

Fujitsu Group's Green Logistics Activities

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In April 2006, the Revised Act on the Rational Use of Energy (Revised Energy Conservation Act) was enforced and both consigner businesses and transport operators were strongly demanded to take energy-saving measures in logistics. Fujitsu is a "specified consigner" that handles freight transport of more than a certain volume (30 million ton-km a year) and it is required to report on the actual reduction of CO₂ emissions achieved with transport and energy-saving plans every year. Therefore, the entire Fujitsu Group is promoting activities to reduce the environmental impact related to logistics throughout its supply chain, or green logistics activities. In the Environmental Action Plan, Stage VII, Fujitsu has set a target relating to the Group's logistics (domestic, intra-region outside of Japan) of "reducing by 2015 the CO₂ emissions per sales from logistics by over 4% compared to 2011" and is rolling out green logistics activities globally. This paper presents specific activities on which the Fujitsu Group is focusing to achieve this target, including "modal shift expansion" and "reduction of vehicles by improving loading efficiency" together with case examples.

1. Introduction

Green logistics is an approach to reduce CO₂ emissions generated in logistics and refers to logistics that is environmentally friendly and causes less environmental impact. In Japan, CO₂ emissions of the transport sector account for about 20% and green logistics is attracting attention as a measure to combat global warming. Improving energy efficiency leads to a cost reduction by improving transport/delivery efficiency while also reducing environmental impact in ways including reducing CO₂ and air pollutant emissions. Accordingly, combined with the widespread concept of corporate social responsibility (CSR), many enterprises are engaged in green logistics activities.

Green logistics, which is intended to reduce greenhouse gases such as CO₂, specifically includes: improving vehicle loading efficiency by modal shifts and cooperative transport/delivery, introducing low-emission vehicles such as hybrid and compressed natural gas (CNG) vehicles, introducing digital tachographs that record the drivers' driving data, optimizing transport routes and the locations of logistics centers, and using eco-packaging. Of these, a modal shift means

switching to a mode of transport that causes less environmental impact, and the improvement of vehicle loading efficiency means reducing CO₂ emissions from transport by loading one truck with as much freight as possible to reduce the number of vehicles.

This paper describes our green logistics activities by presenting specific examples including "modal shift expansion" and "reduction of vehicles by improving loading efficiency."

2. Fujitsu Group Environmental Action Plan

Based on the corporate value "In all our actions, we protect the environment and contribute to society" given in the FUJITSU Way, the Fujitsu Group's philosophy and guiding principle, we position environmental conservation as one of the highest priority issues of management so that the beautiful environment of the planet will be passed on to the next generation. Under this concept, the Fujitsu Group is promoting environmentally conscious activities in the field of logistics (green logistics activities) as well as other fields and working on reducing CO₂ emissions from transport

throughout its supply chain from component procurement to product delivery while cooperating with related divisions such as the development/design, purchasing, manufacturing and sales divisions.

In order to drive environmental management, the Fujitsu Group has established the "Fujitsu Group Environmental Policy" based on the guiding principle above and, to pursue specific targets for putting it into practice, formulated the "Fujitsu Group Environmental Action Plan." Concerning logistics, we set a target of "reducing CO₂ emissions from domestic transport to 15% below the FY2008 levels by the end of FY2012" in the Environmental Action Plan, Stage VI. As shown in **Figure 1**, we successfully achieved the target with a 32% reduction in FY2012 as compared with FY2008.

As activities for CO₂ emissions reduction, we have promoted activities to expand modal shifts for PCs, mobile phones and procured components, improve loading efficiency by using consolidated transport with products of different divisions and group companies and improve fuel efficiency by employing hybrid vehicles and eco-friendly tires.

