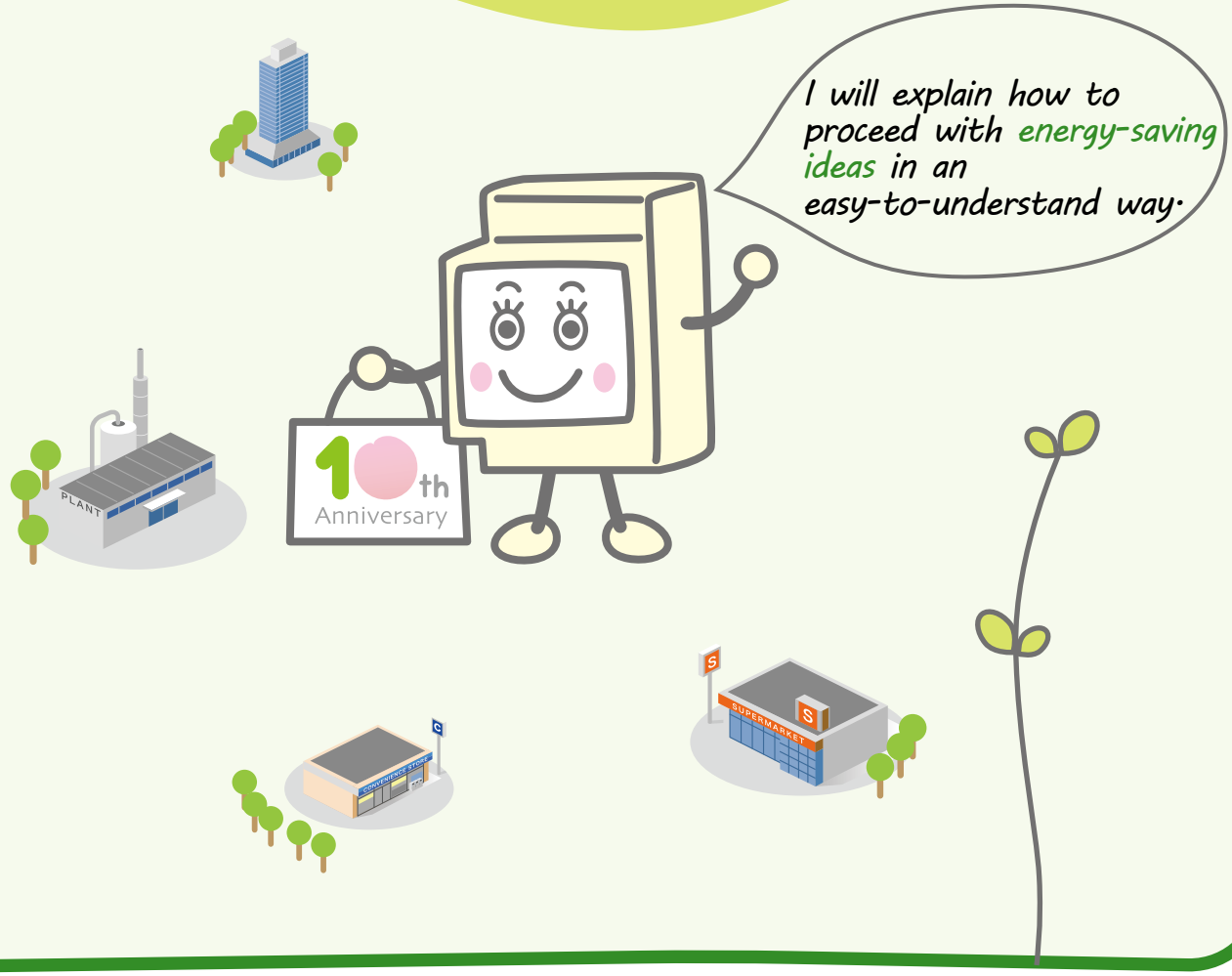
Panasonic

Energy-Saving Ideas

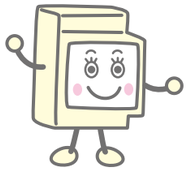


10th anniversary of Eco-POWER METER® launch.
We have comprehensively supported energy-saving activities and will continue to do so in the future.

