

Nipron Wa Vol.52 2018 Summer



Non broken Non destroyed Nonstop power

This is the highlight!

Special feature on GP power supply Introduces photovoltaic power generation solutions that can be utilized in a variety of applications.

2 Special feature on PSUs supporting high peak power Nipron's power supply units are optimum for motors load with a support for high peak power. PSUs best suited for customers' environments are proposed.

It resolves issues such as the high cost of gridconnection, waiting time for grid connection approval, and output control.



Reduce the high cost of grid connection with a power storage system

http://www.nipron.com

Use 3300 m² of idle land

http://www.nipron.com

Low voltage ultra overloading



Up to 24-hour continuous sale of electricity

PV eXpander, power storage system

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

This is a low-voltage surplus power storage system that increases the revenue from sale of electricity with a continuous sale by storing surplus power in a battery while limiting the costs of grid connection and equipment with a significant overloading on a low-voltage solar power station.

Because the PV Maximizer included in the system makes it possible to install panels in narrow spaces and on a land with poor conditions, it is also possible to save the cost for land improvement.



Benefits of introducing PV eXpander

Compared to the high-voltage grid connection

• Because the application is simple, power generation can be started smoothly and the cost of grid





- Because high-voltage cubicle is not necessary, the initial cost can be reduced.
- required and the running cost can be reduced.



PCS: Approximately 49.5 kW Battery capacity: Approximately 400 kW



PV Maximizer enhances the value of a power station

PV Guardmyan monitors by string with high accuracy



B-PVM



The string voltage, which has dropped because of failure of panels, shadows, mixture of different types of panels, uneven orientation of panels, etc., is boosted while maintaining the maximum power point. By eliminating the voltage differences between strings, it becomes possible to retrieve the maximum power from panels available for power generation.

It is also possible to build a PV Guardmyan, a high-accuracy monitoring system that performs remote diagnosis of I-V and P-V curves string by string. With the high- accuracy monitoring with PV Maximizer, it is possible to increase the revenue from selling electricity while reducing the O&M cost.

Effective use of limited land with the PV Maximizer

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.



Adding panels on the slope in all sides

It is possible to install panels even in a location with poor conditions like a slope facing north. Depending on the condition, the number of panels may be increased of 150 to 200% from the conventional design, resulting in a significant increase in the power generation.

Reduction of O&M cost with an accurate monitoring by PV Guardm

I-V and P-V curves can be obtained for each string.

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 PV Guardmyan adopts a unique monitoring system, an accurate monitoring using the I-V and P-V curves is possible from a remote location.



PV Maximizer, an essential item for PV power generation



• The I-V and P-V curves can be obtained remotely and an in-depth inspections can be performed easily with the remote and automatic characteristic curve diagnosis.

• It is possible to monitor the power generation over the Internet.

• The power generated, temperature and insolation can also be checked.

• Features an automatic mailing system in case of an emergency

PV Maximizer & PV Guardmyan enhance the value of existing power stations. http://www.nipron.com

PV eXpander Installation examples



Products supplied PV Maximizer PV eXpander

With the super overloading of 500%, the sale of electricity is enabled for an extended period by storing surplus power while improving the PCS availability.

The PV eXpander (surplus power storage system), which performs a significant overloading against the PCS and enables the sale of electricity for an extended period by storing surplus power, has been selected.





257 kW panels are grid connected at a low voltage. Utilizing a battery, the PCS availability is improved.

With a low-voltage grid connection below 50 kW, it is possible to reduce the initial and running costs in comparison with a high-voltage grid connection. According to the rules of installation for a low-voltage grid connection, a low-voltage grid connection is possible if the capacity of either the PV panel or the PCS was below 50 kW.

In this system, a low-voltage grid connection is made by installing 257 kW panels (approx. 500% overloading) for a 49.5 kW PCS. However, there is no significant benefit without further action because the surplus power exceeding the PCS capacity is too large. Therefore, a battery system is installed to store the surplus power and sell it during the night to improve the system availability and increase the revenues from the sale of electricity.



Super overloading combined with batteries to boost revenue from selling electricity http://www.nipron.com







Compared to high-voltage power stations

• Because the application is simple, power generation can be started smoothly and the cost of grid connection can be reduced.

> Low-voltage grid connection starts generating power more smoothly than high-voltage grid connection.