3. Modal shift expansion

As specific measures, we are actively pushing ahead with modal shifts, which raise expectations for a significant CO₂ reduction especially in transport. First, we focused on Fujitsu Isotec Limited (Date City, Fukushima Prefecture), a factory that manufactures desktop PCs and servers, which account for most of

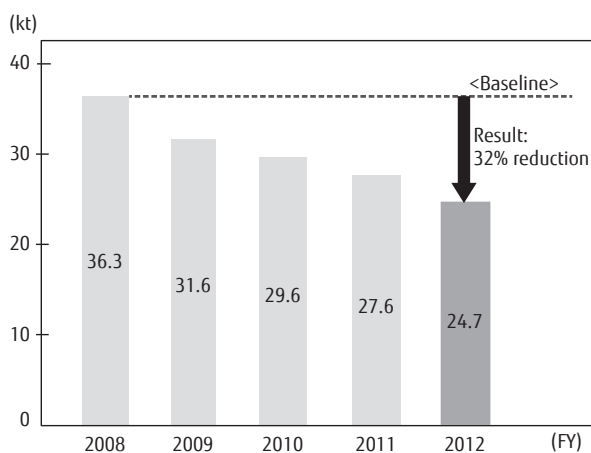


Figure 1
Changes in CO₂ emissions from domestic transport of Fujitsu Group.

the freight handled in Fujitsu, and started transporting products by rail in 2004. Meeting requirements related to cost and regular transportation posed problems and the rate of application of railways remained low because fares were found to be higher than truck transport for some destinations and there was a fear that transport might be delayed due to natural disasters and other reasons. However, hurdles were overcome one by one through changing the pallet size to conform to the specifications of the Japan Freight Railway Company's container railcars and revising the method of stacking to improve loading efficiency and by examining and checking the rate of regular operation of rail transport, which led to expansion of rail transport. As a result, we have acquired the "Eco Rail Mark product" certification established by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Railway Freight Association. Modal shifts (for between seaports and factories) in component procurement were difficult to achieve because of the problems of cost and lead-time. However, by participating in the rail model project of the MLIT that is intended to enhance rail services for transporting freight from Japan's super hub ports to the interior of the country, we sought solutions to the problems in collaboration with the Japan Freight Railway Company. We started to use 20-foot sea containers in August 2009 and 40-foot sea containers in May 2010 for rail transport and realized an integrated modal shift for the entire process from component procurement to product transport. In an effort to expand this effort to other factories and products, we managed to apply rail transport to shipment of mobile phones in February 2010 and acquired another Eco Rail Mark product certification, which is an example of our activities for expanding our modal shift.

In this way, we have been striving to find solutions to problems while cooperating with logistics companies and related divisions and actively adopting rail transport; our efforts were recognized and led to us winning the 2010 Minister of the Environment Award for the Prevention of Global Warming for our modal shift activities. In March 2011, we achieved a modal shift percentage (percentage of use of rail transport) of the entire company of more than 15% and acquired an "Eco Rail Mark company" certification as the entire company (**Figure 2**).

In FY2012, we attempted to further strengthen



Figure 2
Eco Rail Mark.

cooperation with the related divisions to expand rail transport. Specific activities, which concerned Fujitsu Mobile-phone Products Limited^{note)} (Ohtawara City, Tochigi Prefecture), a mobile phone manufacturing factory, were intended for manufacturing and delivery in consideration of the Japan Railways (JR) schedule and shipping time and included: sharing of targets and orientation (alignment of awareness); identification and coordination of issues; and study, implementation and management of measures jointly with related divisions such as the manufacturing division (including line companies). Issues such as the following were identified.

- 1) Production status is not readily visible to the logistics site.
- 2) Product delivery is not classified according to the destination and products are not delivered at the scheduled time.
- 3) For rail transport, the time of departure from the factory needs to be earlier than for truck transport.
- 4) Time of delivery to customers must be met (delayed delivery not permitted).

As measures to address them, we ensured information was shared between the manufacturing and logistics divisions (e-mail communication) for 1), established rules for delivery in consideration of the destination and time of shipping for 2) and 3) and,

note) Fujitsu Mobile Phone Products Limited and Fujitsu Peripherals Limited were integrated in April 2014, and the function to mass-produce mobile phones was aggregated into Fujitsu Peripherals Limited.

