A Message from the President

Daifuku has contributed to the society through the company business for more than 65 years since its establishment. It is our pleasure to know that our products and technologies has tied in well with resource saving and energy saving both directly and indirectly.

Thirty years ago, in 1973, Japanese people faced the oil shock and were aware of the importance of energy saving for the first time. In that year Daifuku developed the first refrigerated automated warehouse in Japan which realized drastic reduction of electricity consumption by adopting the construction of storing cooled air in the steel racks themselves, while allowing workers to be released from load handling work under the very low temperature of -40°C. With this as a turning point the refrigerated automated warehouse spread widely, initiated changes in the food circulation patterns and was exported to overseas.

Daifuku’s spirit to tackle unknown problems and to expand its business into all over the world for the purpose of satisfying customer’s needs has been succeeded from the time of establishment. For example, for the production lines of liquid crystal panel having a better energy saving feature compared to CTR, Daifuku has supplied the cleanroom conveying systems manufactured in Korea and Taiwan. For the automobile industry having a great interest in ecology, Daifuku has delivered automobile production lines to major automobile manufactures located in Europe, United States, Asian countries and other countries. Consequently the 35% of consolidated sales amount of the last fiscal year was derived from overseas projects.

One of the most important business challenges of Daifuku is to promote the production at optimum location through the cooperation with our factories and subcontractors in North America and Asia. To do so, in addition to observing applicable laws and regulations of penetrated countries, Daifuku is required to deal with the environmental issues more positively.

Our production sites have already been the holders of ISO 14001 certificate. Now Daifuku is going to expand the scope of certification to the whole company by the fiscal year 2003, covering all non-production sectors including administration and report or website itself for their improvement would be highly appreciated.

As a Good Global Citizen

Daifuku is going to expand the scope of certification to the whole company by the fiscal year 2003, covering all non-production sectors including administration and report or website itself for their improvement would be highly appreciated.
Daifuku is trying to measure, analyze and figure out the environmental impacts generating throughout its line of business activities to supply distribution system and equipment.

Daifuku is exerting efforts to reduce the environmental impacts of its own activities while reducing environmental impacts of the total society by comprehensively supporting logistics in order to contribute to the establishment of the resource recycling society.

**Business Activities**

**FA: Factory Automation**
Developing advanced FA systems mainly for the manufacturing industry and providing various types of distribution system such as conveying systems, automated storage/retrieval systems (AS/RS) and automatic guided vehicles (AGV).

**DA: Distribution Automation**
Proposing the most suitable system for various businesses in distribution industry to meet their SCM needs.

**MA: Medical Automation**
Providing storage and conveying systems to support safe and fast medical services.

**LA: Library Automation**
Developing automated warehouse and conveying system used in libraries.

**AA: Agricultural Automation**
Daifuku's various automated systems are also used in the agricultural field for sorting vegetables and fruits.

**SA: Service Automation**
Based upon technologies used in the distribution system, Daifuku develops various types of products used in everyday life and for leisure.

**Environmental Impact Reduction Activities**

For Sustainable Resource Recycling Society
Daifuku Products with Consideration of Environment

Daifuku is exercising efforts to provide products considerate of overall global environmental issues by developing or improving the products for environment protection. These include the energy saving consideration in designing, recyclability of products, containers for collection of scrapped home electric appliances and refuses, and automated warehouse for efficient inventory control.

In FY 2002, our automated warehouse system was employed in the newly built West building of National Diet Library with high appreciation. Daifuku will continuously providing products with giving active attention to the global environment.

Products with Consideration of Energy Saving

Daifuku is focusing on the energy saving consideration in designing the transportation and storage system. For example, in designing the stacker crane “S/R Machine H series” for automated warehouse, Daifuku achieved the energy saving by separating the material carriage and maintenance operator’s cab, and enabling to move up and down only carriages upon automated operation. The ‘Magic Sorting System (MIII)’, mini load AS/RS has been designed to save energy during operation by saving the weight of main body. Through these products, Daifuku is supporting customer’s energy saving activities.

Equipment and Devices for Environment Protection

Daifuku Mesh Box Pallet, “Palletainer”, a returnable container serves for reduction of packing and packaging materials. This pallet can be stacked during use and folded during nonuse, and be helpful for the efficient use of space. Daifuku is supplying also the products for collecting and recycling the scrapped home electric appliances and collection of home refuse. The Containers for collection of scrapped electric appliances has considerably shortened the loading and transportation time by means of unit loading of the electric appliances. In the field of home refuse collection, Daifuku is supplying the refuse containing cage, “Gomi-Clean” preventing the refuse from being packed and littered by crows and cats, to keep the cleanliness and beauty of surrounding area.

Case Examples

- **LAWSON, INC.** Introducing Noise-Silencing Roll Box Pallets for Regional Environment Management

LAWSON, INC. (Head Office: Suita City, Osaka) has adopted the easy lock type CTE as the cart pallets used for supplying goods to shops, and achieved noise reduction and the extensive improvement of work efficiency.

- **Ichikawa Kankyo Engineering Co., Ltd.** Utilizing Various Types of Material Handling Equipment in Game Machine Dismantling Plant

In this center, the collected game machines are loaded to the pallet and stored in the vehicle-based tilted moving system. For example, in designing the stacker crane CTE of Daifuku Products with Consideration of Environment Protection, it reduces collision noise and the noise during moving by the adoption of double pipe structure for panel frames. It can be folded easily by moving the side panels inward and lifting the resin base with foot. The CTE has been selected because its silencing design and easy operation meet the needs of convenience stores requiring the commodity supply in night time and having the increased number of female part time workers. In addition the established collection and recycling route of components such as steel panels and wheels was also appreciated.

