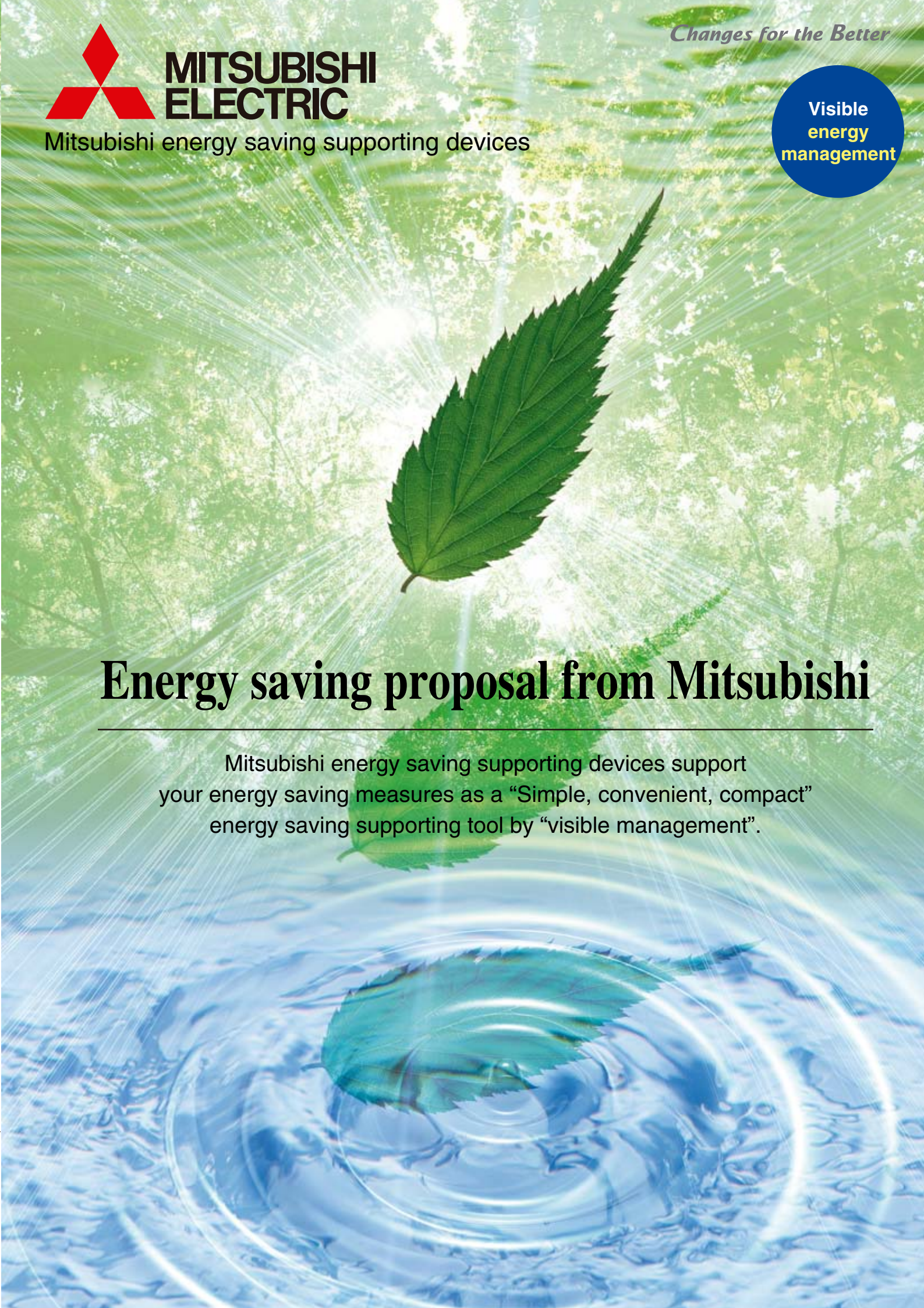
MITSUBISHI ELECTRIC

Changes for the Better

Mitsubishi energy saving supporting devices

Visible energy management



Energy saving proposal from Mitsubishi

Mitsubishi energy saving supporting devices support
your energy saving measures as a “Simple, convenient, compact”
energy saving supporting tool by “visible management”.

Energy conservation contributes

Growing recognition of energy conservation

The Kyoto protocol
(Entered into force: 2005)

With global warming becoming more serious each year, countries that ratify this protocol commit to reduce their emissions of greenhouse gases compared to the 1990 emission levels. Global movements for energy saving have become more active.

