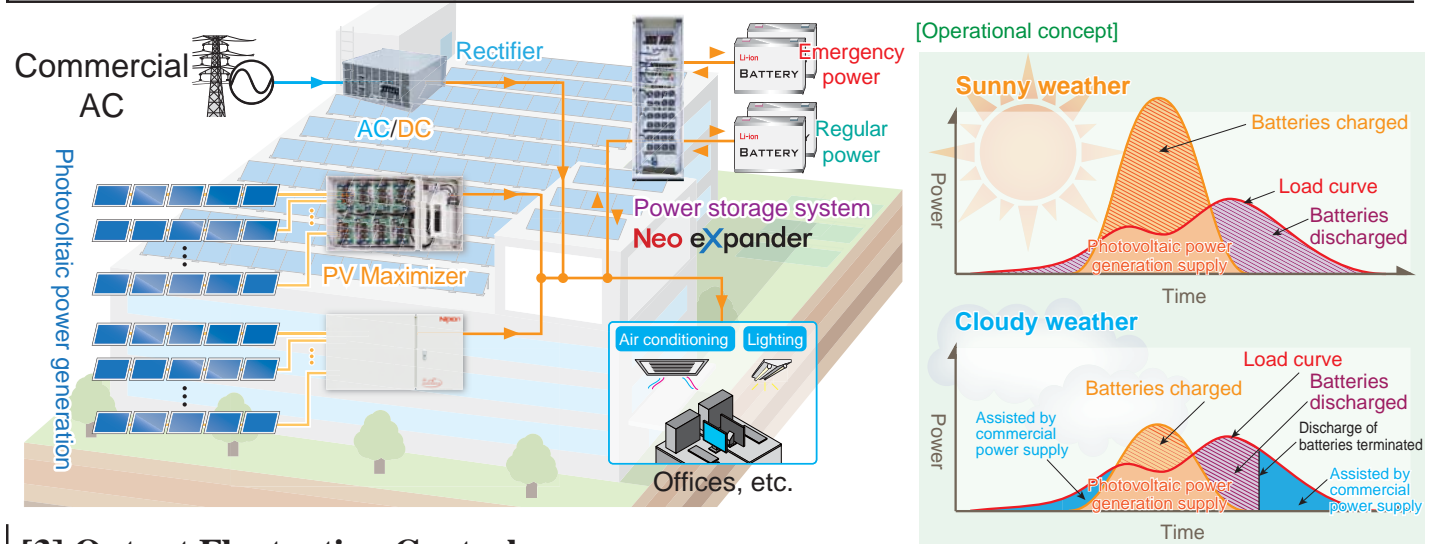
<http://www.nipron.com>

Application examples

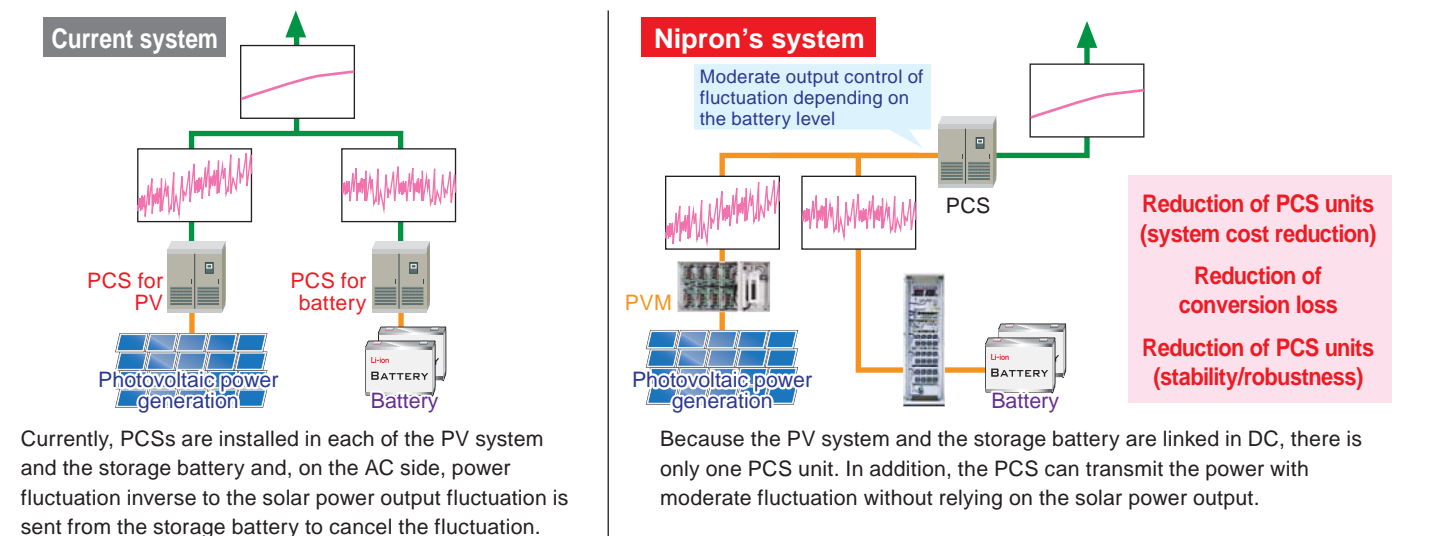
[1] Sale of surplus power Example: 1 MW panel (with 200% overloading)