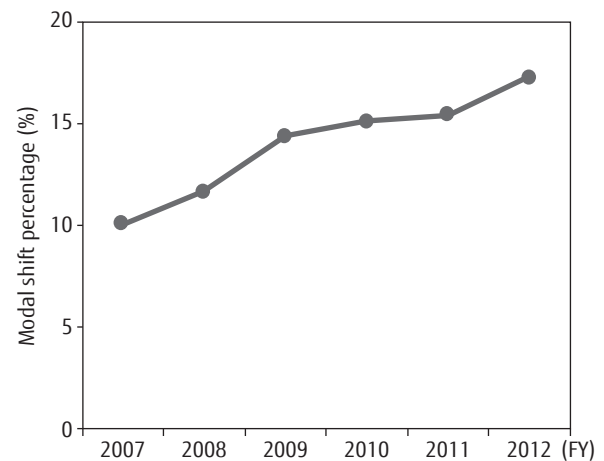


Figure 3
Domestic modal shift percentage of Fujitsu.

for 4), coordinated the delivery time with customers involving the department and sales division. These activities led to an increase in the modal shift percentage (percentage of railway use) of the entire company in FY2012, as shown in **Figure 3**.

4. Reduction of vehicles by improving loading efficiency

Improvement of loading efficiency, which directly leads to cost reduction, is one of Fujitsu's important activities. Conventionally, transport routes and vehicle allocation methods were studied according to the products of the respective business units (BUs) to optimize transport. As efficiency improvement and downsizing progressed and the overall volume decreased, we took further measures to improve consolidated transport with products of other BUs and the Fujitsu Group companies, and even of companies outside the Fujitsu Group, so as to increase the volume of goods handled, and thereby continued to improve efficiency.

First, as an activity relating to product transport, we present examples of consolidated transport with group companies and companies outside the Fujitsu Group.

In February 2007, we aggregated freight information of multiple consigner businesses in the Tokyo metropolitan area and constructed the "concentrated vehicle allocation control support system" that converts and standardizes the data formats that were different for each company. Then we started carrying out

cooperative deliveries to customers and cooperating in the transport of repaired items, returned devices and procured components to manufacturing factories jointly with the Fujitsu Group companies and component suppliers. This activity was carried out as a model project of the "FY2006 Green Logistics Partnership Promotion Project" and was awarded the Minister of Economy, Trade and Industry Award of FY2007 Excellent Green Logistics Commendation Program.

In August 2012, to transport products to be shipped to the distribution centers of major retailers, we started carrying out consolidated transport with home electronics products of other companies in some parts of Japan and achieved a reduction in the number of vehicles by improving loading efficiency.

We are promoting green logistics that offers improved customer service and environmental consciousness with service parts as well as products. For example, we relocated parts centers to manage service parts nationwide in an attempt to reduce CO₂ emissions. By relocating parts centers closer to customers or field customer engineers (CEs), the reduction of time until parts are delivered to customers has been realized. In addition, we encouraged field CEs to stop at parts centers in order to take service parts with them, as an effort to cut CO₂ emissions by reducing deliveries from parts centers to customers.

The Fujitsu Group is working on reducing CO₂ emissions by improving loading efficiency also with component transport. In FY2011, we focused on the K computer to aim at component procurement linked with manufacturing and made efforts to deliver the necessary parts in the necessary amount when they became necessary. As the method of transport for that purpose, we employed the Milk run method (collection of loads in a routine run), which involves making regular visits to component suppliers for collection. As a result, trucks that were used for delivery from each of the multiple component suppliers have been replaced by collection-based transport, and this has led to a reduction in the number of trucks. Returnable packaging was also adopted to help reduce waste (packaging materials for procured components), resulting in realization of an environmentally conscious transport system.

