Nipron GAZE into the future

Nipron Wave

Vol.58 2020 Winter

This is the highlight

1 Special Feature on GP Power Supply (Power Supply for Renewable Energy)

To achieve the SDGs, environmentally friendly corporate activities are required.
Please make Nipron's products and technologies useful for initiatives to protect the global environment!

2 Special feature on new product GP1U-1000 series

Introducing high-reliability and long service life power supply, 1008W rated & 1440W peak power & 1U size.

Front cover illustration by Wataru Harada

Please make Nipron's products and technologies useful for initiatives to protect the global environment!

SDGs

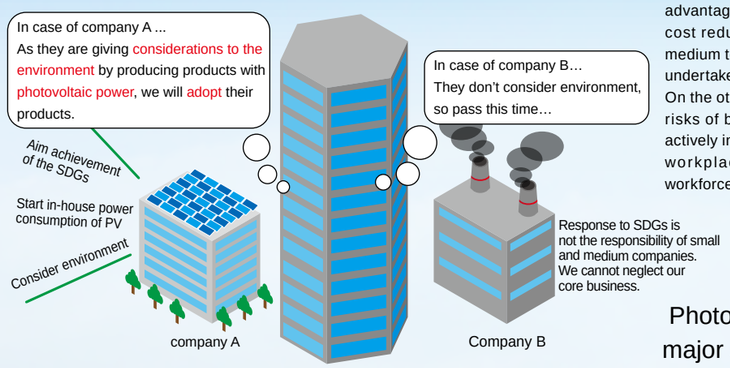
RE100

ESG Investment

Environmentally friendly managements are required.

Today, efforts have been started in the global scale to solve various environmental issues with the goals, such as SDGs, having been defined. For example, the dissemination of electric vehicles, which do not emit CO_2, has accelerated.

Large corporations undertaking to achieve SDGs are using the response to SDGs as a criterion for selecting their partners



Undertakings of SDGs, RE100 and ESG will create a variety of advantages (better corporate reputation, increased sales, long-term cost reduction, new business opportunities, etc.) and this is why medium to small companies, in addition to large corporations, should undertake them even by spending time and money.
On the other hand, companies that neglect those activities are taking risks of being left out as a partner by large corporations who are actively involved in such activities and being regarded as undesirable workplace by people, making it difficult to recruit excellent workforces.

SDGs

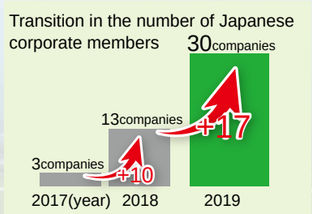
AFFORDABLE AND CLEAN ENERGY

CLIMATE ACTION

SDGs (sustainable development goals) refer to 17 goals and 169 targets set to solve issues held by the world to build a sustainable society. Undertakings to achieve SDGs can increase the likelihood of corporations to survive and create a variety of advantages, such as opportunities to gain new markets. On the other hand, failure to undertake SDGs gives rise to risks such as poor corporate reputation and consumers holding off the purchase. Hence, the SDGs can be considered as opportunities for the businesses to grow. It is believed that renewable energies are essential to achieve the goal of "Affordable And Clean Energy," which is one of the 17 goals.

RE100

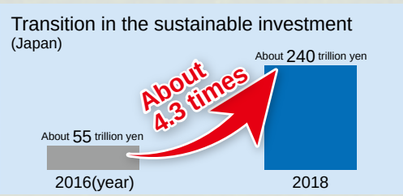
This is an international association of corporates operated by a British nonprofit organization focusing on obtaining 100% of electric power required to run offices and plants by renewable energy sources, such as solar power, by 2050. While most corporations aim to achieve the target in between 2030 to 2050, several dozens of European members have taken a lead by achieving the target already. Among Big Four tech companies (GAFA), Google has achieved the target in 2017 and Apple has announced that its progress was 99% as of 2018. There are 221 members globally as of December 2019, with a total of 30 Japanese corporations after the addition of 17 in 2019.



* As of December 19, 2019, when the column was written

Reference: RE100"GOING 100% RENEWABLE: 2019 RE100 PROGRESS AND INSIGHTS ANNUAL REPORT"

ESG Investment, Sustainable Investment



Reference: Ministry of Economy, Trade and Industry, "Report of the SDGs Management / ESG Investment Study Group"

The ESG investment refers to investments made on corporates giving considerations for environment, society and governance, while the sustainable investment refers to corporates that give considerations for ESG, in addition to financial analysis. The amount of such investments is increasing globally and, from 2016 to 2018, that of Japan has increased approximately 4.3 times. As evidenced in the move of Financial Services Agency to amend the guidelines for institutional investors, such as insurance and trust companies in spring, 2020, adding a clause to focus on ESG for the first time and demanding them to declare if they give a consideration to the viewpoints of ESG in their investment decisions, these concepts are spreading as guidelines for determining the corporate value.

Photovoltaic power generation utilizing four major solutions from Nipron is recommended

Optimum in the age of environment-aware business management

Four major solutions for photovoltaic power generation offered by Nipron

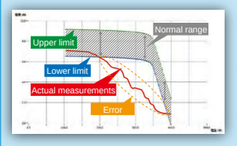
PV Maximizer

- Significantly reduces the effects of shadows and failures
- Maximizes the power generated
- Repowering of existing power stations

Perfect-full O&M

- Supports offered in every step from monitoring to restoration
- Power station improvements are also offered
- Perfect maintenance-free

PV Guardmyan



- High-precision string monitoring
- Diagnose failure remotely
- Detect error early

Neo eXpander

Charging/ discharging DC/DC converter

- Best for in-house power consumption, off-grid and VPP
- High efficiency power storage system can be constructed easily

Please make Nipron's products and technologies useful for environment management. http://www.nipron.com

Ideal for local governments and small and medium enterprise for RE Action http://www.nipron.com

