

## A Green ICT Case Study

Of **ICT**

### Zero Power Consumption in Standby Modes: Zero-Watt Displays and PCs

The European Union has passed a law that requires electrical equipment in standby mode to consume less than one watt by 2010 and less than 0.5 watt by 2013. As a leading supplier of green ICT products, Fujitsu has already surpassed these regulatory requirements as its groundbreaking displays and PCs consume absolutely no power when in standby mode.

Fujitsu's original design technologies for displays have enabled us to achieve zero watt in standby mode without any loss of image quality. An Eco button and automatic brightness controls, enable an energy saving of 50% during use.



In addition to displays, our ESPRIMO E/P990 PC series, which was designed and manufactured by Fujitsu in Germany, do not consume any power while in standby mode. These PCs have acquired the Blue Angel (Germany) and Nordic Swan (Northern Europe) environmental accreditations, which are the equivalent to Japan's Eco Mark. They are also compliant with the United States ENERGY STAR® 5.0 and EPEAT environmental standards.

In future, as part of our range of initiatives to further improve our energy efficiency, we are working to optimize our standby-mode-zero-watt technologies and are now investigating their possible use with servers.

\* Not for sale within Japan.

While zero-watt PCs differ from conventional PCs in terms of their power supply unit, motherboard, and BIOS, they do not represent an entirely new product. However, we had to completely remodel the BIOS and motherboard to achieve zero-watt power consumption. In particular, the circuitry was challenging to design and it took us over a year to complete their development.

Head of the Zero-Watt Development Team,  
**Peter Bush**



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### Energy Savings Achieved at the London North Data Center, with Groundbreaking Research

Fujitsu's "London North" data center in the suburbs of London has achieved compliance in line with both local and international legislation, such as the Kyoto Protocol, the European 'Code of Conduct' for data centers and the UK government's 'CRC Energy Efficiency Scheme'. As an energy-saving business and Eco-Friendly Data Center it is actively working to reduce greenhouse gas emissions and mitigate its burden on the environment.

After investigating such elements as best practices and legislation in its field, the London North Data Center was able to successfully save energy by leveraging Fujitsu's management

expertise. For example, a machine room is normally kept at a temperature of between 21 to 22°C, but our research revealed that a temperature increase of 1 or 2°C would have no effect on the machines' performance. Similarly, while humidity had conventionally been kept at about 50%, our studies confirmed that a slight increase or decrease in humidity caused no problems in machine management. Other measures the center introduced included optimizing the floor layout so that air with different temperatures would not mix. Through these efforts, the facility has reduced its yearly CO<sub>2</sub> emissions by about 3,000 tons compared to a conventional data center.



Energy consumption is now a fundamental part of the costs of running a data center, contributing around 30-40% to the total cost. So achieving a sustainable reduction in energy bills is a key driver for our business. However, we felt that there was still plenty of room for improvement in energy usage. To achieve this sustainable reduction, Fujitsu has a clear definition and a methodology for measuring what constitutes an environmentally friendly product or service.

Operations Development Manager  
**Chris Flanagan**



## Of ICT

Won the 2009 Minister of the Environment Award for the Prevention of Global Warming, Won Green IT Award 2009 Review Board Special Award.



## Blade Server Reducing Power Consumption by about 40%: PRIMERGY BX900

The PRIMERGY BX900 blade server system is designed for dynamically changing IT infrastructures, with superior performance per watt and virtualization capabilities, resulting in a blade server with low power demands and low operating costs. Through the thorough application of low power components and our efforts to improve cooling efficiency, we have been able to reduce electricity consumption by about 40% compared to the Rackmount Server (a Fujitsu product) of four years ago. Moreover, we have not only reduced power consumption but also contributed to reducing the burden on the air conditioning for the entire data center.

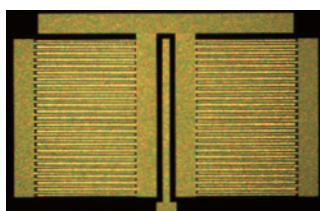


PRIMERGY BX900

## Of ICT

## Fujitsu Develops World's First Gallium Nitride HEMT for Power Supply

In June 2009, as a technology to reduce power consumption in electronic equipment such as ICT devices and home appliances, Fujitsu Laboratories Ltd. developed a new structure for gallium nitride high electron-mobility transistors (HEMT) that enables power loss to be reduced to one-third (1/3) that of power supplies based on conventional silicon transistors. Fujitsu's new GaN HEMT will be able to reduce total power consumption by 12%, thereby resulting in the effect of removing 330,000 tons of CO<sub>2</sub> in Japan as a whole. In the future, we will continue to push forward toward the practical application of this technology, and intend for it to be in use in power-supply units by around 2011 (see page 49).



Gallium nitride HEMT (surface micrograph)

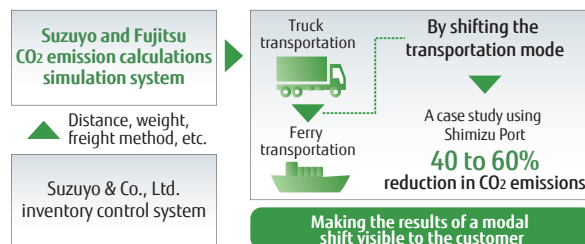
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Won Green IT Award 2009 Commerce and Information Policy Bureau Director-General Award



## Carrying Out CO<sub>2</sub> Reduction Proposal Programs in Cooperation with Suzuyo & Co., Ltd., Via a Modal Shift Simulation

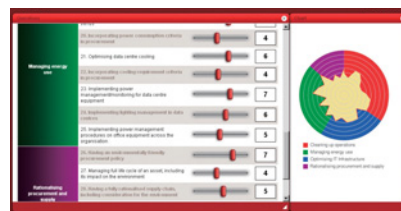
By combining Fujitsu's CO<sub>2</sub> emission calculation system (Logistics package : LOMOS/EC) with Suzuyo's inventory control system, we are able to calculate CO<sub>2</sub> emissions when using modes of transportation other than freight consolidation and trucks (a modal shift). We can then use this information to provide services that clearly identify the modes of transportation that are most environmentally friendly. A feature of this service is that it utilizes a vast range of data—about shipment origin and destination, product weight, and the type of transportation—to calculate CO<sub>2</sub> emissions, and it is supporting our customers' efforts to reduce CO<sub>2</sub> emissions and to draw up their own plans to achieve reductions.



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## An Environmental Consulting Service That Helps Customers Improve Their Own Environmental Management

Centered on Japan and Australia, the Fujitsu Group provides its customers with an environmental consulting service that helps them improve their own environmental management. Fujitsu Australia Ltd., (FAL), a member of the Fujitsu Group, has been developing this environmental consulting service in Australia and providing customers with proposals tailored to their management policies and environmental targets. The service is based on two frameworks: first, the Enterprise Sustainability Framework for environmental change risk evaluation and environmental strategic planning and support; and second, the Green ICT Framework for the evaluation of ICT infrastructure efficiency.



Green ICT evaluation tools (Australia)