[2] In-house power consumption system (emergency response + energy saving)



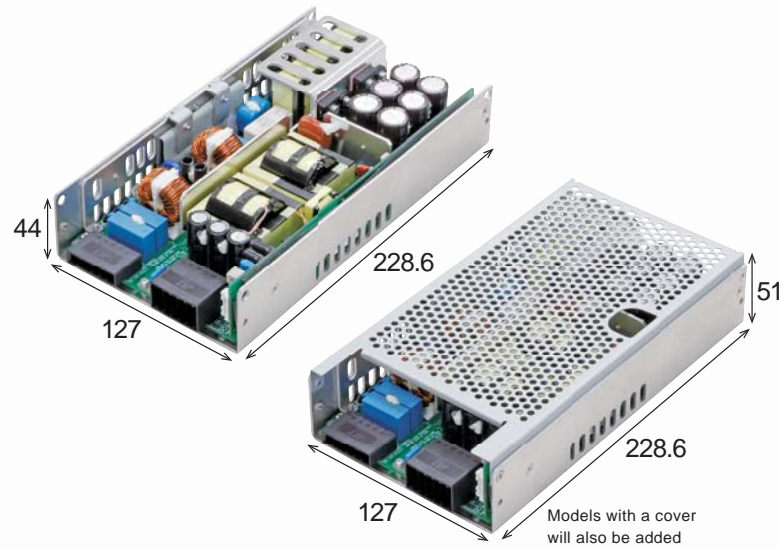
[3] Output Fluctuation Control



Nipron's four major solutions for photovoltaic power generation plants

<http://www.nipron.com>

Fanless power supply unit supporting the peak power of 1200 W



UZP-600 series

Continuous: **600W** Output voltage: **24V/48V**
 Peak: **1200W** Max. efficiency: **95%_{typ} (AC230V)**

The high peak power twice as high as the continuous power is supported

The unit can supply the power twice as large as the continuous power for the predefined time (5s). This eliminates the need to select a power supply unit with a large continuous power rating matching the peak load and enables the reduction in the PSU size, leading to many benefits including the elimination of fans in the unit and replacement of unit-type power supplies.

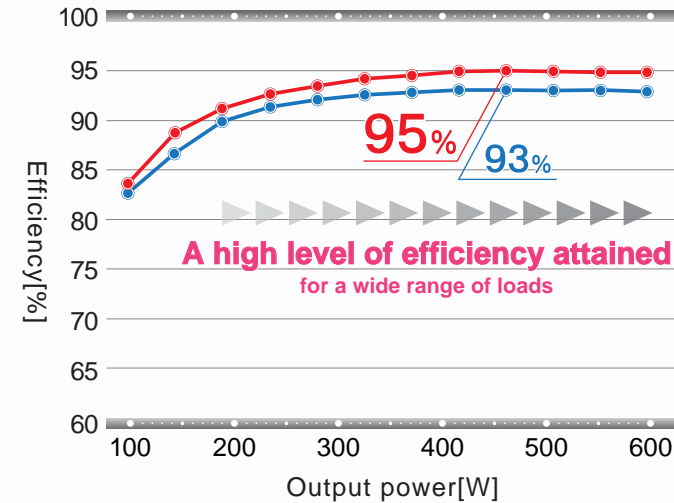
Peak 1200W
Continuous 600W **Twice the power**