Things required for high-voltage power stations

- Because high-voltage cubicle is not necessary, the initial cost can be reduced.
- Appointment of the chief electric engineer is not required and the running cost can be reduced.

With the PV Maximizer

. The freedom of design, without the influences of shadows and strings, makes it possible to utilize idle lands effectively.

It's not only to sell! Here's how to use photovoltaic power generation!

The power generated from the solar light can be utilized in a variety of applications including factories, data centers and data mining. From improved efficiency in the energy usage to reduction of losses in the power generation, Nipron offers optimum solutions for the customer needs utilizing the products and know-how of a power supply manufacturer.

Micro-grid system utilizing the PV Maximizer



Similar examples

A system in which a high availability is chieved by priority control.

SAKURA Internet operates a large-scale data center in Ishikari City, Hokkaido. At the data center, Nipron's PV Maximizer is adopted for the DC link priority control, which puts the priority in the consumption of photovoltaic power generation.



- If the solar power was available, it is supplied preferentially.
- 2 If the solar power was lost, the power is taken from the utility company.
- 3 If there was a power failure, the power is supplied by a standby battery.



A high-efficiency system using DC electricity supply

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Shifting to an age where the power generated is used-

Solar power × Data mining

5% increase in the efficiency compared to conventional methods! PSU for data mining with in-house solar power consumption





Self-consumption of solar power and how to use the surplus power

* Since the product is under development, the specifications and the design shown here may change without a notice

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Optimum for transportation equipment! Special feature on High Peak Power Support PSUs

In some cases, power supply units larger than actually required are used to address the peak load current. By selecting Nipron's high peak power support PSUs, it is possible to make the system smaller and reduce the cost. With the cooperation of Itoh Denki Co., Ltd., a measurement was done to determine how big a peak current is supported by a single PSU (GPSA-600) using a motor roller.

Measurement results of peak current with simultaneous start-up of all zones

With the cooperation of Itoh Denki Co., Ltd., an experiment was made to verify how many zones of motor roller (POWER MOLLER®) can be started up with a single unit of GPSA-600-24P.

Measurement conditions

Transfer method: Simultaneous start-up (slow-start setting of 0.3s) Transfer speed/weight: 60 m/min, 40 kg (arranged in each zone) Number of connected zones*: 1, 4, 8 and 12 zones

Simultaneous start-up ... Upon confirming the start of transfer in the subsequent zone, the transfer in the subject zone is started.

Slow-start setting ... Refers to the time setting from the POWER MOLLER start-up to the moment at which the set speed is reached. This setting prevents the pile of cargo to collapse.

manufactured by Itoh Denki Co., Ltd.

Motor roller (POWER MOLLER®): PM486GE-60

Driver: CB-016N6 manufactured by Itoh Denki Co., Ltd.

* Zone ... A section in which several free rollers (eight in this experiment) are belt-driven by a single POWER MOLLER.

Measurement: The peak current and voltage of GPSA-600-24P were measured by performing a simultaneous start-up in 1, 4, 8 and 12 zones.



Figure B Figure C

A represents a single zone. B is a free roller and C represents a motor roller.



Measurement results

In the simultaneous start-up of POWER MOLLERS (with 0.3s slow-start setting), up to fourteen zones were tested and it was confirmed that all fourteen zones started up. Hence, it is considered that GPSA-600-24P has the capacity to drive up to about fourteen zones.

However, since the PSU went into the over-current protection (OCP) mode in the experiment with fourteen zones and the output voltage dropped a little, Nipron recommends to use it up to twelve zones from the perspective of product specifications.



It is important to select the PSU suitable for the peak power of the motor.

Shown on the left is an example of a waveform of a motor load.

Motors typically require a larger load capacity than that of normal operation during start-up. Also, the load varies depending on the cargo being transferred and the transfer method. Especially with DC motor rollers involving a large change in the load, unlike AC motor rollers that start up relaying the cargo, it is necessary to step into the selection of PSU and this puts a significant burden on the user.

Nipron's PSUs support a high peak power specifically for the motor load. Based on the frame length, the number of zones and the number of motors, proposals on optimum PSUs can be made.

