

Highlight — Environmental Consideration in Business Activities —

Making Factory Energy Usage “Visible” on a Production Line Basis and Using this Information to Save Energy

Factories that have already spent many years reducing their energy consumption find it difficult to propose and implement additional improvement measures. One reason for this is energy management that is still in need of refinement.

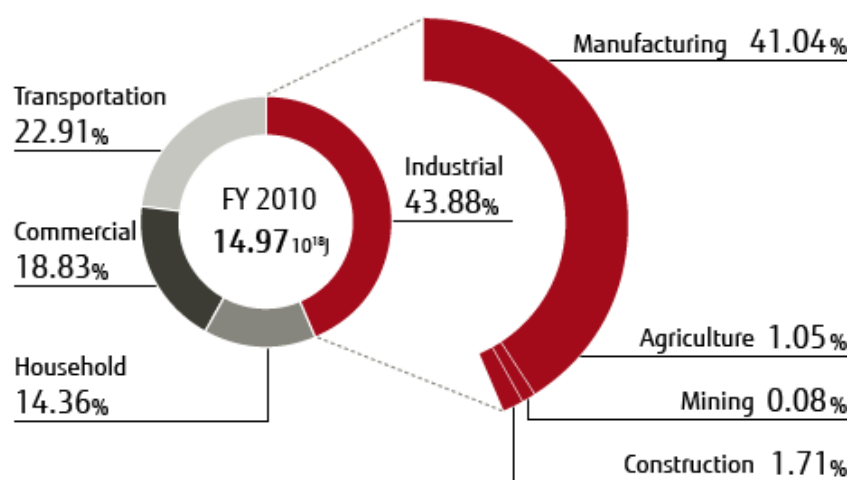
Fujitsu Isotec Limited (FIT) has determined how much energy it uses all the way down to the level of individual production processes, and begun to implement energy-saving measures tailored to conditions for individual production processes.

Current Status of Energy Conservation in Manufacturing Industries

The impetus for Japan's energy conservation policies can be traced back to the two oil shocks the country suffered in the 1970s. These two events, which had enormous economic impacts, brought to light the importance of conserving energy and created conditions for the advancement of energy-conservation policies^{*1}. As a result, by the end of the 1980s, the industrial sector was leading major improvements in energy efficiency. Nevertheless, it still accounted for over 40% of energy consumption. Manufacturing industries^{*2}, which account for more than 90% of industrial energy consumption, are still being encouraged to do more to save energy.

In recent years, however, companies have begun to say that limits are being approached in energy conservation effectiveness and openly wondering what else they can do. Indeed, with energy consumption per base unit basically unchanged since the 1980s, energy conservation efforts have reached their limits.

Energy Consumption by Sector



Source: "Energy White Paper 2012," published by the Japanese Ministry of Economy, Trade and Industry, Agency for Natural Resources and Energy

*1 Advancement of energy-conservation policies:

[Refer to "Energy-Related Problems and Responses," published by the Japanese Ministry of Economy, Trade and Industry, Agency for Natural Resources and Energy](#)

*2 Manufacturing industries:

[Refer to the "Energy White Paper 2012," published by the Japanese Ministry of Economy, Trade and Industry, Agency for Natural Resources and Energy](#)

Energy Management at Manufacturing Facilities Facing a New Problem

Fujitsu Isotec Limited (FIT), which manufactures and recycles personal computers and servers in Date City, Fukushima Prefecture, has implemented various energy-conservation measures under Fujitsu Group Environmental Action Plans. Through the gradual adoption of energy-conservation measures, including solar panels, greenery to insulate walls, LED lighting, and high-efficiency heat pumps for air-conditioning, FIT has steadily reduced the overall energy consumption of its manufacturing facilities.

Nevertheless, it found itself facing a new problem. It realized that it was looking only at overall energy consumption and had neither accurate information on how much energy it was using in real time, nor any idea of the amount of energy consumed at particular times by particular areas of its operations. That meant it could not propose or implement energy conservation measures tailored to particular energy uses.