One of the best in the industry in terms of efficiency

A high level of efficiency 95%_{typ} has been achieved for a 24 V output type, providing a significant support for saving energy and reducing CO2 emission.

Efficiency graph (an example of measurement)

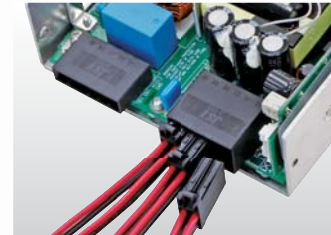
[Measurement condition: — 100 VAC input — 230 VAC input]



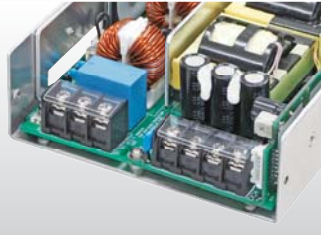
Terminal blocks for different scenes of use are available

The PSU comes with harmonica style terminal blocks or dividable nylon connectors as I/O terminals. (Both horizontal and vertical arrangements will be offered.)

Connector type (horizontal)



Terminal block type (vertical)



Output specifications

	UZP-600-A24	UZP-600-A48	Common output	
			+12VSB	+12V FAN (Optional)
Output voltage	+24V	+48V		
Continuous current/continuous power (Natural air cooling)	25A 600W	12.5A 600W	0.42A 5W	0.25A 3W
Continuous current/continuous power (Forced air cooling)	33.4A 801.6W	16.7A 801.6W	-	-
Peak current/peak power (within 5 s)	50A 1200W	25A 1200W	-	-
Input voltage	85 - 264 VAC (with PFC, global input)			
Safety standards	UL (cUL) 62368-1 certification expected, CE marking to be addressed, Electrical Appliance and Material Safety Act (Ordinance Section 2) compatible design			

Features

- Miniature size of 5 × 9 inches
- Comes with a +12 V standby output
- Blackout detection signal and remote ON/OFF feature incorporated
- Instantaneous power failures can be addressed by connecting a capacitor unit
- The built-in arrestor to avoid/mitigate the risk of lightning damage
- Models certified for medical standards will also be added
- With a +12V output (optional) linked with the remote ON/OFF for the fan



High efficiency DIN rail mount compatible PSU



UDP-240 series

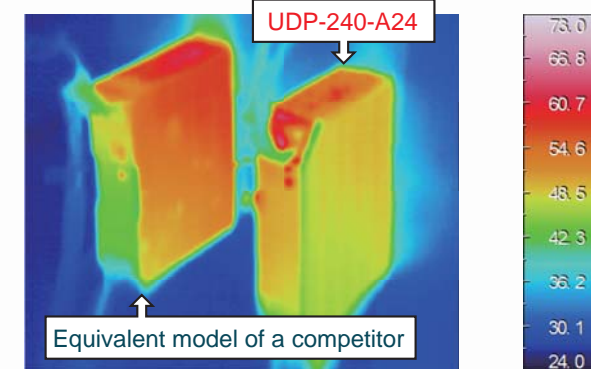
Continuous: **240W** Output voltage: **24V**
 Peak: **400W** Max. efficiency: **94%_{typ} (AC230V)**

UDP-120 series

Continuous: **120W** Output voltage: **24V**
 Peak: **200W** Max. efficiency: **93%_{typ} (AC230V)**

Limits temperature rise and supports miniaturization and extension of service life

The UDP series boasts a high efficiency with the maximum efficiency of 94% (UDP-240-A24 with 230 VAC). Because the heat generation due to switching loss has been reduced drastically by attaining the high efficiency, the series makes it possible to reduce the man-hour and cost in addressing the heat in control panels.