Nipron's power supplies used in numerous electrical transmission devices to manage high peaks

http://www.nipron.com

High peak power support PSU lineup

Correspondence between the number of motors driven and the PSU

Number of motor rollers driven Recommended Actual capacity		PSU model name	Input voltage	Output voltage	Rated capacity/Peak capacity	
1 to 2 rollers	1 to 2 rollers	OZP-120-24	85 - 264 VAC	24 VDC	120 W	216 W
3 rollers	3 rollers	UZP-150-24	85 - 264 VAC	24 VDC	150 W	400 W
4 rollers	5 rollers	OZP-200-24	85 - 264 VAC	24 VDC	200 W	400 W
5 rollers	6 rollers	OZP-350-24	85 - 264 VAC	24 VDC	350 W	600 W
12 rollers	14 rollers	GPSA-600-24P	85 - 264 VAC	24 VDC	600 W	1440 W

* To use the PSU in an environment where the coefficient of friction would be larger than normal, such as refrigerator/freezer stores, it is necessary to reduce the number of motor rollers. Contact us for further information

2P-350-24









Large capacity & high efficiency Board type switching power supply

OZP-350-24 Capable of driving five motors!

350 W rating Peak capacity 600 W (for ten seconds)

95(W)×47(H)×222(D) (Open frame type) 107(W)×57(H)×252(D) (with cover)

Miniature, large capacity & high efficiency Board type switching power supply

Capable of driving three motors!

150 W rating Peak capacity 400 W (for ten seconds)

75(W)×35(H)×168(D) (Open frame type) 83.8(W)×45(H)×188(D) (with cover)

Large capacity & high peak power Unit type switching power supply

Capable of driving twelve motors!

600 W rating Max. peak capacity 1440 W (for five seconds)

128(W)×61(H)×240(D)

Invitation to exhibition

Invitation to Logis-Tech Tokyo 2018



Event date: September 11 (Tue)-14 (Fri), 2018 Venue: East 8 Hall, Tokyo Big Sight Booth number: 8-510

Nipron will participate in Logis-Tech Tokyo 2018, which will be held for four days from 11th to 14th of September at the Tokyo Big Sight. This exhibition is the only one in Japan and the largest one in Asia specializing in logistics which is indispensable for economic activities infrastructure, and held to facilitate the trade, technological improvements, provision of information and personal exchange by collecting the latest software and hardware, including logistic devices, systems and services

At the Nipron's booth, many single output power supplies, including the GPSA and OZP series selected by many transportation equipment manufacturers, will be displayed. Also, there will be transportation equipment demonstrations utilizing OZP power supply units to facilitate better understanding of Nipron products. If you happen to be there, please do not hesitate to visit Nipron booth



Invitation to exhibition at the 5th INT'L SMART GRID EXPO Osaka

side World Smart Energy Week Officering **SMART GRID EXPO OSAKA**

Nipron will take part in the 5th INT'L SMART GRID EXPO Osaka, which will be held for three days from 26th to 28th 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 the Nipron's booth, the PV Maximizer, which eliminates voltage differences between strings by boosting a drop in the string voltage while maintaining the maximum power point and extracts the maximum power from panels available for power generation, the PV Guardmyan, which enables accurate remote monitoring and diagnosis, and the PV eXpander, which allows the user to save the cost of grid connection, hold the land improvement cost in check and install the maximum number of panels, will be displayed. 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 (TEL)06-6487-0611(FAX)06-6487-0523 do not hesitate to contact us. Our contact: Strategic sales group, Nipron Co., Ltd.

Event date: September 26 (Wed)-28 (Fri), 2018 Venue: Hall 5, INTEX Osaka



A scene of last year's presentation (E-MAIL)support@nipron.co.jp

Report of exhibition

Participated in the IoT/M2M Expo

Nipron participated in the 7th IoT/M2M Expo, which took place for three days from the 9th to 11th of May at Tokyo Big Sight. The Nipron's booth featured the demonstration sample of HPCSA-700P, which is the IoT model under the development, and the display of HPCSA-1500P, a large capacity ATX power supply unit, among others.

Especially, the HPCSA-1500P, a large capacity 1500 W ATX power supply unit designed for the deep learning and GPU servers, which have become the focus of people's attention in recent years, attracted the eyes of many visitors. With specific inquiries obtained, the exhibition provided a good opportunity for us to reaffirm that the market will grow in the future.



