Efforts to Prevent Global Warming

We are examining all of our business operations in our efforts to reduce greenhouse gas emissions - not only factories and offices but also transportation and the products and services we provide.

Basic Approach

We are working to reduce emissions of greenhouse gases associated with all our group business activities. These efforts include reducing emissions of CO₂ due to energy consumption and other greenhouse gases at our factories and offices and reducing emissions associated with transportation (see page 68). Furthermore, we are working to prevent global warming throughout all areas of business activity by contributing to reduced emissions of greenhouse gases by our customers, industry, and society in general by developing IT products (see page 53) that achieve energy savings and by providing IT solutions (see page 57) that have the effect of reducing environmental burden.

Low Carbon Committee Newly Established

Since preventing global warming will become an increasingly important business issue and will have a correspondingly greater effect on the way we conduct our operations, we set up a new Low Carbon Committee at the corporate level (see page 46).

The committee's remit is to make those in charge of our businesses aware of the quantities of CO₂ emissions associated with their operations and to deliberate and formulate clear policies on how our businesses should be operated in the Group as a whole with attention to global warming.

Specifically, the committee has begun discussing policies such as setting reduction targets and business evaluation indicators for each business group and budgeting for equipment investment.

Reducing Greenhouse Gas Emissions Associated with Manufacturing

In our Stage V Environmental Protection Program, we established the goals for annual CO₂ emissions from energy consumption of (1) holding emissions levels to under those of fiscal 1990 for business sites in Japan and (2) reducing emissions per unit of actual sales by 28% relative to fiscal 1990 levels by the Group as a whole, including overseas businesses, both by the end of fiscal 2010. We have implemented and are continuing to move forward with the following energy-saving measures.

- Energy-saving equipment, focusing on motive-power facilities (introduction of free cooling, inverters, energy-saving facilities, fuel conversion, etc.)
- Increased efficiencies through revised manufacturing processes, accompanied by proper motive-power facility operation and improvement of management
- Adjusting appropriate room temperature for office air conditioning, saving electricity for lighting and office automation equipment
- Promotion of the measurement and visualization of energy consumption and proactive use of that data
- Use of natural energy sources such as solar and wind power As a result of these efforts, our CO₂ emissions due to energy consumption in fiscal 2008 were 1.066 million tons in Japan. While this figure represents a year-on-year decrease of 81,000 tons, which was attributable to business realignment in response

to market changes, among other factors, it was a 3.0% increase compared to fiscal 1990.

CO₂ emissions for the entire Fujitsu Group were roughly 1.24 million tons, or 67.8% of levels in fiscal 1990 in per unit of real sales terms.

We are also participating in the Japanese Government's domestic emissions trading scheme pilot project, launched in fiscal 2008 with the aim of examining further global warming countermeasures based on a medium-to-long-term viewpoint.

Energy Consumption CO₂ Emissions (Japan Only and Group Total)

CO2 emissions (group total) ZZ CO2 emissions (Japan only)



Trends in CO₂ Emissions per Unit Sales (Group Total)

(tons/100 million yen)



* CO2 conversion coefficient for purchased electric power: Our results for fiscal 2002 and later are calculated as 0.407 tons CO2 per MWh. (We expect the coefficient to be 0.34 tons CO₂ per MWh in 2010.)

* Actual sales: Consolidated sales compensated by the Bank of Japan's corporate goods price index (electrical equipment). (Per unit value = CO₂ emissions/actual sales)



Promoting the Visibility of Individual Businesses' CO₂ Emissions (Fujitsu Oyama Factory)

When attempting to reduce energy usage in factories, it is important to address it not only from the equipment aspect but also from the process aspect in the production and other departments. To do this, Fujitsu's Oyama Factory installed meters to measure the cumulative power consumption on the primary side of the distribution panels in its main production and testing equipment (in 25% of the total) in order to make the amount



of electricity being used for production visible

Rendering the electricity consumption of the most powerhungry departments visible in this way enables us to set energy reduction targets, monitor progress, and keep our day-to-day energysaving activities invigorated.