Backup features for instantaneous power failures and blackouts

The product lineup will include a model that is capable of backing up instantaneous power failures and blackouts by connecting a capacitor pack or a battery pack.



Features

- Reduction of noise filters possible
The power supply unit clears VCCI ClassB for the conducted emission
- Supports approx. 1.7 times higher peak load
The product supports 10 second output of peak power, which makes it optimum for devices involving an inrush current, such as motors.
- Adoption of push-in terminals to reduce the burden of man-hour
- EN62477-1 OVCIII compliant design
- The built-in arrestor to avoid/mitigate the risk of lightning damage
- Notification of service life expiration supported (optional)



Output specifications

	UDP-240-A24	UDP-120-A24
	Output voltage	+24 V
Continuous power	240 W	120 W
Peak power (within 10 s)	400 W	200 W
Efficiency	115 VAC	92 % typ
	230 VAC	94 % typ
Power factor	115 VAC	99 % typ
	230 VAC	90 % typ
Input voltage	85 - 264 VAC (with PFC, global input)	
Safety standards	UL (cUL) 62368-1 and UL508 certifications expected, CE marking to be addressed, SEMI-F47 (UDP-240-A24) and EN62477-1 OVCIII compatible design	

A fanless unit delivering an amazing 600W continuous/1200W peak

<http://www.nipron.com>

A compact, high-performance DIN-rail-compatible backup power supply with a long service life

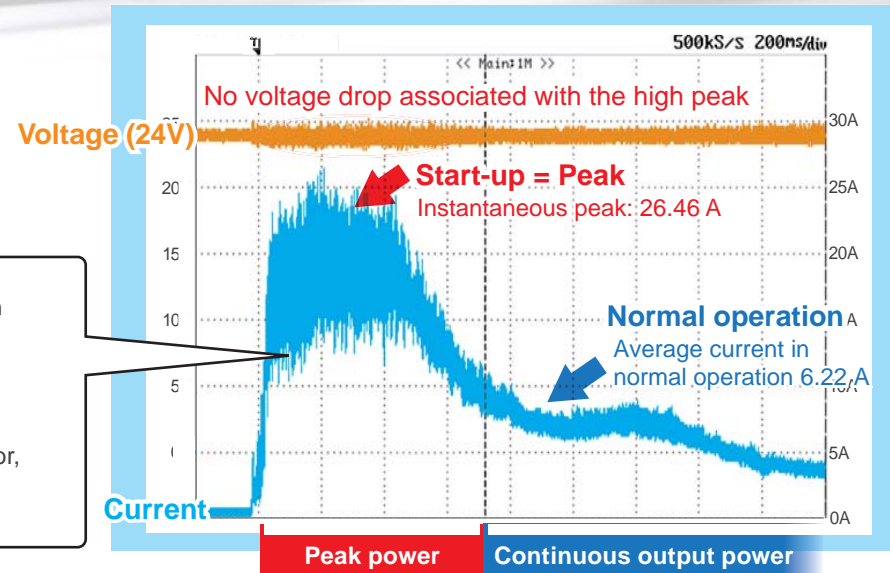
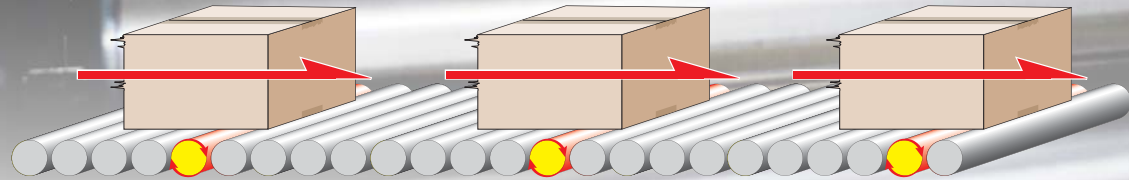
<http://www.nipron.com>

The power supply featuring enhanced peak power

— Ideal for motor loads of transportation equipment and the like

OZP-240/600P

Amazing cost reduction enabled with the PSU supporting a high peak power



As shown on the right, motors consume an inrush current significantly higher than the normal operation current at the startup. In addition, since the required current varies depending on the load capacity of the motor, selection of PSU is difficult and expensive.