3 Year Warranty

Energy-Saving Ideas No. 1

Have you started energy-saving Activities?



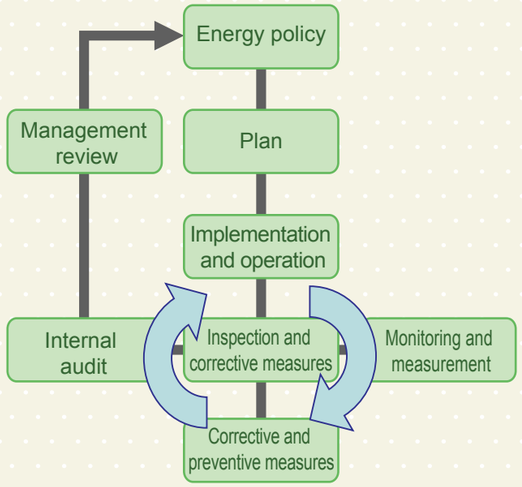
Ecopana-chan

Recently it is essential to tackle with energy saving due to rise in electricity charge or fuel cost and energy-saving request under increasing demand by intense heat. However, it is difficult to determine how to start.
First, to find the problems and issues of the current situation, "Visualize" and "Analyze" energy consumption and then, proceed to "Implementing" the energy-saving activity.

ISO50001 is a part of ISO140001, an international standard specializing in energy management system A framework for sustainable energy efficiency covering the past, present and future is proposed by utilizing the PDCA cycle.
This can be applied to all industries regardless of business types, business conditions and scale.
Some countries/governments are offering tax advantages for installed energy management systems or energy reduction.

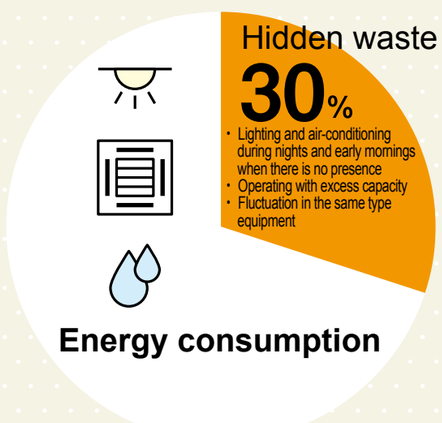
Features:
- Applicable to all types of energy, including renewable energy such as power, fuel and air.
- Top management system
- Requires establishment, implementation and maintenance of a management system for continuous improvement in the efficiency of energy consumption
- Specific measures for creation, evaluation and improvement of energy reviews (from past to future)
- Requirements on operation ("Design plan of equipment / process", "Equipment services and energy procurement")

ISO50001 Energy management system model



Leads to improvement in energy performance, reduction in costs, and increased awareness of energy-saving.

Did you know a lot of hidden waste ?

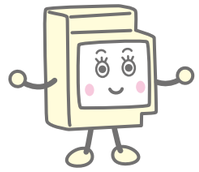


By "Vizualizing", the Panasonic group discovered about 30% of waste in energy consumption.
Random implementation of energy-saving activities is not practical and effective.

The quickest way to saving energy is to find the hidden waste and taking appropriate measures.