5. 3Rs in packaging

The Fujitsu Group is actively engaged in activities such as the 3Rs (reduction of waste generation, reuse and recycling) in relation to packaging of products and parts for the purpose of reducing environmental impact in the entire logistics process. Specific examples include adopting the reusable "Green Eco Belt" (jointly developed by DHL Supply Chain Ltd. and EcoBiz Co., Ltd.) that prevents a load from collapsing (**Figure 4**) and using returnable containers in transport for the off-site repair service (**Figure 5**). Reusable packaging materials are employed to cut back on the use of corrugated cardboard boxes and cushioning materials, which were disposed of after a single use, and environmental impact has been successfully reduced.

6. Global application of green logistics

The Fujitsu Group began measuring CO₂ emissions from international transport (to or from Japan) in FY2008 and has been carrying out activities to reduce CO₂ emissions by switching from air to ocean transport, raising the container loading ratio, shortening transport distances, reducing air transport frequency and reducing the weight of packaging and cushioning materials. As an example of a group company's activity, a method



Figure 4
"Green Eco Belt" prevents stacked items from collapsing.

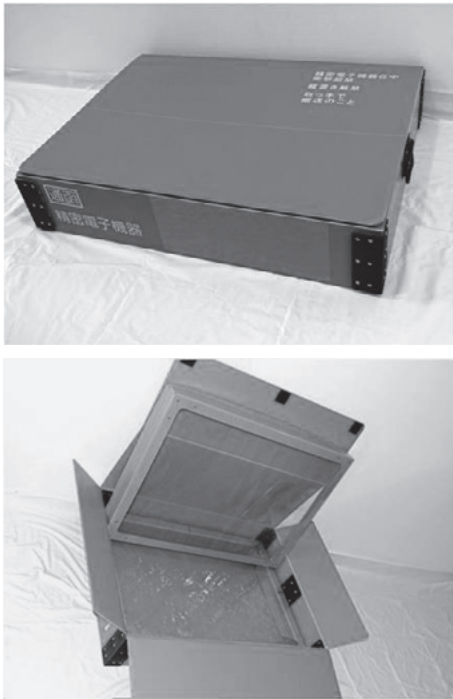


Figure 5
Returnable container for IA servers.

of component procurement has been implemented in international transport in which the container space is effectively used by standardizing conventionally non-uniform outer packaging sizes. In addition, these activities have been applied overseas, resulting in a further reduction in the number of containers.

At major overseas group companies, we began measuring CO₂ emissions related to international and intra-region transport starting in FY2011. We cooperate with transport operators and promote green logistics activities in collaboration with customers. Specific examples of reduction activities include switching from air to ocean transport and increasing the container loading ratio by taking measures such as adjusting the

sizes of orders for procured components and consolidating smaller items of freight from multiple suppliers in one container.

7. Conclusion

The Environmental Action Plan, Stage VII, which sets a target of reduction of the CO₂ emissions from transport of the entire global group, concerns all types of transport in relation to the Fujitsu Group's products including international and intra-region transport in addition to domestic transport. Up to now, the methods of measuring CO₂ emissions from transport in international transport or at overseas offices have been coordinated with the individual offices (e.g., unification of coefficients) but the specific activities have been carried out by the respective offices. In the future, green logistics activities on a global basis are expected to further expand through the joint activities of the entire Fujitsu Group.

It is necessary to implement environmental activities in logistics not only as activities of the Fujitsu Group but also together with all partners including component suppliers, logistics companies and customers (delivery destinations). That is another reason why the Fujitsu Group has established the "Fujitsu Group Green Logistics Procurement Direction," which describes the basic concept of green logistics and requests for partners. The content covers as many as 13 items including, for example, acquisition of ISO 14001 external certification, green management certification and other certifications, improvement of loading efficiency, reduction of traveling with an empty load, promotion of eco-driving and priority employment of low-pollution/high-fuel-efficiency vehicles. The Fujitsu Group is striving to conserve the environment of the earth together with its partners through logistics activities based on this Procurement Direction.



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Mr. Niwa is currently engaged in domestic purchasing and green logistics activities.