Increase of the electric rate

Due to the recent increase in oil prices and rise in electricity costs in certain countries, energy saving has been regarded as necessary to cut the electricity costs.

ISO-14001

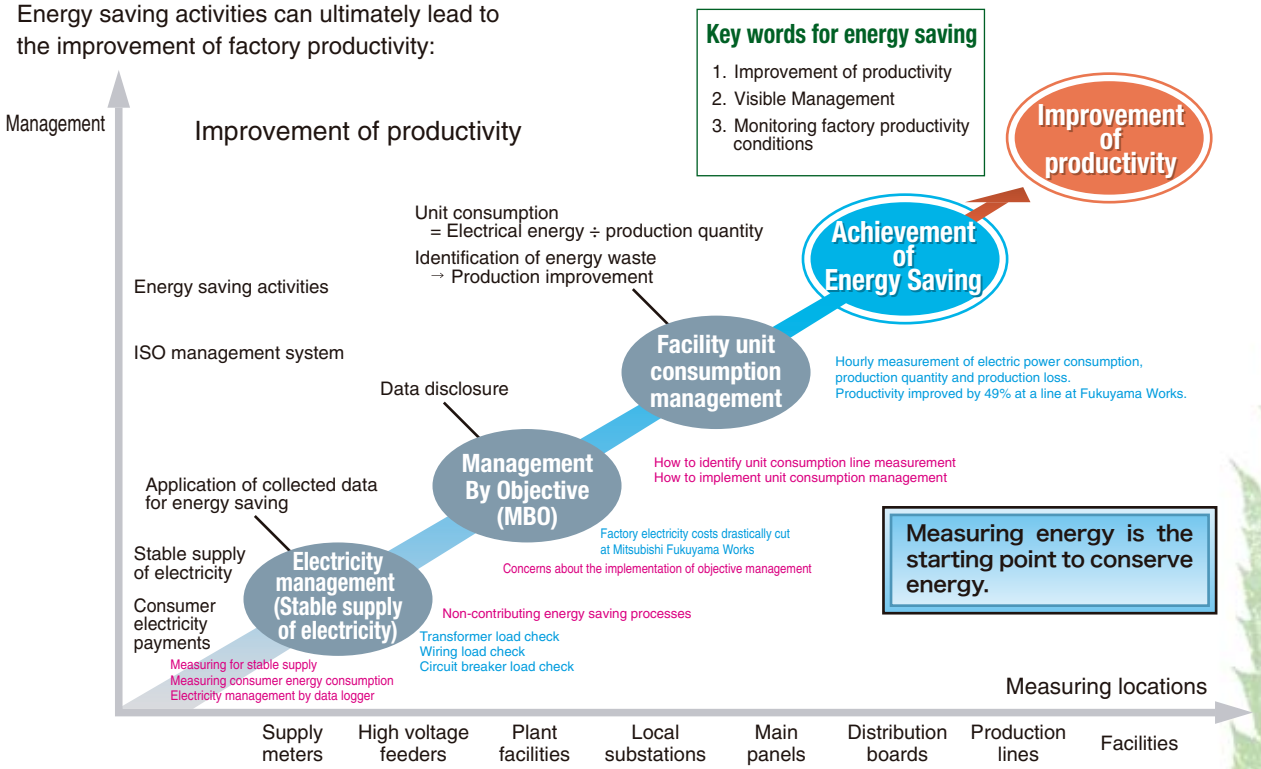
More companies are being certified according to ISO-14001. This growing concern for environmental problems and environmental preservation efforts by companies is seen as one of their management priorities.

Management system based on ISO-14001

ISO-14001 requires companies to manage the cycle below for continuous improvement.

Steps for the energy saving activities

Energy saving activities can ultimately lead to the improvement of factory productivity:



Concepts of energy saving

- What do you need if you are to go on a diet? Measuring your weight and making a graph of the weight fluctuation can lead to success in a diet. The same holds for energy saving. Measuring energy and analyzing current factory conditions by Visible Management is the starting point to conserve energy.