Energy-Saving Ideas No. 2

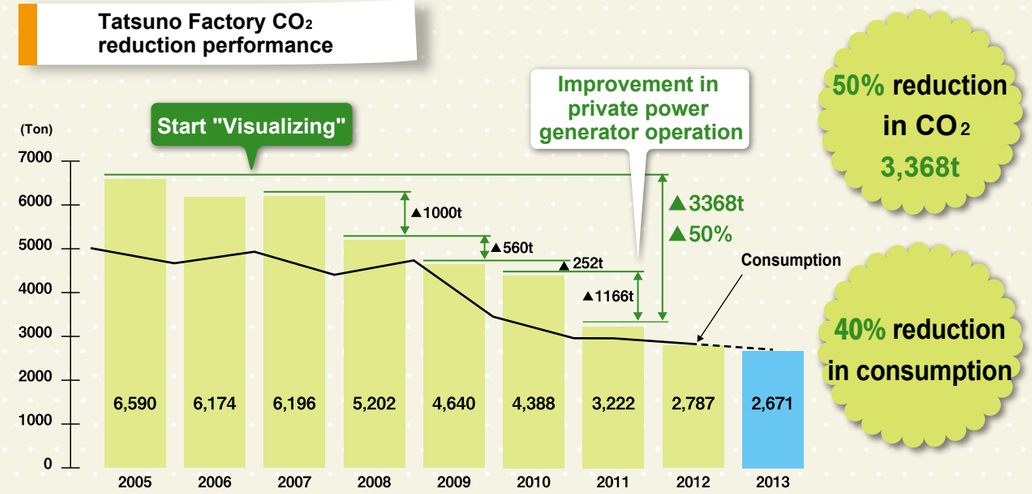
Successful cases at Panasonic Industrial Devices SUNX Tatsuno Co., Ltd.



Let's take a look !

At Panasonic Industrial Devices SUNX Tatsuno, the energy-saving activity started by "Visualizing" has achieved excellent results. Conventional methods had not reached ideal or desired goals. By "Visualizing" energy consumption, hidden waste has become visible and resulted in huge reductions of energy consumption.

Tatsuno Factory CO_2 reduction performance



Example of an energy-saving measure

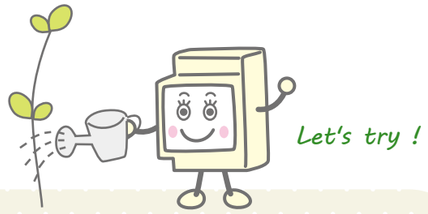
Item	Annual effect in cost (1kWh = 13JPY)	Applied equipment
Molding process machine: Cutting off the breaker on holidays and when not in use	28,579 JPY	22.9kWh/day
Molding machine heater: Fitting with insulation material	78468 JPY	56kWh×50 Units
Molding dryer unit: Hot air recirculation implemented by circulating hot air exhaust into the air intake	1,004,640 JPY	32.2kWh×10 Units
Line facilities: Back up data and the power supply is switched off when not in operation	197,340 JPY	63.25kWh/line
Avoid unnecessary lighting thoroughly by adding a canopy switch (string switch)	79,872 JPY	32W×20 lights

1. Operating a visualization system installed with approx. 650 Eco-POWER METERs
2. Monitoring operating situation on big screens.
3. Available to monitor other energy items beside electric power.

Location : 300, Katayama, Tatsuno-cho, Tatsuno-shi, Hyogo
Site area : 47,000 ㎡

Energy-Saving Ideas No. 3

Energy saving implementation cycle



Plan

How to reduce electricity charges

General breakdown of electricity charges

Electricity Charge	=	Base line	+	Demand

The term demand indicates the amount of power consumed per fixed time. For example, even when the total power consumption is the same for an interval 30 days, if the power consumption is high only for a given few hours or few days compared to lower constant consumption a day, we have to pay more electricity charges.
When the power consumption is higher as opposed to the power supplied by the power company, consumers have to increase investment of equipmets or facilities. This may also increase electricity charges for consumers.

POINT
- Reduce the contract power by reducing the peak value
- Reduce electricity charges by reducing power consumption

First step in energy-saving

"Visualize" 

↓

"Analyze" 

↓

"Implement" 

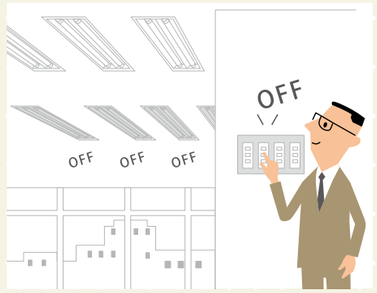
It is similar to the process of increasing sales of a company. First, the current situation should be analyzed and, issues should be identified. Then appropriate measures are taken.

PDCA, the energy-saving implementation cycle

Do

Reduction in power consumption

Try to manage the demand.
When consumption is likely to exceed the target demand, forcibly cut the load OFF and perform peak shaving.



