

## Energy management on a large scale to realize state-of-the-art "green factories"

Hyogo, Japan

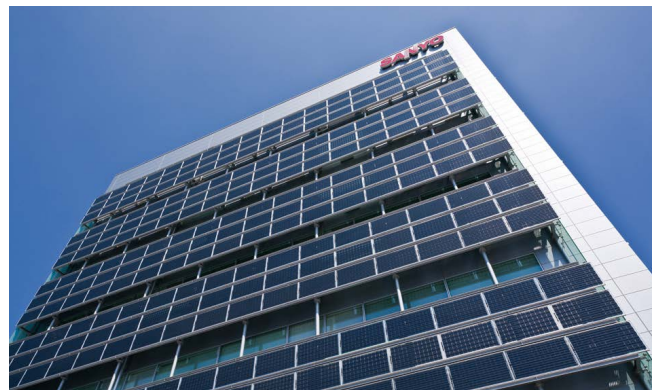


### Managing solar systems and power storage against the weather

Electric power can no longer be spoken of without the use of renewable energy. However, with solar and wind power systems, output changes because of the weather, so power generation and storage have to be efficiently managed.

Especially with industrial plants that use large amounts of electric power, there is demand for "green factories" with systems for generating and storing power and optimally managing energy-efficient equipment.

At its Kasai Plant (Kasai, Hyogo Prefecture) where the company manufactures batteries for environment-friendly vehicles, Panasonic is conducting large-scale pilot tests of solar cells, lithium ion batteries and energy management technology for optimally controlling them.



Generating power with double façade HIT that installs 2-sided polar panels on the building exterior

## Smart energy systems for controlling energy generation, storage and usage.

As a solar power system, Panasonic has introduced a 1 MW solar system (about 5,200 solar cell modules) capable of producing enough clean energy to power about 330 typical homes. And, for the storage batteries, it employs the world's highest class of lithium mega batteries of a 1.5 MWh capacity and a battery management system that efficiently charges and discharges the whole lot as if it were a single battery.

Panasonic has built a "Smart Energy System" (SES) consisting of energy-efficient systems for controlling air conditioning, lighting, kitchen equipment and so forth, and an SES controller that optimally integrates the power generation and storage systems for these. As the core of the SES, the SES controller tracks the amount of power generated by the solar cells, the amount of power stored in the storage batteries and the amount of power consumed by equipment and systems in real-time.

It effectively utilizes electric power by controlling power generation, storage and consumption. The SES uses the electric power generated by the solar cells to drive DC equipment and charge the storage batteries, and stores inexpensive nighttime power for use during the daytime. Air conditioning and lighting in the administrative building are optimally controlled according to how power is being used at the factory.



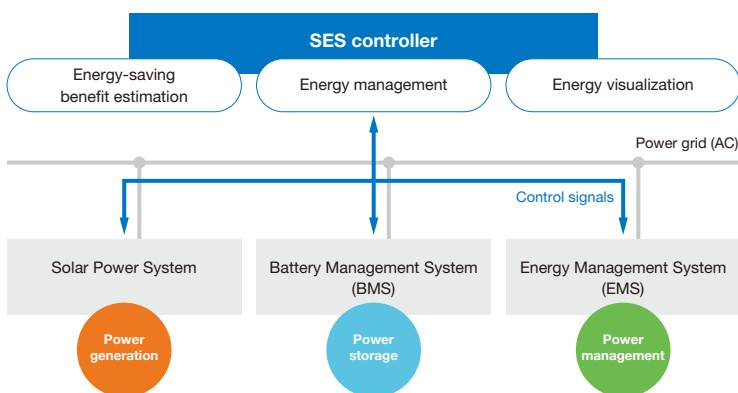
Power storage using a lithium mega battery system of the world's highest capacity class (1.5 MWh)

## CO<sub>2</sub> reduction of about 2,408 t a year and about 90% of the administrative building's power consumption covered.

Panasonic's Kasai Plant is targeting a reduction in CO<sub>2</sub> emissions of about 2,480 t a year by using the SES to maintain a comfortable workplace environment and efficiently manage power supply and demand. Between all of the solar power generated at the plant and the reduced consumption achieved by the energy-efficient systems, the energy-savings are equal to about 90%\* of the electric power consumed by the administrative building. Plans are to horizontally apply these results to other large factories, facilities, etc.

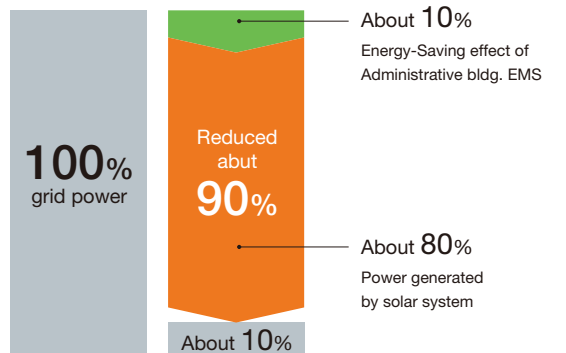
### Smart Energy System

Smart Energy System (SES) with an SES controller for optimally integrating power generation and storage systems



### Result of Using the SES

About 90% of the electric power consumed by the administrative building is covered by solar power and the reduced power consumption of the building's EMS.



### Installed Products