A high peak power support PSU is a power supply unit capable of supplying an output power exceeding the continuous output power for a certain period. It enables an operation matching the load, in which the load at the startup is handled by the peak power while load for normal operation is managed by the continuous output power. For this reason, it eliminates the need to select a PSU based on the peak inrush current and enables selection of a PSU with a smaller capacity matching the load for normal operation.

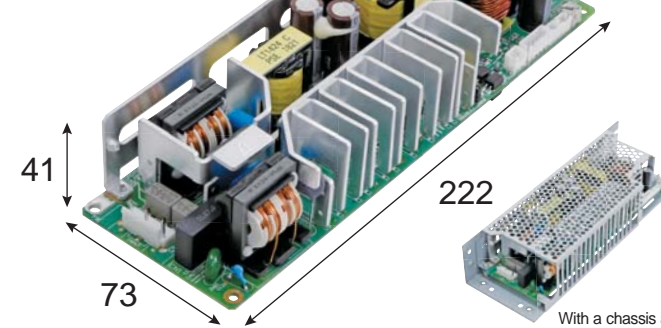
	High peak power support PSU OZP-240/600P	PSUs without the support for high peak power	
Continuous output power	240W	240W	600W
Peak power	600W	-	-
Number of motor roller driven capacity			
	Economical and small	Expensive and large	

The OZP-240/600P Power Supply offers a stronger peak power to accommodate motor loads. <http://www.nipron.com>

Two models are offered for different applications

Standard model

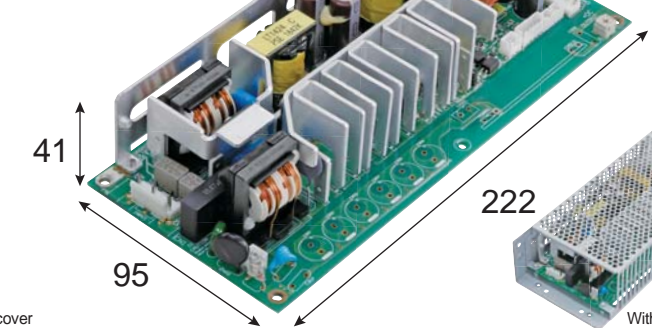
OZP-240/600P-24



Continuous: **240W**
At 200 VAC input

Model with built-in arrester

for an enhanced resistance to lightning surges
OZP-240/600P-A24

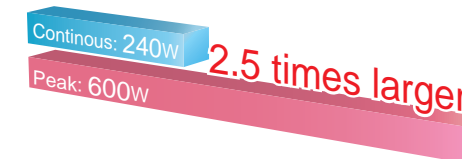


Peak: **600W**
At 200 VAC input

Efficiency: **90%**
At 200 VAC input

Features

- ▶ Amazing support for the high peak load approx. 2.5 times larger



- ▶ Back up possible for instantaneous power failure with a connection of capacitor pack



- ▶ With remote ON/OFF feature
- ▶ With blackouts detection signal

- ▶ Built-in arrester + varistor for enhanced resistance to lightning surges (OZP-240/600P-A24)



Arrester

An arrester is built in as a surge protector and the resistance to external surges caused by lightning and other reasons is enhanced.

- ▶ Double-sided through-hole plated circuit board adopted
- ▶ A variable register for adjusting output voltage provided

Output specifications

Type	OZP-240/600P-24 / OZP-240/600P-A24
Output voltage	+24 V
Maximum current/ Maximum power (continuous) At 100 VAC input	8.4 A 201.6 W
Peak current/ peak power (within 5 s) At 100 VAC input	16.7 A 400.8 W
Maximum current/ Maximum power (continuous) At 200 VAC input	10 A 240 W
Peak current/ peak power (within 5 s) At 200 VAC input	25 A 600 W
Efficiency	100 VAC: 86 % typ
	200 VAC: 90 % typ
Power factor	100 VAC: 99 % typ
	200 VAC: 95 % typ
Input voltage	85 - 264 VAC

* Contact us for the output voltage other than 24 V.