Start to reduce unnecessary power consumption.
Then, take measures for power loss and energy-saving areas.
Results can quickly be realized by prioritizing areas with large power consumption.

Waste	・Reduce lighting bulbs ・Temperature setting of the air conditioner ・Raise the temperature of cooling water outlet of the turbo Chiller, etc.
Loss	・Use LED lighting ・Fitting insulation jacket to the header section of the blower steam chamber ・Control the air volume of parking ventilation fan ・Automating operation of the escalators, etc.
Energy-saving	・Reduce or change power used for showcase lightings.

POINT
- Cut down peak power
- Cut down power consumption

Action

Implementation of an energy-saving activity

7 tips for smart power saving

1 Set lighting luminance less than 500lux


Light sensor

2 In summer, actual room temperature should be approx. 28℃


Temperature-humidity sensor

3 Thoroughly set office automation equipment to energy-saving mode

4 Share the results by "visualization"


Eco-POWER METER

The first step is to become aware of the present situation

5 Save energy by improving the energy efficiency of equipment without affecting the office environment

6 Set low priority for actions that take heavy load but provide low results

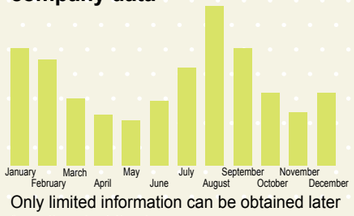
7 Plan measures during tight power situations in advance

Check

Capture the power consumption

Confirming the results before and after the implementation of energy-saving activities leads to further energy-saving activities.

Capture peak power from company data



Only limited information can be obtained later from the electrity charges.

Identify locations involving peak power


KW Watcher

The cause for peak power and power consumption increase becomes clear.

Clarify the power consumption by use


KW Watcher

Priorities for production equipment, air conditioning and lighting can be set for energy-saving activities.

Compare before and after of energy-saving activities


KW Watcher

The results of energy-saving activity is obvious.

POINT
- "Idle operation" during non-operation
- "Excess capacity" and "Fluctuation" during operation
- "Fluctuation" and "balance" of the same type equipment

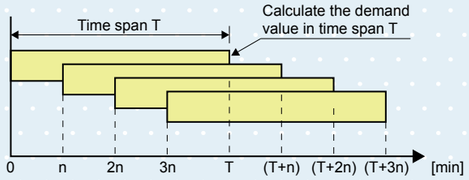
Energy-Saving Ideas No. 4

Example application
→Demand management, energy-saving & quality control

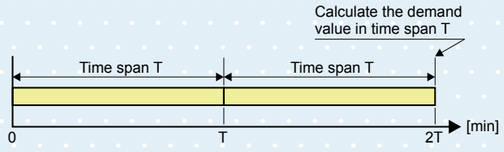
Demand management

IEC demand (Sliding block interval and Fixed block interval)

Users set the time span for demand calculation to an arbitrary value between 1 to 60 minutes (in increments of one minute). The average power demand within the set span is calculated at the end of the span. [The demand values of active, reactive, apparent, active (export), and reactive (export) power are calculated.]

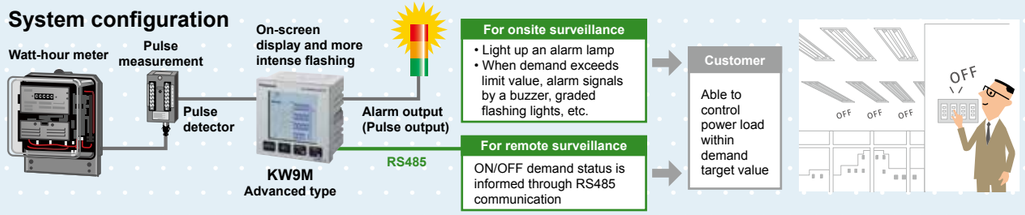


• Sliding block interval method
The next time span starts “n” minutes later. (Value “n” is arbitrarily set by users.)