Weight Measurement

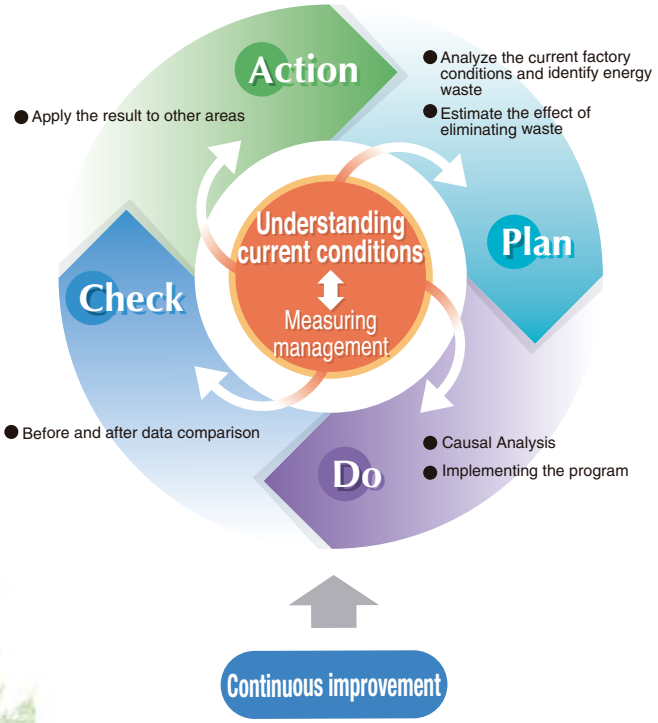
Electronic Energy Measurement

- For energy saving, measuring and managing product production energy units is necessary.

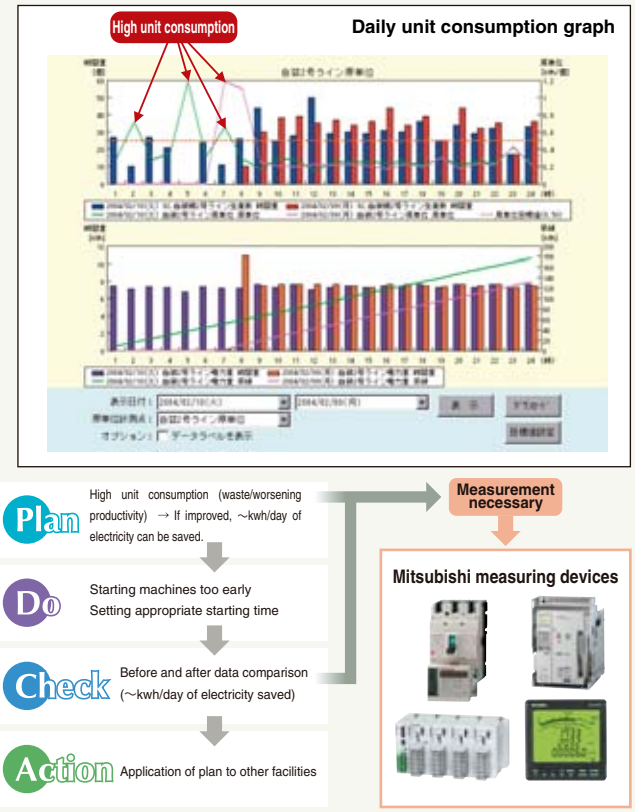
➡ **Measurement (grasp and analyze current conditions) and improvement activities are necessary for energy saving.**

to improve the product efficiency.

Methods for Energy Saving (PDCA)



Example of use



Effects of Energy Saving

Increase of productivity

Productivity at normal conditions can be analyzed by managing unit consumptions (Electrical power/production quantity). For example, one reason of worsening unit consumption can be facility breakdown. By finding the cause, the unit consumptions will decrease, which leads to improvement in productivity. Moreover, surveillance of upper/lower limits contributes to maintaining electrical machines and equipment.

Increase of Energy Efficiency

Effective energy saving activities start from grasping the current conditions by making energy usage amount visible. Efficiency of energy usage becomes possible by thorough energy management by department, and usage by unit consumption management by each line facility.

【At factories】

- Realize “visible management” by building a model factory for energy saving
- Realize “visible management” where everyone participates by disclosing data
- Finding waste by unit consumption management at each facility
- Finding waste by measuring facility management
- Strengthen unit consumption management by time, line and facility

【At buildings】

- Realize “visible management” where everyone participates by data disclosure
- Implement and promote energy saving activities by Management By Objective
- Strengthen each floor’s time and energy usage management

Increase of Production Process Efficiency

By measuring electrical power on a short cycle (1 sec, 1 min etc), how each load changes throughout the manufacturing process can be observed. You can analyze if there is any unprofitable waiting time or unnecessary load current running during a waiting time.