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

http://www.nipron.com

PV Maximizer corner

Thanks to the support of customers, the 5,000 string mark broken

The PV Maximizer, which is capable of maximizing the power generation string by string, has broken the mark of 5,000 cumulative units shipped since its introduction in 2014. The number of units translates to the total capacity of approximately 24 MW. Taking this opportunity, Nipron would like to express its appreciation to all customers who have adopted the product.

Besides enabling actions against shadows, centralized arrangement and NWSE omnidirectional arrangement by performing the MPPT control string by string, the PV Maximizer has been recognized for its capability of reducing the O&M cost and building a power storage system by the introduction of PV Guardmyan, which enables remote diagnosis. Also noteworthy is the fact that Nipron is a Japanese manufacturer specializing in industrial switching power supply units and has been designing and manufacturing products in Japan for about forty years. The company's background transpires a sense of security, which translates to the success of its products.

Concerning the next generation power electronics market including the PV Maximizer, it is expected that the global market size will expand to 3.2 GW in 2016, about 5% in terms of utilization, and approximately 9 GW in 2020, while it is said that the utilization in the Japanese market is less than 1% of all solar power stations in operation. Amidst the increased requirement for the next generation power electronics, which optimizes solar power stations and enhances their values, the PV Maximizer is capable of enhancing customers' solar power stations, increase their values, offering Nipron's unique remote diagnosis feature and constructing a power storage system. We welcome inquiries from anybody who is interested in the product.



Notice on the renewal of ISO9001 & ISO14001 certifications

The ISO9001 & ISO14001 certifications have been renewed.

Following certifications for Nipron have been renewed to the latest 2015 versions by Intertek Certification Co., Ltd.

- ISO9001 (International quality standard)
- ISO14001 (International environmental standard)

Based on its business philosophy of "Guard," Nipron has set the undertaking of "guarding the global environment" and has been taking actions to improve the influence to the environment continuously and intends to maintain and further improve the product quality with the following recognition in mind.

"To improve the quality and maintain the high level of quality"

"To establish the control system for the creation of products required by the customers"

"To embody the technology supported quality in products in the production line without fail'

"To respond quickly to nonconformities and establish a system to prevent recurrences'



Example of PV Maximizer installation







Business is Competition

"Never give in!"

July 1, 2018 Good morning, everyone! Today marks the first day of our 38th fiscal year. This year has been a very good year for me. Two joyous things occurred that I would like to share with you.

On May 10, I was honored to receive the distinguished Order of the Rising Sun, Silver Rays, from the Japanese government. The ceremony took place at the Prince Park Tower Tokyo Hotel, after which the recipients were taken to the Imperial Palace and received words of appreciation on the bestowal of the order from His Majesty the Emperor himself. I am extremely grateful, as is my wife, standing next to whom I received the medal of honor.

This decoration was quite unexpected. When I look back on what I was able to contribute to the nation and to society, in a way I feel undeserving of such an honor. I have heard that it is quite rare for a currently active business executive to receive such a decoration, so I am elated and further humbled by the honor. The recommendation for my receiving the honor came from the Kobe Branch of Japan Finance Corporation, which has seen how I started the enterprise from scratch, specializing in DC power supply equipment, and survived through 47 years to become a leading medium-sized company today that is useful to society in many ways. I gratefully accepted the recommendation for the recognition it gave to the contribution we have made to other small and medium-sized enterprises. With appreciation, I would like to express my gratitude to our long-supporting customers, suppliers, financial institutions, and other stakeholders. Thank you very much.

I will use the conferral of this honorable decoration as motivation to make further efforts to contribute to the advancement of the nation and society.

The other thing that brought me great joy was the ability to announce that Nipron has achieved its highest ever sales in the fiscal year ended June 30, 2018. That figure was 6.1 billion ven, with ordinary income well over 600 million ven, close to 700 million ven.

The year-on-year growth of 30% was due not only to economic growth, but certainly to the effect of stimulating the market by introducing new products, etc. Of particular note is the large increase in sales of large switching power supply equipment (mainly 3 to 5 kW output or more) for semiconductor equipment systems and machine tools. Although Nipron does not place top priority on sales, 10 billion yen has nevertheless been a significant goal that we have held for a long time. In the current fiscal year (38th term) we have set 8 billion yen as our sales target, but then to reach 10 billion yen in the following year, as outlined in our 10th management plan, sets the bar quite high. Last year, in the first term of our plan (37th term), we set and reached a target of 6 billion yen-a significant achievement, as I see it.