Models with optional features can be arranged

Depending on the customers' needs, models with optional features can be arranged. Please consult with us.

- Parallel operation feature
- Standby output
- Measures against instantaneous power failure (extension of retention time)



Size: 95(W)×41(H)×222(D)

Small size and low cost with an amazing number of rollers driven

<http://www.nipron.com>

Invitation to exhibition



6th INT'L SMART GRID EXPO Osaka

Held inside World Smart Energy Week OSAKA 2019

6th INT'L SMART GRID EXPO

Nipron will take part in the 6th INT'L SMART GRID EXPO Osaka, which will be held for three days from 25th to 27th of September at INTEX Osaka. This exhibition specializes in and collects all products and technologies required to build smart grids and distributed energy systems.

At Nipron booth, products and services for a long-term operation of photovoltaic power generation as an important social infrastructure supporting a sustainable community are collected under the banner of Four Major Solutions and the maintenance of power generation performance and streamlining and labor-saving in the maintenance are proposed.

In an industrial solar power station, a meticulous control for each string prevents a drop in the efficiency caused by local mismatch of characteristics and, while maintaining the power generation efficiency for an extended period (PV Maximizer), detects a sign of power generation loss at an early stage with the bulk measurement of IV characteristics monitored remotely and a big data analysis and addresses the problem (PV Guardmyan/perfect full O&M). In addition, proposals of added functions by power storage system are also possible (Neo eXpander).

Also, presentations of various products, which have been well received at the past exhibitions, will be given. Please feel free to visit Nipron booth if you happen to be there.

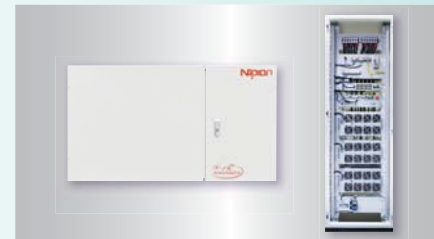
* We are pleased to send invitation to the exhibition to customers who are interested in it. Please do not hesitate to contact us. Our contact: Air Force Sales Division, Nipron Co., Ltd.

(TEL) +81-6-7220-3657 (FAX) +81-6-6487-2212 (E-MAIL) support1@nipron.com

Event date: September 25 (Wed)–27 (Fri), 2019
Venue: Hall 4, INTEX Osaka
Booth number: 7-44

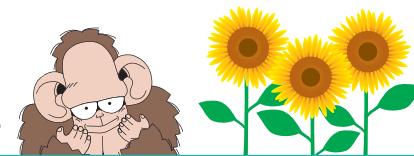


A scene of Neo eXpander presentation



PV Maximizer and Neo eXpander

Productivity Improvement Presentation for Sales & Administrative Departments



The Productivity Improvement Presentation for Sales & Administrative Departments was held.

As the third event of TQC presentation by young employees, which was first held during the employee training session in September last year by employees in the production departments, a TQC presentation was held on June 21 of this year by the sales and administrative departments. In the event, a total of ten teams competed by presenting improvements and other achievements made in their work. After a stringent and fair deliberation, following three teams were awarded (the top three teams). Congrats to everybody in the teams.

Lead by young employees with working experience of ten years or less, the event turned out to be a very fruitful one by sharing improvement activities performed routinely in each department. Everybody was convinced that steady and down-to-earth efforts made in the sales and administrative departments and the results will lead to the "work style reform." A friendship party for the participants was held after the TQC presentation. Every team appraised other teams' efforts and the party was invigorated. Nipron will continue to improve its productivity by a multidisciplinary effort.



A scene from the TQC conference

- Gold Prize**
Air Force Sales Team
- Silver Prize**
Sales Management Team
- Bronze Prize**
Business Planning Team



Gold Prize ... Air Force Sales Team



Silver Prize ... Sales Management Team

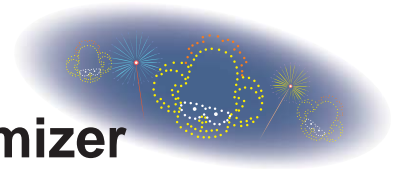


Bronze Prize ... Business Planning Team

A wide range of power supply units is available. Call us to find out more.