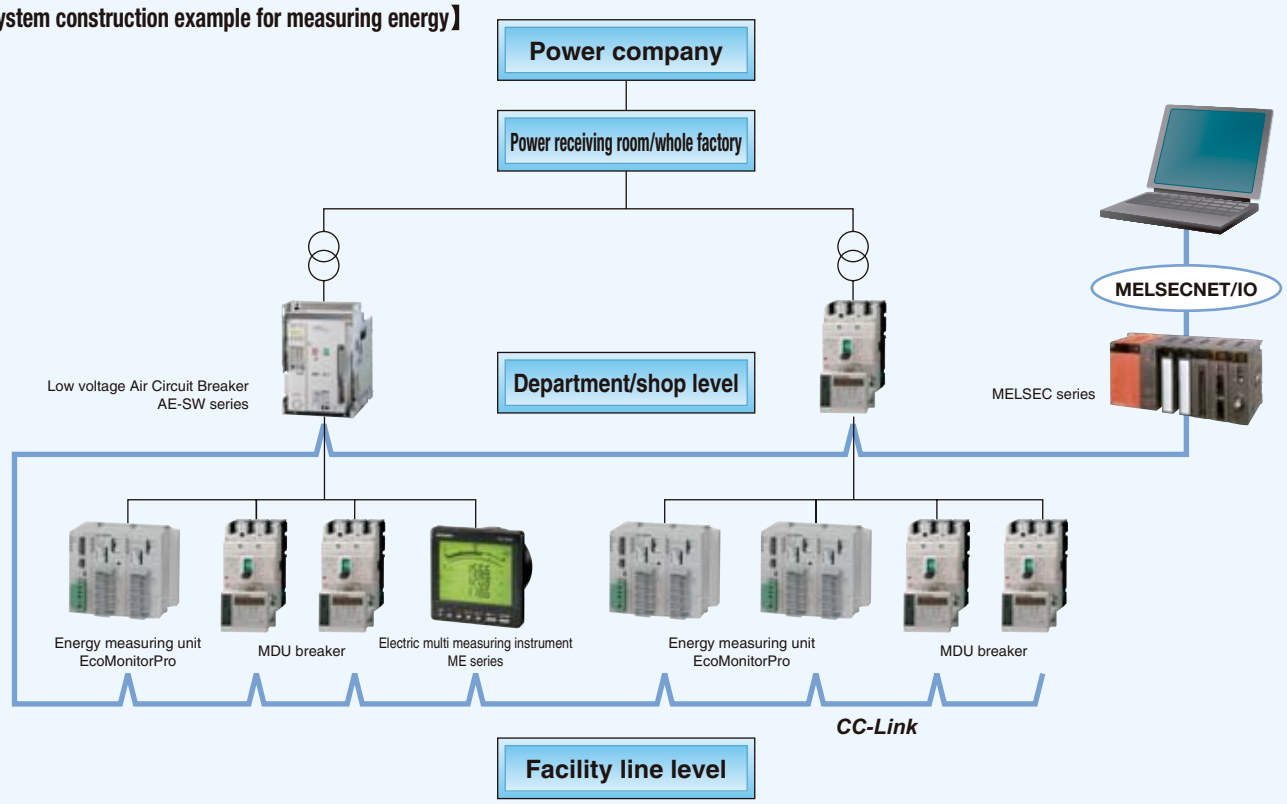
Example at Mitsubishi Fukuyama Works

Production unit consumption cut by **14.6%**

(in 2004, compared to 1990)

Mitsubishi energy saving supporting devices

【System construction example for measuring energy】



Support your energy saving activities – Mitsubishi measuring devices

MDU breaker

Measuring Display Units (MDU) installed on breakers, which measure and display circuit information.

Energy measuring unit EcoMonitorPro

Packaged function modules flexibly satisfy your diverse needs.

ACB (Low voltage Air Circuit Breaker)

Air circuit breakers with measuring functions.

. Separate module units for functions satisfy various needs. Functions can be chosen according to your needs.

Electric multi measuring instrument (ME series)

One measuring unit can be applied to diverse circuits, from incoming circuits to high voltage feeders, and secondary transformer circuits.

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