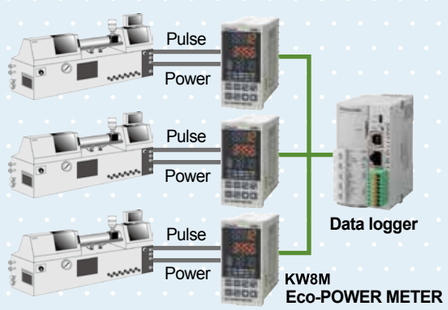
• Fixed block interval method
The next time span starts after completion of the current span.

System configuration



* Also ready for CT inputs (electric power measurement)

Energy saving & quality control of factory production equipment



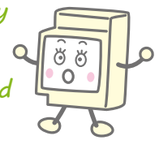
Power consumption for production volume and the molding machine can be measured by a single unit! Power consumption for each production is indicated which enables the calculation of appropriate cost price. Also, waste by idle power consumption and fluctuation in same type of equipment can be clarified.

Eco-POWER METER for cost calculation including energy cost

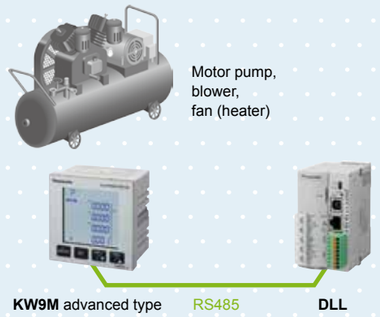
Example application
→Preventive maintenance & energy-saving

APPLICATIONS

Power quality and air consumption are monitored too!



Power quality monitoring and air "Visualization" of factory production equipment



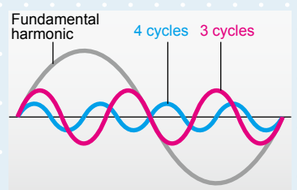
Preventive maintenance of motor or inverter equipment is possible.

When equipment malfunctions or deteriorates, harmonics or unbalanced voltage / current are generated. They may cause a variety of problems such as breaker malfunction or malfunction / halting of equipment with built-in microcomputer, heat generation of motor, insufficient torque etc., leading to a shorter life cycle or increased power consumption. Monitoring harmonics and fluctuations lead to preventive maintenance of such troubles.

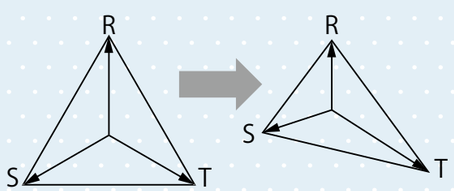
KW9M Eco-POWER METER for measuring power quality and assisting preventive maintenance for equipment troubles

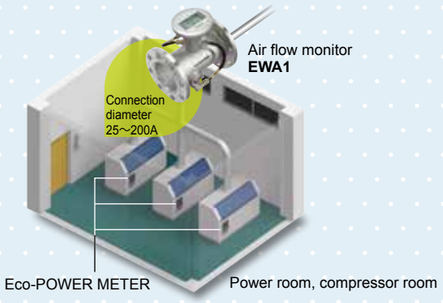
KW9M Eco-POWER METER advanced type

- Harmonics up to 31 cycles: THD (harmonic distortion) measurement, current / voltage balance measurement.
- High accuracy :Active power 0.5% accuracy: 0.2% current / voltage contributes to a few percent of accumulated power reductions



Harmonic generation





Compressor efficiency can be measured.

The adequacy of air supply from the compressor as can be judged in comparison with current volume. Required power is 30-40% when unloading operation. Does such a large capacity compressor bring unloading? By fully operating a suitable compressor, the power consumption of the entire factory can be reduced.

"Visualize" unnecessary unload of compressors via the Eco-POWER METER and air flow monitor

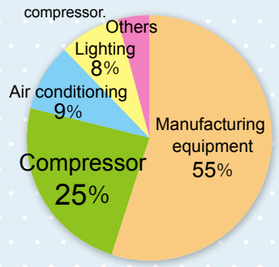
Air flow monitor EWA1 EWA1

Monitoring is possible even in fluids containing oil mist because detection method is based on ultrasonic waves. Filters like mist separators for the flow monitor are not necessary.
Connection diameter: 25 - 200A

Do you know what this number is?
Power consumption rate of compressor in a factory Approx. 25%

In fact, a compressor requires large amounts of power compared to other equipments.
In other words, when thinking about energy-saving in a factory, reducing energy used for the compressor is a big contributing factor.