Expectations for DC power supply is in the rise

Renewable Energy and dispersed power source

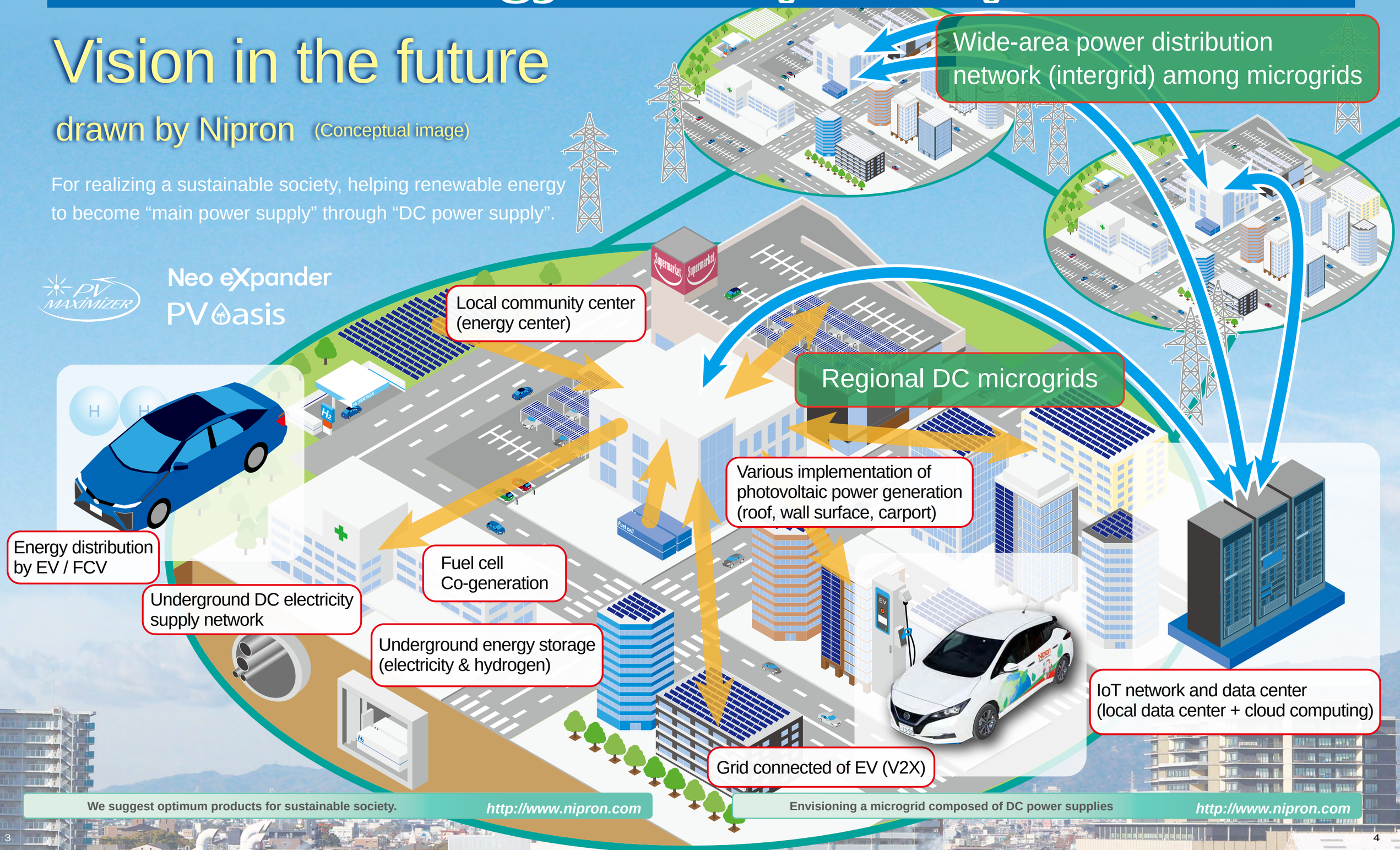
Vision in the future

drawn by Nipron (Conceptual image)

For realizing a sustainable society, helping renewable energy to become “main power supply” through “DC power supply”.

Neo eXpander

PV Oasis



Today, consuming the photovoltaic power is more advantageous

PV Oasis

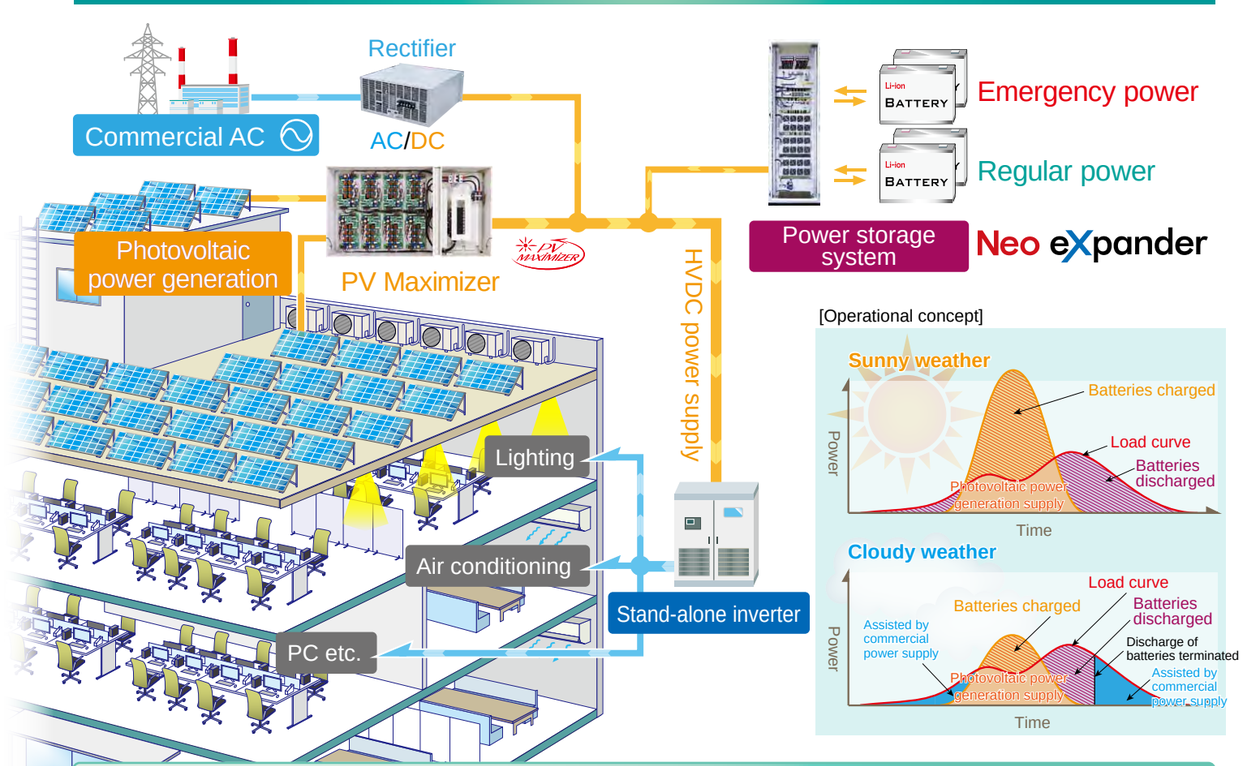
The in-house consumption of PV power stored in battery

The advantage of in-house power consumption is not only reducing the electric bills

In addition to large corporations, there is a trend to demand small and medium companies to undertake the reduction of CO2 by investors and business partners with the backgrounds of SDGs and ESG investment.
On the part of small and medium companies, this also means an opportunity to expand the business with large corporations who are actively involved in the use of renewable energies and decarbonization and enhance their social values.