Case Study ② Reviewing Heating Systems and Converting Equipment to Save Energy (Fujitsu Kansai Systems Laboratory)

Fujitsu Kansai Systems Laboratory kept the number of heating units down by turning its computer room into an office.

It also converted a heat storage water tank to produce chilled water for its air conditioning system at night, when electricity is cheaper. This enabled it not only to reduce its annual CO_2 emissions by 74 tons but also to save on its electricity costs.

This initiative won the laboratory a prize for effort in fiscal 2008 as one of the case studies on improvements to the operation and control of heat storage systems collected by the Heat Pump &Thermal Storage Technology Center of Japan.

Preliminary Verification of Benefits from Remodeling a Heat Storage Water Tank Using Thermal Fluid Simulation

1 hour from start of heat storage 8 hours from start of heat storage The provided of the storage water tank.

Cutting Emissions of Greenhouse Gases Other than CO₂

The semiconductor industry has established a voluntary action plan to cut the emissions of PFC, HFC and SF₆, which are all greenhouse gases.

We have set a target of reducing emissions of greenhouse gases other than CO₂ to 10% below the fiscal 1995 level by the end of fiscal 2010. Our Electronic Devices units are continuing to change over to gases with lower global warming potential as well as to install equipment to extract such gases on new manufacturing lines.

In fiscal 2008, the most up-to-date reduction technology and scrubbing devices were introduced as part of a NEDO assisted product (NEDO: the New Energy and Industrial Technology Development Organization, an incorporated administrative agency), making emissions of approximately 428,000 tons after conversion using the global warming potential index (GWP).

Although there are differences in our scale of production and manufacturing processes, this represents a 65.3% increase from fiscal 1995.

Emissions of Greenhouse Gases other than CO₂ (total for semiconductor business)



Promoting the Use of Renewable Energy

Some Fujitsu business sites have introduced renewable energy in the form of solar power, wind power, etc. Some data centers that have introduced solar power have, for example, devised ways of monitoring the contribution of renewable energy, rendering the solar radiation intensity, instantaneous power generation and cumulative power generation for the day visible on display panels.

Renewable energy is actively introduced when new data centers and other facilities are built (see page 16). We intend to go on increasing the proportion of renewable energy we use, and are considering setting targets for its introduction in the future.

We also perform carbon offsetting of the electricity we consume by using Green Power certificates* at events and exhibitions such as Fujitsu Forums and stockholders' meetings. In fiscal 2008, we purchased a total of approximately 44,000 kWh worth of these certificates.

* Green Power certificates

This is a system whereby a certificate issuer issues tradable certificates accredited by a third party (the Green Energy Certification Center) for the environmental added value of electricity generated by natural energy.

Case Study ③

Project to Improve Air Conditioning Efficiency in Data Centers (Fujitsu Shikoku Systems Limited)

Fujitsu Shikoku Systems Limited carries out regional systems integration, package development and outsourcing services. There is a data center (IDC) in the Kochi Fujitsu Technoport building that the company occupies. A through-floor air conditioning system is used in the data center's IDC Machine Room to cool machines such as host computers and servers efficiently, but the equipment was being operated with the specifications unchanged from when the facility had been constructed, with the racks'air intakes and outlets facing each other.

Starting in fiscal 2008, the company addressed this issue by optimizing the position and number of outlet grilles in the floor and intakes in the ceiling so as to adjust the airflow balance to suit the way in which the racks were populated. This increased the air conditioning efficiency and allowed the system to be run with fewer units and the operational settings to be adjusted and relaxed.

As a result, the building's total CO₂ emissions dropped by around 7% compared with fiscal 2007.

Airflow and Temperature Distribution Simulation (Cross-Sectional View Showing Machine Room from Side)



For the Environment