Now, let's measure the waste air flow by "Visualizing".
"Visualize" air flow by installing an "ultrasonic wave" air flow monitor. This leads to air leakage detection and higher efficiency of the compressor.

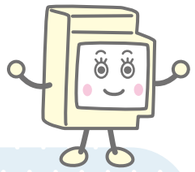


(Breakdown of power consumption in a general factory)

Energy-Saving Ideas No. 4

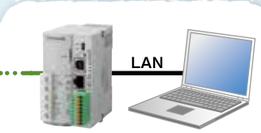
Example application →Building

For example...



Temperature / Humidity / Light Sensor

Excessive cooling or warming by air conditioners is detected and efficient operation is possible. Excessive or insufficient lighting can be “visualized” .



Data Logger

Accumulated data can be easily visualized on office PCs. Energy-saving awareness can be raised due to accessibility to all employees.

Eco-POWER METER

Transformer: Power usage for each application is displayed. Elevator: By measuring electric power for each phase, the unbalance level is confirmed, which is useful in the preventive maintenance of motors.

Eco-POWER METER, Expandable Type

Office: Air conditioner and lighting power consumption measured, and power usage discrepancy between different floors can be verified.

Comprehending time period energy consumption trends is an important factor in energy-savings in buildings.

Most energy is consumed in buildings by air conditioners and lightings. During the time period before the start of the work day, load on lightings and air conditioners suddenly increases..

Because energy consumption is highest during office hours, managing efficiency of facility operation is important for saving energy.

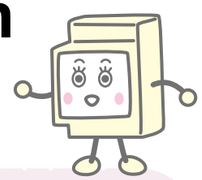
Although air conditioning and lighting energy consumption decreases during nights and on holidays, a high cost-effectiveness can be achieved by taking measures on the "Vizualized" unnecessary idle consumption.

Energy-Saving Ideas No. 5

Software introduction

Free

We pursue easy usability by updating our software from time to time according to customer requests.

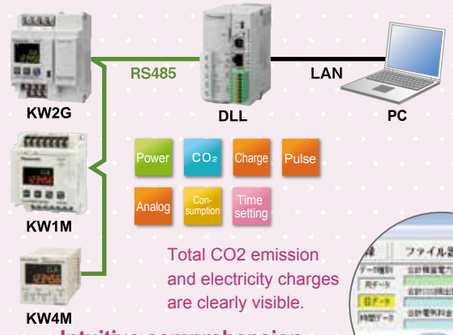


KW Watcher ▶ "Visualization" of data accumulated in DLL.

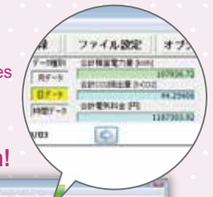
Eco-POWER METER + DLL

Simply select the data to be displayed, date and type of graph

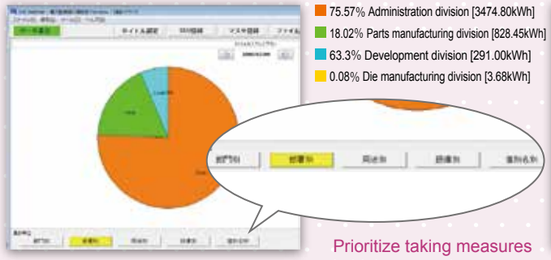
* Fix the equipment and details in the initial configuration.



Total CO2 emission and electricity charges are clearly visible.



Intuitive comprehension from the pie chart!



Areas with high energy consumption can be identified by breakdown on divisions, departments and use.

Prioritize taking measures in high consuming areas.

Intuitive comprehension from the stacked bar graph!

Identifying which equipment affects whole power consumption leads to take effective measures.

KW View ▶ Visualize measurement data collected on the SD memory card

SD card compatible Eco-POWER METER

"Visualization" in 3 easy steps.