- Improvement of company value
- BCP support
- Reduce the electric power cost
- Energy saving
- Easily introduce
- Possible to use tax incentives

The in-house consumption of PV power stored in battery (PV Oasis) system image



The power generated shall be "used" rather than "sold"

http://www.nipron.com

If you introduce in-house power consumption, PV Oasis is good value!

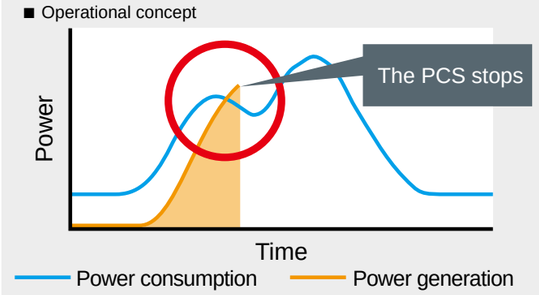
Common in-house power consumption

For the in-house power consumption with a grid connection, it is necessary to take actions to prevent "inverse current," a flow of power generated to the power company. Typically, following measures are used.

Ⅰ. Introduce a device to prevent the inverse current (RPR).

While the introduction of a device preventing the inverse current (RPR) will prevent the inverse current, the PCS will stop if the power generation becomes excessive and it will take time to restore it. Also, the cost of RPR installation is expensive.

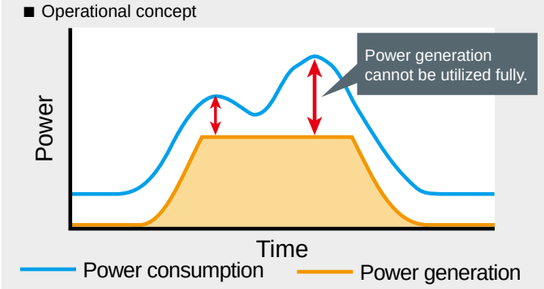
■ Operational concept



Ⅱ. Limit the PV power generation at or below the base power consumption of the building.

If the power generation is limited at or below the base power consumption to prevent the inverse current, it will be impossible to install solar power panels with a capacity sufficient to make the user appreciate the economic advantage and the power generation system will not be utilized effectively.

■ Operational concept



The in-house consumption of PV power stored in battery (PV Oasis)

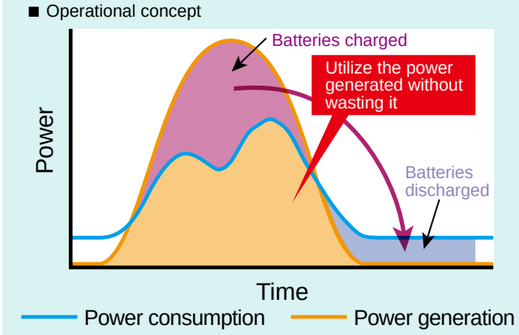
Because the grid connection is not provided,there is no inverse current…
RPR is not necessary and economical.
An elaborate discussion on the grid connection is also unnecessary.

It is possible to utilize the power generation fully.
Surplus power is charged to battery.

"PV power + Battery" will enable a stable operation without the influence of weather.
Moreover, the power will be backed up with no interruption in an event of a blackout.

The use of a stand-alone inverter will make the PCS unnecessary and economical.

■ Operational concept

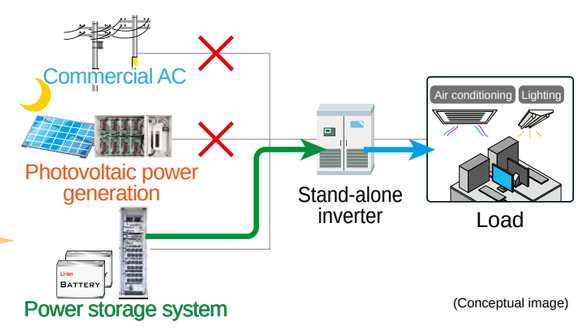


Highly efficient system can be constructed

It is optimal for BCP support.

In an event of a disaster, the power can be supplied from the photovoltaic power generation system and the battery. In addition, the system can be used for BCP support by setting aside a part of the battery power for emergencies.

The setting can be made freely
- Regular power
- Emergency power



(Conceptual image)

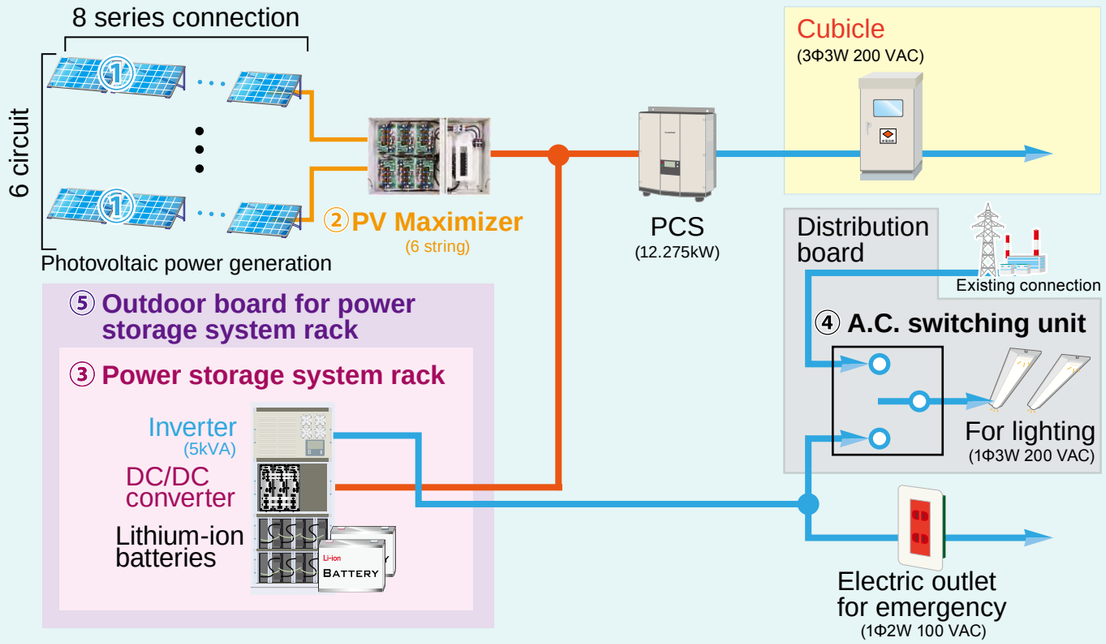
The in-house consumption of PV power stored in battery "PV Oasis" have many advantage of introduction