Solar power generation



LED lighting



Greenery to insulate walls



High-efficiency heat pumps

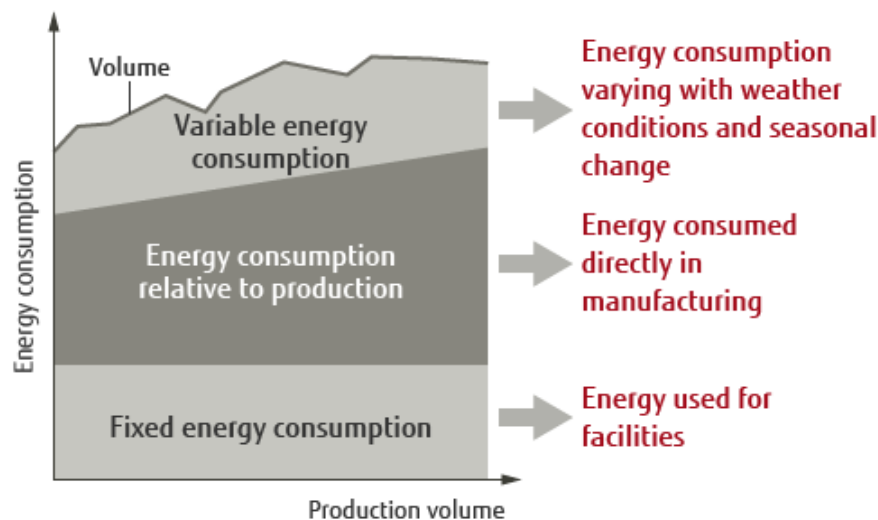
Detailed Visualization with the Environmental Management Dashboard

In April 2012, therefore, FIT adopted the Environmental Management Dashboard, developed by Fujitsu as a tool for accurately identifying energy usage by specific areas of a business' operations. With sensors installed in its manufacturing facilities, FIT was able to see visual representations of detailed energy consumption data gathered from throughout its operations via a network.

As a result, FIT can now manage its overall manufacturing facility energy consumption in terms of three categories - energy consumed directly in manufacturing (energy consumption relative to production volume), energy used for lighting, air conditioning, and other facilities (fixed energy consumption), and energy used for air conditioning and other purposes that vary depending on weather conditions and seasonal changes (variable energy consumption).

Production-Related Energy Management Moving Forward

Use ICT to Visualize Energy Consumption in 3 Categories



VOICE

We will use the Environmental Management Dashboard to determine our next moves.

Kazuto Ara, General Affairs Division Manager, Fujitsu Isotec Limited

We were finding it difficult to identify areas in which to invest for additional energy savings, and unable to move forward in this sense. With the Environmental Management Dashboard, we can determine in real time how much energy we are consuming by production process, and immediately identify anomalies and waste.

Even though we have not yet taken full advantage of everything the dashboard has to offer, I already see it as a tool that exceeds common sense in pointing the way to what we should do next.



Managing Energy Relative to Production Resulting in New Process-Level Awareness

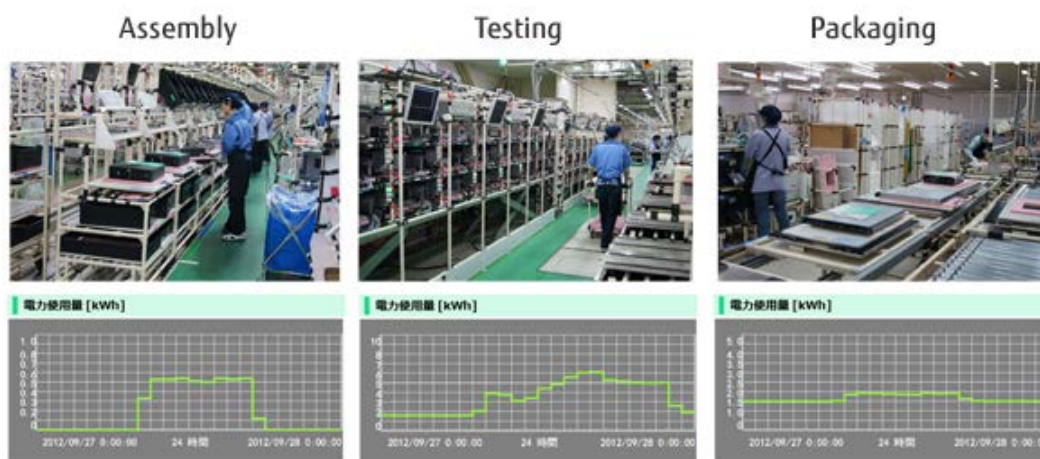
Energy consumption relative to production, a measure of energy consumed directly for production activities, provides a clear visual representation of energy consumed by production line, production process (assembly, testing, and packaging), and product.