Step 1 **Press the file import button**
Step 2 **Select graph**
Step 3 **Select date and data to be "Visualized"**

Comparison graph of before and after of accumulated power consumption

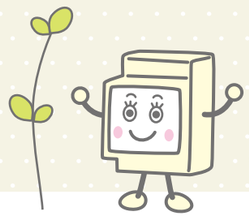
Comparison graph calculated power and temperature (analog)

All software can be downloaded for free from our website.
***Operating environment etc., can be also be confirmed.**
* Registry of customer information is required.

Energy-Saving Ideas No. 6

Let's start "Visualization" , let's link "Optimization"

Without "Visualization", energy-saving measures will end in ineffective results.
Discovering waste efficiently and taking measures, reduces energy consumption with maintaining comfort and leads to optimization.
Easy installation from 1 unit is possible from Panasonic's large selection of energy-saving supporting devices.
Possible to expand with confirming effectiveness. We propose a "Visualization" system that matches the customer needs.



Power Monitoring

Beginning with 1 device, expanding the system later is easy.
Selectable from a wide variations depending on the application.

Eco-POWER METER

For both energy-saving and power monitoring
KW9M／A

Max. 16 circuits can be measured

SD card compatible type
KW2G-H

Economical expandable type
KW2G

Eco-POWER METER

For first time users!

Concluded with just 1 unit
KW1M-H

Standard
KW1M

For wiring difficulty / add-on
KW1M-R

Mini DIN 48
KW4M

22.5mm ultrathin type
KW7M

Compatible with general-purpose CT
KW8M

Remote monitoring

Wireless type is used for layout with frequent changes or locations where it is inaccessible and additional installing is required.

Wireless Unit

Outdoor / (Coverage approx. 1km) across the floor is also OK!

920MHz band high speed stable wireless communication
ENR1

429MHz band wireless communication
KR10

2.4GHz band high speed wireless communication
KR20

Eco-POWER METER

2.4GHz band high speed wireless communication
KW1M-R

Signal converter

LAN connection for RS232C/RS485 communication
KS1

Environment management

Managing temperature, humidity and air leads to energy-saving.

Temperature, humidity and illuminance management

2.4GHz band high speed wireless communication
EWR1

429MHz band wireless communication
WR20

Temperature, humidity and illuminance management

Thermoelectric couple, DC current / voltage input possible!
KT4H/KT4B

Air flow management

Compatible diameter: 25 - 200A
EWA1 Series

Data collection and accumulation

Every type of measurement data is collected, accumulated and stored.

Data Logger

Data Logger Light（DLL）

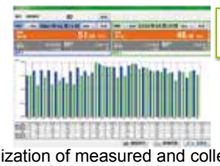
Visualization

Easy to visualize and find waste or loss without expertise.

Visualization software

Free download

"Visualization" of accumulated data in **DLL**.
KW Watcher



Free download

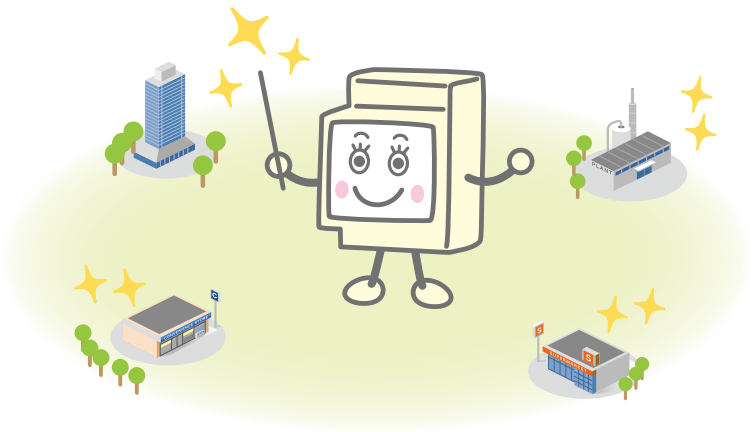
Visualization of measured and collected data on the SD memory card
KW View

Visualization software

Free download

Easy "Visualization" of real-time data from the Eco-POWER METER
KW Monitor

* Some products are not available in certain countries. Contact your nearest sales office for product details.



Please contact .....

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