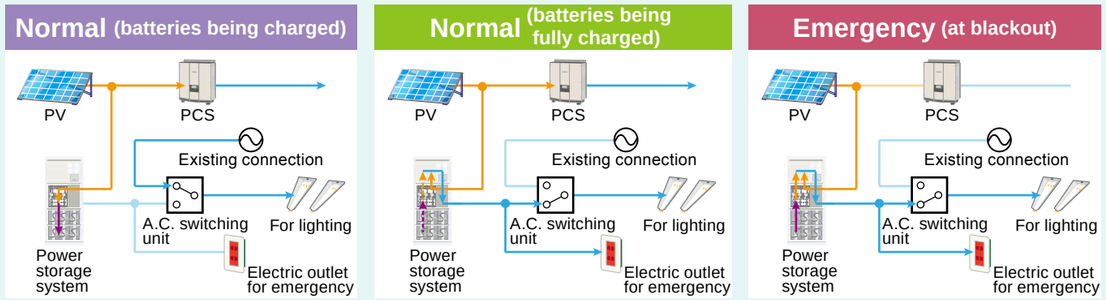
http://www.nipron.com

We suggest PV Oasis according to an application.

Effective use of surplus power & blackout backup system

By storing the surplus power of a power station that sells power in the battery, it is possible to use the battery as a backup power supply in case of a blackout, leading to an effective use of power in the station. In the example shown below, the backup power is supplied only to the lighting and emergency power outlets during a blackout.





An in-house power consumption system with a battery is offered as a package. Introduction is easier now.

① Solar cell module (crystalline)
Output:325W
Total number of panels:48
Total capacity of panels:15.6kW
Construction:8 series connection×6 circuit

② PV Maximizer
The number of units:1
The number of circuits:6 circuit
Output Voltage:400 VDC max.

③ Power storage system rack
Input Voltage:400 VDC max.
Output Voltage:1Φ3W 200 VAC
Output capacity:5kVA
Maximum charge power:5kW
Maximum discharge power:5kW
Battery type: Lithium-ion battery
Nominal power storage capacity:7.44 kWh
Size(mm):W800×D800×H1,900

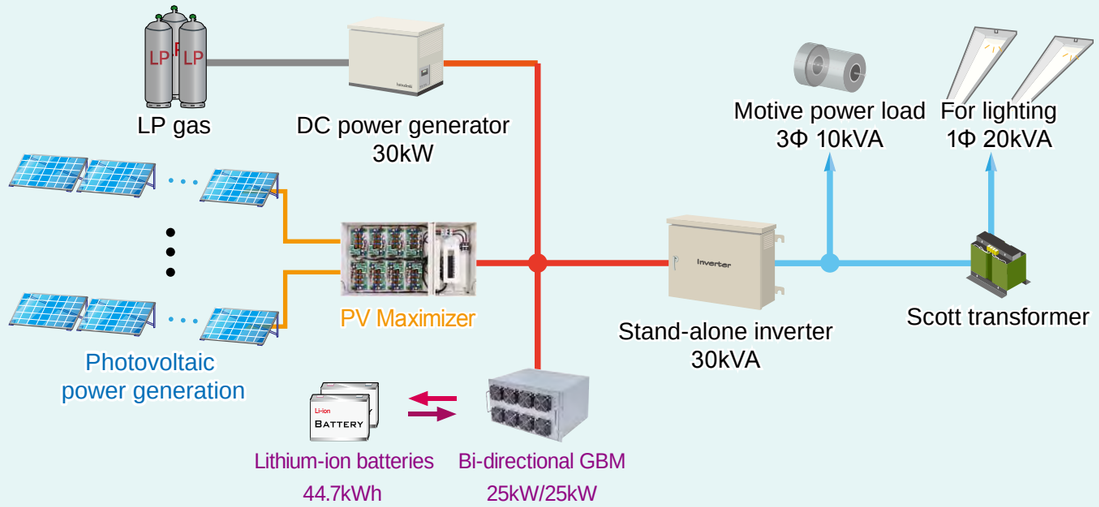
④ A.C. switching unit

⑤ Outdoor board for power storage system rack
Size(mm):W2,000×D2,000×H2,507

Build a system that will not stop even with a blackout in a disaster *http://www.nipron.com*

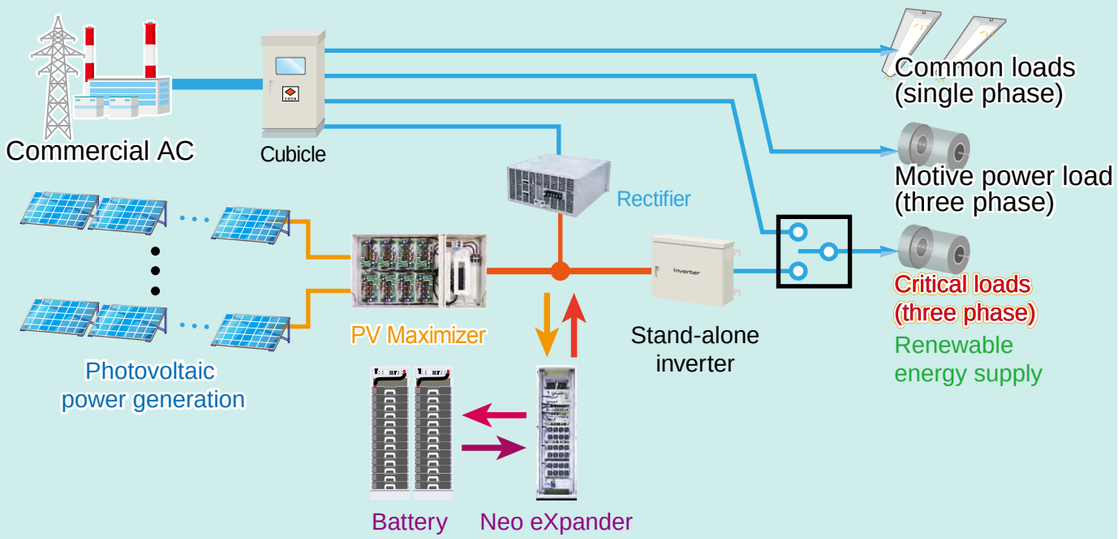
Off-grid type in-house power consumption system

By combining an LP gas generator and the in-house power consumption of PV power stored in battery system (PV Oasis), the system can be run without using commercial power supply at all. During the day, while using the photovoltaic power, surplus power is stored in a battery. At night and under an inclement weather, the system is operated with the power from the battery and, if there is a shortage of power, the LP gas generator is used to provide an assistance.