<http://www.nipron.com>

Voices of customers using the PV Maximizer



Interview

An addition with different panels realized with PV Maximizer

"A" Company in Osaka Prefecture

[1] Backgrounds of introduction

Would you tell us what prompted you to start the photovoltaic power generation?

Because we wanted to make a difference in protecting the environment and, also, because we learned that it was a business producing stable profits.

What initiated the encounter with Nipron?

We were introduced to Nipron by another company at INT'L SMART GRID EXPO Osaka and made an inquiry later by phone.

What was the first impression of PV Maximizer?

At first, there were many uncertainties and PV Maximizer was something mysterious because we are a company with little electrical knowledge. Although we were uneasy since we did not understand the product completely, we had a feeling that it was a reliable product based on the explanations of the person in charge and his boss, along with the support of documents.

Tell us why you chose PV Maximizer.

Because the proposal of addition with different panels using the CIS panel, which produces more power, and PV Maximizer satisfied our requirements. The fact that we had all materials needed for the consideration as Nipron had proposed everything from the panel selection, layout to simulation was also one of the reasons. They were also quick to address our concerns on existing facility and this led us to believe in their thoroughness in following up the project.



Tell us about the anxiety and concerns you had before the introduction of PV Maximizer.

We were anxious about having two different contractors for the existing part and added part.

Were you relieved of those anxieties and concerns?

In addition to the follow-up up to the delivery, they were very flexible in addressing our inquiries on solar power, including how to apply for a deemed certification, and their eagerness in undertaking all the way to the after-sales support made the anxiety and worry go away.

[2] Effects of the introduction

Were you relieved of those anxieties and concerns after the introduction?

The power generation has exceeded the simulation given in advance and the operation is as expected.



[3] For the future

Do you have any idea about the power station operation after the completion of the FIT electricity sales?

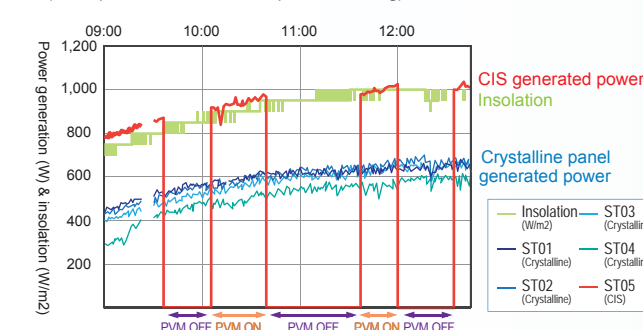
We still don't have a clear idea about operation and we are now collecting information on various applications being considered, including in-house power consumption.

PV Maximizer enables addition with different panels

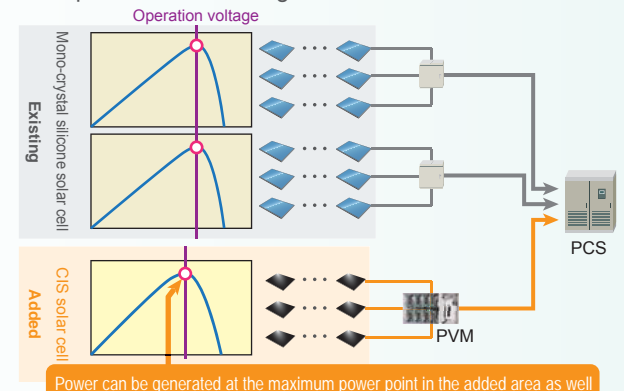
Different types of panels become available for power generation by using PV Maximizer

The chart on the left shows how the power generation shifted by switching ON and OFF the PV Maximizer (PVM) when crystalline panels and CIS panels were connected to the same PCS. If the PVM was OFF, the CIS panels did not produce any power. However, once the PVM was turned ON, the results show that the CIS panels became available for the power generation.

■ Power generated in each string
(a test performed on the rooftop of our building)



■ Conceptual connection diagram



Power can be generated at the maximum power point in the added area as well

The PV Maximizer has been adopted by many of our customers.