This performance is the result of strong cooperation among all of our employees—including sales, management, and manufacturing personnel—to whom I am grateful and happy for. As a reward for everyone's efforts, I have announced a summer bonus and raises that exceed government guidelines. Also, we have decided to offer a company trip to all of our employees (approximately 400 people) between September and October (to celebrate our 200th company-wide sales conference).

In order to reach 10 billion yen in sales in two years by the end of our 39th term, we are relying on strong demand for solar power to continue, as we have invested significant resources in creating markets for our power supply equipment (PV Maximizer), monitoring systems, and power storage systems. In the first half of the previous term we received many orders for our power storage system (PV eXpander), but in the latter half of the year the market cooled due to the government's announcement of facility expansion restrictions, resulting in a difficult situation for us. However, since future prospects for the market remain bright, I am determined to make the most of our management plan through the solid execution of good ideas.

On a different note, yesterday I was up at three o' clock in the morning to watch the Japanese national soccer team play Belgium to try to reach the final 8 at the Russia World Cup 2018. In contrast to the team' s passive performance against Poland in the final game of the qualifying round, I was moved by the players' magnificent display of energy and their battle to the very end. I was surprised to be reminded again how much the players' way of working together and their movement changed according to the strategic intention and direction of their head coach.

People have different opinions of team coach Akira Nishino, and I apologize for my amateur viewpoint, but it seemed to me that there was much sentiment critical of the coach from the qualifying round on that stemmed from a mix of anger and frustration that the team had such wonderful players and that they could have won if only the coach had commanded them to do so.

Coach Nishino was hired suddenly, just two months before the World Cup. In the team's tune-up matches they lost one match after another, so their victory over Colombia in their first pool play match was unexpected and a tremendous accomplishment. Previously, the Japanese national team' s head coach was a foreign national, so Nishino emphasized good communication. By communicating with the players he was certainly able to build trust, which helped a great deal in getting them motivated and boosting their collective strength. But in the second match, against Senegal, we only caught glimpses of Nishino's philosophy (or Japanese style). In the third match, against Poland, Nishino's extreme strategy was revealed in his player selection and passive playing style. From the start, the aim was only to draw. That almost proved his ruin when the opponent scored a goal. In the second half, his tactics were a shameful passing of the ball back and forth, content to lose as long as another goal was not scored so that Japan would go through in second place instead of Senegal based on a difference of fewer vellow cards assessed.

I was angered, wondering why he didn't put in stars like Keisuke Honda. His strategy was to play it safe and rest his top players until the round of 16, but if Senegal had evened the score with Colombia in the other pool play match taking place at the same time, Japan would have lost out and his strategy would have amounted to nothing. Then, in the match against Belgium in the next round, I still wonder if he knew what he was doing by waiting until the final 10 minutes to put in Honda.

I was frustrated, seeing the coach' s facial expression shown during the match on TV, and by his tactics that showed no willingness to go for a win, and I think that even among his supporters there were many who were similarly frustrated. So, what is my point? I want to draw a lesson from this frustration.

Whether you are a coach with the eyes of the nation upon you or the president of a company, as the person with the power to make decisions and give commands, you have an obligation to aim for victory against the competition and command your subordinates (the ones who will carry out your orders) to go for the win. If you are merely trying not to rock the boat, you will not win. That kind of attitude only leads to losing. It doesn' t matter how graceful the loss is or if you receive consolation from it. Loss is frustrating and detrimental, and you can never get it back. It's not enough simply to put up a good fight. A loss is a loss. I wish that Coach Nishino had the guts to go for the win.

I myself am giving this kind of critique as a company president who is in a similar situation. Business is competition, and if you lose, your employees become frustrated, so one cannot burden them with the fate of failure. Since I founded this company, my attitude has been "Never give in!" I have battled continuously in this way for 48 years, and that has brought me to this day. I would like to believe that this attitude has led to the recognition of a national medal of honor. I pledge once more to work hard for Japan and for society at large in business to not bring shame to this important decoration.

Setsuo Sakai July 2018

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

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