In-house power consumption & blackout backup system

The in-house power consumption of PV power stored in battery system (PV Oasis) is connected only to critical loads. During the day, while using the photovoltaic power, surplus power is stored in a battery. At night, the power is supplied from the battery with an assistance of commercial AC power in case of a shortage. Also, because a large-scale installation of cubicle is not required for this system, it is possible to reduce the cost and time of installation.



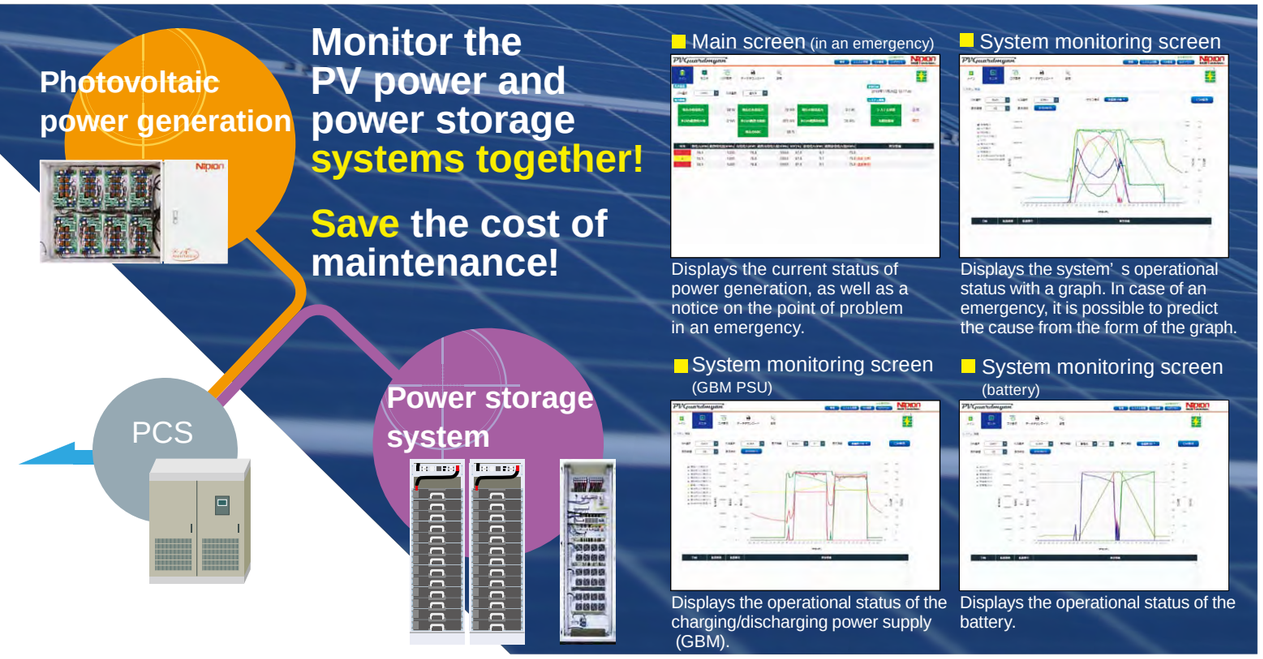
Meeting a variety of customer needs with PV Oasis *http://www.nipron.com*

High-precision remote monitoring system PV Guardmyan

Enables the remote monitoring & control of power storage system

PV Guardmyan manage and analyze big data, including the power generation for each string measured by the PV Maximizer and characteristics curve (I-V characteristics curve) reflecting the health of each string, detect problems and their signs remotely and report them.
The system now offers additional features of monitoring power storages systems, cloud-based diagnosis and remote control of charging/discharging operations. This makes it possible to save the burden of performing works and addressing problems on site, in addition to reducing the power generation loss by detecting problems at an early stage.

New PVGuardmyan



Function of monitoring battery

Function	Content
Display electric power information	Display electric power information
Display error information of the device	Collects information on device failures Supports the detection of problems on the battery
Parameter setting	Following setting files are kept for each charging/discharging controller. • Thresholds for errors in the cloud-based diagnosis • Charging/discharging settings (demand control settings*)
Remote control	System control (startup/reset) Emergency stop, charging/discharging control
Diagnosis of the cloud's error	Power control diagnosis, abnormal internal temperature
Notification of error	Sends an alert mail if any problem was found Self-diagnosis of devices, cloud-based diagnosis