<http://www.nipron.com>

The Nipron Story, by Our President

As long as our company exists, we shall remain steadfastly committed to providing products.

On June 30, Nipron' s 38th fiscal year came to a close. Our sales totaled 5.6 billion yen, representing 91.3% of the previous year' s total as well as an achievement rate of only 80% measured against our 7-billion-yen target. Throughout the 39th fiscal year, our Company will continue to pursue this goal. The reasons for this shortfall were twofold: an abrupt halt in orders for our very popular PV eXpander surplus power storage system due to the strengthening of regulations on added installation during our 37th fiscal year; and the significant impact of the sharp slowdown in the Chinese economy due to the U.S.-China trade war that began late last year. However, our ATX power supplies and general-purpose power supplies, which are our flagship products, showed slight growth over the previous year, testifying to the strength of Nipron' s growth energy. This was encouraging. The sluggish pace of orders reversed with a V-shape recovery following the market bottom in March, and the secondary market for solar power stations has shown signs of becoming more active. Looking to our GP business, it is becoming increasingly likely that we will receive an official order in June for a large-scale power storage system, a project that has been on hold since last year. Moreover, with the rise in the SDGs and the RE100 Declaration, the emergence of renewable energy through ESG investment is starting to surge across the country. Orders for four major solutions products targeting the 4 billion yen RE business — PV Maximizer, PV Guardmyan, the Neo eXpander Power Storage System, and the PFOM Perfect-full O&M — have begun to gain momentum. We expect that once demand surges, our target of 4 billion yen in sales of GP power supplies could be exceeded all at once, and we feel that our GP product line alone could advance our product development and market creation target of 10 billion yen.

At the same time, switching power supplies, currently our main product line, are also showing signs of strengthening. We are confident that an annual growth rate exceeding 10% can be assured. In addition to targeting sales of 7 billion yen for our 39th fiscal year, we will promote productivity reforms by improving the development and evolution of Nipron' s unique personnel system, known as GREAT, that will lead to reforms in work style. We will also work to complete our NDMS accounting management system, which has been evolving over several years. We thus expect to make dramatic improvements in labor productivity.

Turning to a different subject, I believe now is the ideal moment to use my remaining time as the current manager to think and act toward the creation of a basic approach to creating a "vital and lasting" system in order to put in place a successor system. While organizing some old materials, I began looking back through history and observing the failure and disappearance of many well-established competitors from the heady days of up-and-coming power supply manufacturers. I came to the conclusion that Nipron has survived and grown stronger by overcoming many challenges and much suffering, while managing to flourish despite these many difficulties. If you observe the ups and downs of many of the more than 400 companies that existed at that time, it seems once again that bankruptcies caused their customers some serious inconvenience. At the same time, one recent obvious issue is the EOL notification for electronic components, but I also feel it necessary to resist what some might consider merely "changing times" as well as the lack of responsibility among manufacturers (strictly upheld in the past) to ensure stability of supply. I have also developed a sense of crisis regarding the decline of Japanese manufacturing, as I fear we are losing our once-renowned excellence.

Since the time Nipron was founded, we have managed to maintain stable management, never failing to modernize in order to keep up with changing times. Nipron is dedicated to recognizing the importance of maintaining a stable supply of good products that customers continue to demand, avoiding mistakes in judgment from overconfidence or conceit that undermine good management. Nipron is committed to sidestepping the trap of excessive competition and market friction that can threaten a company' s survival. At Nipron, we shall renew our determination to uphold public trust and confidence over the long term. In order to adhere to this conviction, Nipron will continue to inculcate in all employees, including management, the importance of continually enhancing Nipron' s value without overlooking the ambition to continue training all staff.

We believe our mission is to create power supplies that serve as the heart of power equipment and continue to supply clean electrical energy for longer than the service life of equipment and devices. We adopted Nipron' s power supply slogan — "Non broken, non destroyed and non stop." — with the aim of becoming the world' s top power supply manufacturer by implementing essential improvements and upgrades every year.

In conclusion, I thank you for your patience and understanding, and I highly appreciate your continued commitment to the Company.

Setsuo Sakai
July 2019

 **Nipron Co., Ltd.** <http://www.nipron.com>

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