Visualization by production line



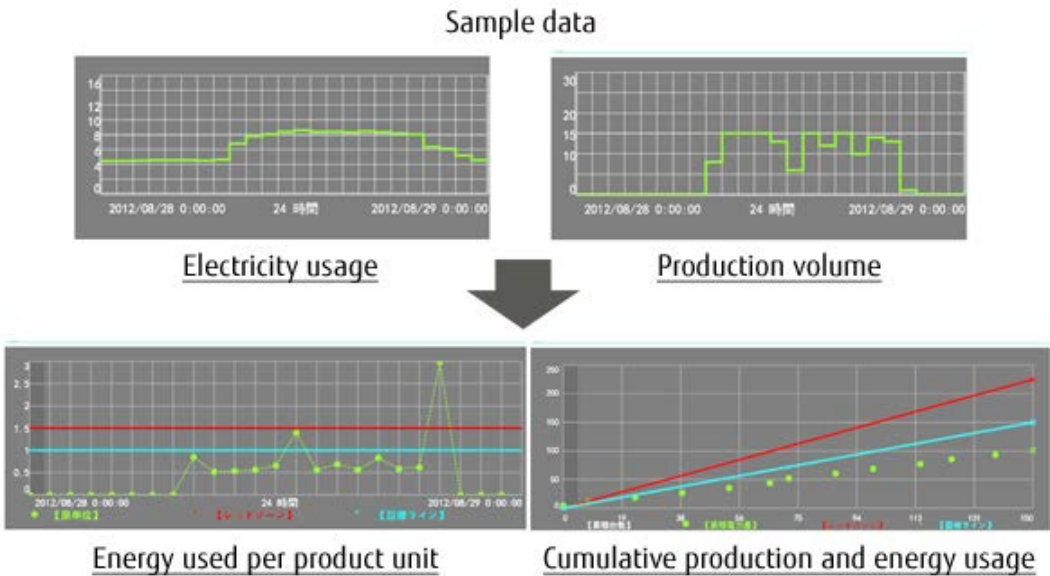
This has enabled us to clearly know energy consumption by area and identify impracticalities, waste, and abnormalities, none of which was possible when managing energy consumption at an overall level. For example, we learned that electricity was being used during certain times in the assembly process, even though products were not being made; that electricity was being used in the testing process even on weekends, when there were no production activities; and that standby electricity consumption, which we thought was fixed, dropped during certain times. Awareness of these facts gave rise to additional energy-saving measures.

Making Energy Consumption Visible by Production Process



In addition, making production-related energy consumption "visible" in real time by product has made it possible to monitor energy usage on a unit basis and made it easier to both identify the causes of energy usage on anomalies and confirm the effectiveness of improvements.

Making Energy Usage per Product Unit "Visible"



Real-Time Display of Fixed Energy Consumption Making Employees Aware of Energy Consumption

Facility-related fixed energy consumption made "visible" for plants, buildings, and units of floor space, can be checked by employees through the personal computers on their desks. The ability to check even indirect energy consumption, which is not related to production, allows employees to be aware of the amount of electricity consumed by the unit in which they work, and pay more attention to energy usage.

Making Energy Consumption "Visible" by Plant and Building



VOICE

We are accumulating know-how and helping to improve the Fujitsu Group's environmental management. Masaichi Tochimoto, President, Fujitsu Isotec Limited

Since our adoption of the Environmental Management Dashboard, units participating in our regular Environmental Committee meetings have begun to actively report new situations that have come to their attention. At present, only a few of these discoveries have resulted in new actions, but I would like to see us implement new, effective measures by continuing along this path and having everyone participate in energy management.

In addition, while continuously working to save energy in our own operations, we will accumulate energy-saving knowledge for plant and office settings, and use it to help strengthen the Fujitsu Group's environmental management.



FIT's energy management efforts using the Environmental Management Dashboard have only just begun. FIT, however, is embarking on an effort to involve all employees at every level of its organization, from top management down, in energy management.

Going forward, FIT will establish energy-conservation objectives tailored to its operations, and analyze the status of its energy usage, to uncover waste and make its operations more energy-efficient.