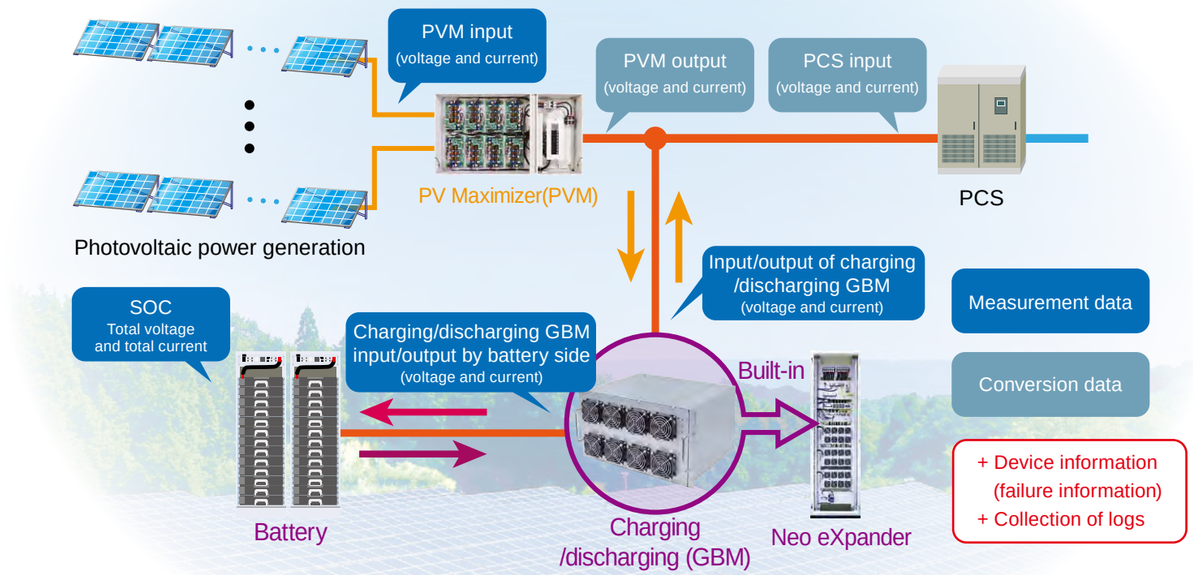
* To be supported

Power storage cloud-based diagnosis features

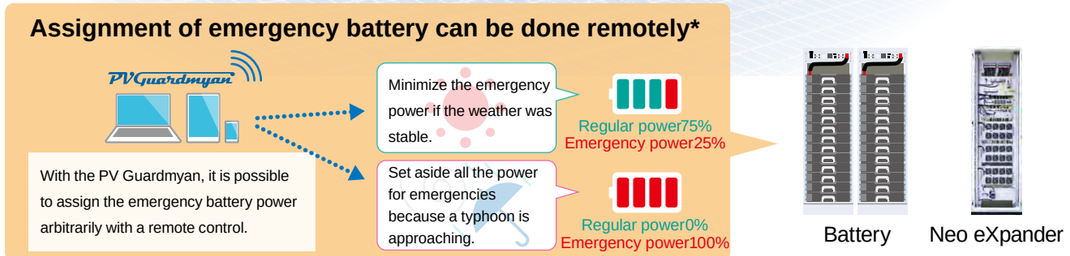
Function	Content	Examples of problems detected
Errors of charging /discharging	Detect the error of charging /discharging control	Failure of charging/discharging (GBM) Failure of the battery Forget to switch on the breaker
Mismatch in the bus voltage	By comparing the voltage measurements on the same bus, detects failures of the device.	Failure of charging/discharging (GBM) Failure of the battery Forget to switch on the breaker
Detection of device error	Detects failures of the device from the internal temperature and the output voltage balance.	Failure of charging/discharging (GBM)

PV Guardmyan — enabling remote monitoring of both PV power and power storage systems http://www.nipron.com

Power storage monitoring system (the concept of data collection)



Assignment of emergency battery can be done remotely*



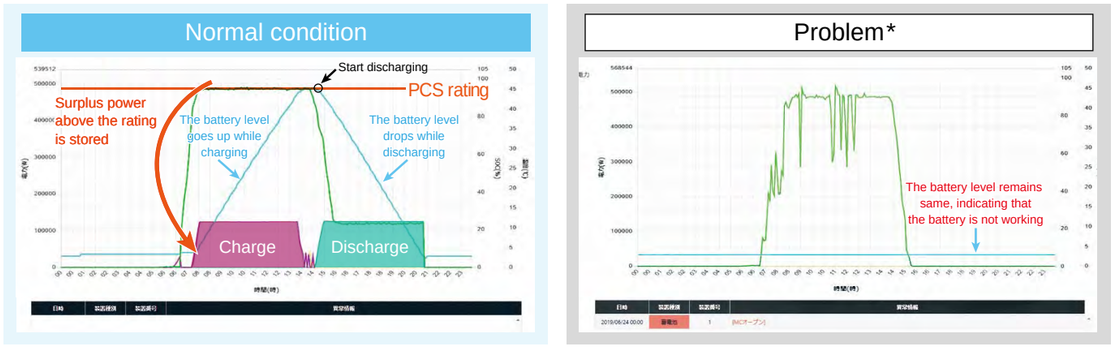
* To be supported

PV Guardmyan power storage system monitoring screen

Comparison of screens under the normal condition and with a problem (an example)

At a power station at which surplus power is stored in a battery by overloading the PCS at a level significantly higher than its rating and the stored power is sold at night, the operation of power storage system monitoring by the PV Guardmyan was verified.

PCS input power — Charging power — Discharge power — Battery level



* The measurement was done by opening the main magnetic contactor between the charger and the battery as a test.

The operational status of the power storage system can be checked at a glance, making it possible to detect problems and restore the system at an early stage

Remote cloud-based diagnosis of battery abnormalities http://www.nipron.com

GP1U-1000 SERIES

Large capacity 1008W low height 1U size PSU

Continuous : ***1008W***

Peak : ***1440W***

Output voltage : ***24V/48V***

A long service life and high power density offered in one unit

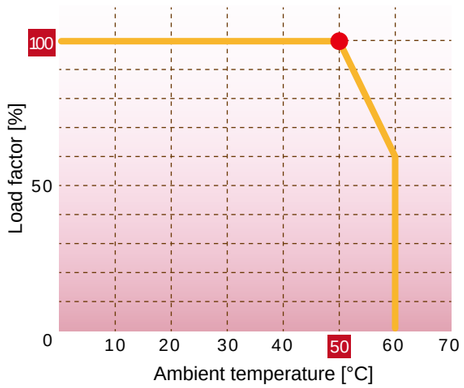
Expected life of more than 10 years *1

1U 40.5mm

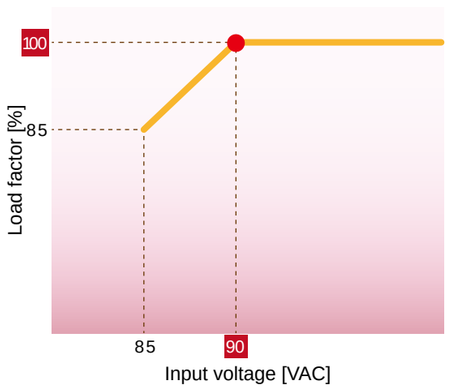
Rack mounting available

*1 Expected life in case of continuous running with 100VAC input / rated output / ambient temperature of 35°C

100% output with ambient temperature of 50°C available



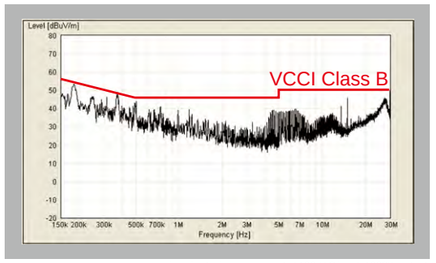
100% output at 90VAC input available



Realize large capacity with 1U size continuous 1008W peak 1440W ***http://www.nipron.com***

Low noise

A conducted emission of even a single power supply unit clears VCCI Class B due to enhanced noise filter circuit and optimized arrangement of parts. Since it is not necessary to provide a noise filter on the outside, it contributes to cost reduction and workload reduction.



Examples of actual measurement at 100VAC input, 1008W output

Low leakage current

Low leakage current characteristics of 0.5mA or less at 264VAC input have the same level as a power supply listed as certified according to the medical standard.

Models certified for medical standards will also be added

Medical standard IEC60601-1 Ed.3.1(MOPP) certified model will be added.

Supports parallel operation

With a built-in current balance circuit, supports parallel operation of up to three units

High efficiency by limiting temperature rise

A high efficiency of 91% achieved with 240 VAC input. 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.

Long service life and highly reliable

10 years life expected in case of continuous running with ambient temperature of 35°C. Highly reliable because of designing and manufacturing products in Japan

Supports various signals

Remote sensing signal supported

By connecting at the end of the load, corrects the voltage drop on the positive line of power output cable.

PWR_OK signal equipped

"H" signal is delivered when the output is normal.

Remote ON/OFF function equipped

Output ON/OFF control is available with Remote ON/OFF signal(PS_ON#).

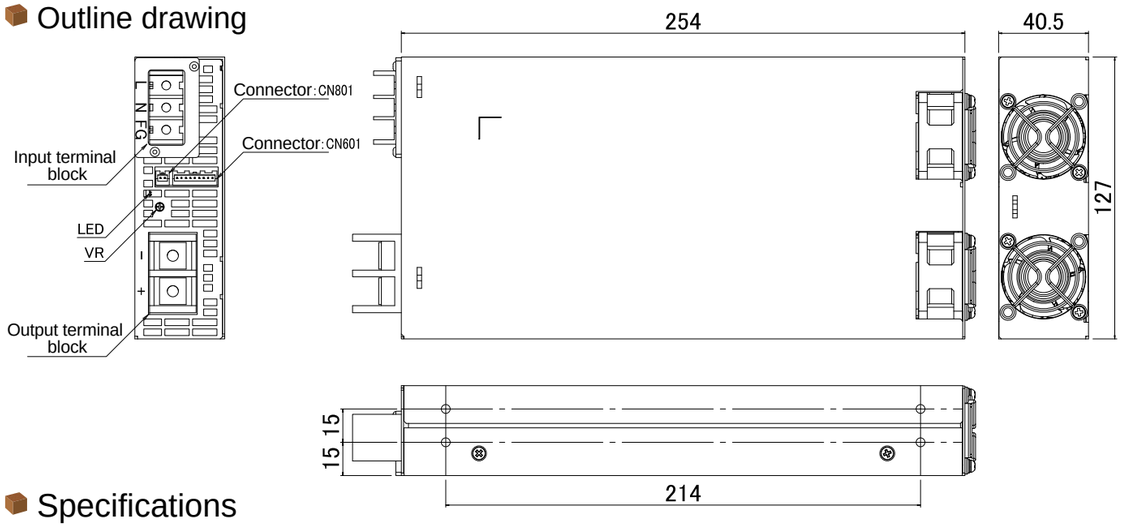
Blackout detection signal

The blackout detection signal is provided as a standard feature and the customer can save the cost of preparing a detection board.

Potentiometer equipped

More stable operation will be achieved by correcting line drop.

Outline drawing



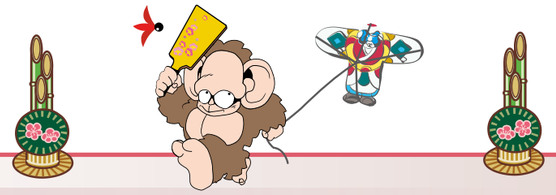
Specifications

Model	GP1U-1000-24P	GP1U-1000-48P	Common output
Output voltage	+24V	+48V	+12VSB
Continuous maximum current / power	42A	21A	0.5A
	1008W	1008W	6W
Peak current/ power(within 5s)	60A	30A	0.5A
	1440W	1440W	6W
Minimum current	0A	0A	0A
Input voltage	85-264 VAC with PFC, global input		

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

High reliability design enables continuous running 24 hours a day, 365 days a year ***http://www.nipron.com***

Invitation to exhibition



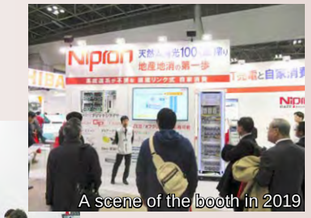
10th INT'L SMART GRID EXPO

Held inside **World Smart Energy Week 2020**

10th INT'L SMART GRID EXPO

Dates: February 26 (Wed)– February 28 (Fri) 2020
Venue: Tokyo Big Sight
Booth No: W7-23

Nipron will participate in the 10th INT'L SMART GRID EXPO, which will be held at Tokyo Big Sight for three days from 26th to 28th of February. It is an international exhibition that introduces every product and technology required for the construction of a smart grid.
As it became more advantageous to "consume" the generated power than "sell" it and, after observing recent large scale blackouts caused by earthquakes and typhoons, the spotlight is on the in-house consumption of power. For this reason, Nipron plans to feature the PV Oasis, the in-house power consumption of PV power system that does not connect to the grid, eliminating the concern for inverse current, and makes the electric power available even in blackouts, and the Neo eXpander, a charging/discharging rack for medium to large-scale power storage systems that is also applicable for surplus power storage and emergency responses. In addition, presentations that were popular in the past exhibitions will be given. If you are planning to see the show, please come visit Nipron booth by all means.



A scene of the booth in 2019

A scene of the meeting area in 2019

* 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: Global Sales Division, Nipron Co., Ltd.

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

A report on the Management Policy Presentation

On October 25, 2019, the 16th Management Policy Presentation was held at Miyako Hotel Amagasaki after a private exhibition and factory tours held at the Nipron head office inviting the guests. We would like to thank everybody who spared their time to attend the meeting.

Private exhibition and factory tour

At the permanent exhibition space, which opened anew in autumn last year on the 5th floor of Head Office, the space and the number of exhibited products have exceeded ordinary exhibitions Nipron usually participates in. Besides exhibition of products, the Nipron History Corner, where the history of Nipron since its incorporation to the present day is shown, and Nipron Wave Corner have attracted many visitors. The presentation of solutions for in-house consumption, which was given at the presentation corner, turned out to be a huge success with no empty seat.
In the factory tour, visitors were introduced to the production line occupying a wide space that became available by the completion of a new building two years ago and Nipron's efforts for enhanced productivity and saving manpower, letting them witness the site of producing Nipron's quality products that are highly reliable.

The 16th Management Policy Presentation

At the management policy presentation, Representative Director & President Sakai gave a welcome speech, followed by presentations of business performance for the previous term and the business plan for the current term. Then the business plan for each division was explained by the head of each division. Also given was a lecture on "the current status of renewable energy policies" by Mr. Yoshihiro Sugiyama, Chief of Natural Resources, Energy and Environment Division, Kansai Bureau of Economy, Trade and Industry.
In the fellowship party that followed, everybody was a happy and carefree, enjoying the entertainment of classical opera, and we felt that we could build a tight relationship with every participant.

A wide range of power supply units is available. Call us to find out more. ***http://www.nipron.com***

Nipron Recognized as a Valuable Partner on the Supplier Day of Keysight, a Leader in the world's Electronic Measuring Instruments

A giant step toward global presence

On 5th of December, Vice President Matsubara (responsible for the sales, research and Engineering Headquarters) and Yoshimura of Global Sales attended the awarding ceremony of Keysight Technologies for recognized supplier.

Keysight Technologies is one of the largest manufacturers of electric & electronic measuring instruments having its head office in Santa Rosa, California, U.S.A. Ever since its inception as Hewlett-Packard in 1939, it has always led the measuring instrument market and, currently, it offers the highest level of solutions in the information & communication, aerospace & defense, semiconductor and other industries.
Nipron was invited to the Supplier Day ceremony held in Penang, Malaysia, being recognized for its long business relationship with Keysight Technologies, with a plan for continued purchase of our ATX power supply units in the future.
During the ceremony, we were given an opportunity to attend seminars in a variety of fields, including IoT, Industry 4.0 and big data, automotive and energy sharing, and differentiation of supply chains.

Keysight Technologies plays a role of the market leading in the 5G technology, which improves the speed and reliability of communication drastically, and Nipron is determined to play its part to contribute to the establishment of secure networks by offering products focusing on the quality and reliability.

A scene of supplier award ceremony by Keysight Technologies

The trophy of supplier award

The quality and confidence available only with a"made in Japan" system

Ever since its incorporation, Nipron has been working hard to develop and produce power supply units that will not "break, collapse or stop" in Japan to protect valuable devices and data of its customers and will continue to do so in the future.

HPCSA-1500P-E2S
Peak:1500W
Continuous:1200W

HPCSA-1000P-E2S
Peak:1000W
Continuous:822W

HPCSA-700P series
Peak:700W
Continuous:600W

HPCSA-570P series
Peak:570W
Continuous:400W

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

The Nipron Story, by Our President

Japan!
Don't fall into a digital colony!

On the first day of the second year of Reiwa
Happy New Year everyone.

According to the Chinese zodiac, 2020 is the year of *Kanoe Ne*. *Kanoe* is a good year for career change, and *Ne* is a year in which we can start wisely: by divine design, it' s an auspicious year for the "New beginnings of growth and prosperity" that comes once every 60 years. I wish all of you a great start to the new year. Many of economic critics have taken a harsh view on the economy for 2020. We are indeed facing the stark reality of the world economy in deepening stagnation amid the US-China trade war, the spread of unilateralism in developed countries of Europe and the United States, as well as the economic instability that the Brexit brings about.

On the other hand, our country Japan is expected to become preoccupied with more severe environmental changes. In addition to the impact of the US-China trade war, the delay in shift to the digital economy will drive the transformation of all market economies, posing a risk that the Amazon effect will ripple through various fields. In all industries in Japan, progress of information acquisition and market domination by oligopolistic IT giants, such as GAFA of the United States, combined with the delay in responding to electronic money and virtual currencies, may accelerate the erosion of the Japanese market by Chinese IT companies. While lagging behind in accommodating cashless payment, I' m afraid that the leading Chinese payment system may penetrate and occupy the Japanese market by undermining the competitiveness of the Japanese economy as a whole, including all the industries and distribution system. I feel restless about our national characteristic and government which lack a sense of crisis and are vulnerable to the US-China battle for the digital hegemony accompanying the trade war between the two countries. In order to avoid such a scenario of failure, I think Japan needs to adopt protectionism at least temporarily to protect the Japanese economy and businesses from the digital invasion. We may stand at the dawn of a new digital colonialism of the 21st century. That' s exactly what China' s Belt and Road Initiative is aiming at.

It can be said that Japan' s sophisticated industrial economic system and monetary system (banknotes, money exchange equipment, distribution mechanism) are delaying digital transformation in the country. If this situation continues, I fear that Japan' s advantages and strengths may allow greater control of the United States and China over its monetary system and distribution system, and undermine its industrial competitiveness, ending up in Japan' s falling from the position as one of the developed countries. When pondering a measure for Japan' s first turnaround after the "lost 30 years" since the government has not been able to devise any such measures, I came up with an interesting idea.

At present, AC electricity supply accounts for nearly 100% of worldwide electricity supply. It is widely recognized that if the electricity supply is converted from AC to DC, it will bring benefits, including improvement of efficiency, in terms of power utilization. Nevertheless, AC specifications of devices and equipment (loads) hinder the progress of the conversion. Actually, converting to DC input is not so difficult, because most loads are converted to DC internally. If conversion to DC is adopted as a national policy, demand for DC conversion will vitalize the industry and help prevent the inflow of foreign goods, and promote the use of renewable energies. Furthermore, it will enhance the resilience to disasters thanks to its easiness of power storage. Also, it will have a profound effect on CO2 reduction. Japan thought that the era of EV would be far off. Meanwhile, China, which cannot catch up with the developed countries such as Europe, the United States and Japan, for engine-powered vehicles, used reverse thinking to map out a drastic national strategy. Turning into action its national plans and policies to come out on top in EV, China began to lead the world as EV gained momentum. Following this example, I' d like to recommend implementing DC conversion as a national strategy earlier than any other countries to the government of Japan, which is struggling with nuclear power and thermal power. Doing so will possibly lead to the revival of the industry and promote export of DC input equipment again. I believe Japan should aim to become a DC-oriented country.

This year is going to be a good year since the whole country will enjoy the boom created by the Tokyo Olympic Games. I' d like to start the new year with you hoping and believing that it will be a good turning point as the historical origin of the year of *Kanoe Ne* says.

Setsuo Sakai
January 2020

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

Sales department and R&D department
1-3-30, Nishinagasu-cho, Amagasaki-city, Hyogo, 660-0805, Japan.
TEL: +81-6-7220-3657 FAX: +81-6-6487-2212