- **Toyota Motor Corporation** Adapting Mesh Box Pallet as Tote Box for Exporting Pressed Parts

The solid and collapsible mesh box pallet “Palletainer” is used in Kamigawa Distribution Center of Toyota Motor Corporation (Head Office: Tokyo City, Aichi) as tote boxes for exporting pressed parts to the US. Palletainer has been adapted and replaced cardboard plastic boxes and steel boxes because of the following advantages.

- **Nerima Ward, Tokyo** Introducing Multistory Bicycle Parking System as Effective Parking Means

Nerima Ward of Tokyo introduced multistory bicycle parking system to keep the dismantling space as much as possible. The FS container is filled up, it is moved to the mesh box pallet “Palletainer” which is then shipped to the recovery plant as a tote box. Palletainer has been adopted and replaced cardboard plastic boxes and steel boxes because of the following advantages.

Bicycles are handy and environmental friendly transportation means and recognized as the important means of urban transport. However, illegally parked bicycles are now getting one of large social problems. Nerima Ward expects that multistory parking in the limited space will contribute to the reduction of illegally parked bicycles.

Daifuku is exercising efforts to provide products considerate of overall global environmental issues by developing or improving the products for environment protection. These include the energy saving consideration in designing, recyclability of products, containers for collection of scrapped home electric appliances and refuses, and automated warehouse for efficient inventory control.

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Bicycles are handy and environmental friendly transportation means and recognized as the important means of urban transport. However, illegally parked bicycles are now getting one of large social problems. Nerima Ward expects that multistory parking in the limited space will contribute to the reduction of illegally parked bicycles.
Daifuku laid down the environmental management policy for whole organization in 1999 based upon that of Komaki Works and Shiga Works. This environmental management policy was communicated not only to all Daifuku employees but also be given access to the general public by displaying it at the entrance of each Works.

In FY 2002, the management policy was partially modified to strengthen the environmental management system. With a goal of getting certified to ISO 14001 for the whole organization in 2003, all employees of Daifuku is now implementing environmental protection activities.

Environmental Management Policy

### Environmental Objectives, Targets and Performance

#### Daifuku Was Appraised as 371st Place in 2047 Manufacturing Companies

According to the announcement of Nippon Keizai Shimbun (the biggest economic journal press in Japan) in December 2002, Daifuku was appraised as the 371st place in 2047 manufacturing companies at 6th Environmental Management Scale Survey. It was lower than last year’s 277th but this was because the evaluation method was changed from this fiscal year and overseas branches were also subject to the evaluation.

Daifuku will enhance the environmental management with considering the improvement at overseas production bases.

This environmental management policy will be communicated not only to all Daifuku employees and all subvendors but also be given access to the general public.

**Issued on January 7, 1999
Revised on October 1, 2002**

### Environmental Management Policy

#### Principles

Daifuku, intending to be a global organization, has recognized that it is one of the most important objectives of the human being to protect the global environment. With this, Daifuku will give consideration to the saving of resources and prevention of contamination of environmental nature in every aspect in its development and production of material handling system equipment.

#### Management Policy

1. Daifuku will proceed in its continual environmental protection activities by special task force in production sectors and ISO steering committee meetings.
2. Daifuku will promote the environmental protection based on the environmental objectives and targets established after the appropriate assessment of environmental effects, for the continual improvement of management system and its performance.
3. Daifuku will establish its own standards complying with all applicable laws, codes and regulations for environmental protection.
4. Daifuku will take environmental protection into consideration at every stage of the design, development, production, use and disposal of all products it provides.
5. Daifuku will put the priority in the following environmental aspects in its business activities:
   - efficient use of energy at all factories.
   - waste reduction.
   - prevention of contamination by wastes from its production activities.
6. Daifuku will enhance education and support to the subvendors and communication with local community for collaboration.

This environmental management policy will be communicated not only to all Daifuku employees and all subvendors but also be given access to the general public.

#### Shiga Works

<table>
<thead>
<tr>
<th>Objective / Target (FY 1998 to 2004)</th>
<th>Objective for FY 2002</th>
<th>Result in FY 2002</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Environmental protection</td>
<td>Strengthening the control of waste</td>
<td>Against water pollution: Good</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Against air pollution: Good</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Against electric power: Good</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compliance with PRTR-Abatement: Good</td>
<td>FY 2002</td>
</tr>
<tr>
<td>2. Reduction of Energy use</td>
<td>Reduction of electric power consumption (By 20% of FY 1998 by FY 2003)</td>
<td>Saving power consumption of compressors by 10% relative to FY 1998</td>
<td>FY 2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduction of energy consumption by less than 10% relative to FY 1998</td>
<td>FY 2003</td>
</tr>
<tr>
<td>3. Water pollution</td>
<td>Reduction of water from utilization (general waste and industrial waste) by 65% of FY 1998 by FY 2003 (Reducing of waste water impact to reduce as the sub-objective)</td>
<td>Reduction of water from utilization by 65% of FY 1998</td>
<td>FY 2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduction of water from utilization by 65% of FY 1998 relative to the one of FY 2002</td>
<td>FY 2003</td>
</tr>
<tr>
<td>4. Indirect effects</td>
<td>Support installation of green supplies and subvendors</td>
<td>Implementation of support and education to green suppliers and subvendors</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planning reduction of used paper and etc.</td>
<td>Nt Enough</td>
</tr>
<tr>
<td>5. Product assessment</td>
<td>Reduction of project, and reduction of the number of paper (By 10% of FY 1998 by FY 2003)</td>
<td>Reduction of project and etc.</td>
<td>FY 2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduction of water from utilization by 65% of FY 1998</td>
<td>FY 2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recovery of material by recycling by less than 10% of FY 1998</td>
<td>FY 2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planning and implementation of reduction</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improvement of recyclability of products provided</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improvement of indication of names of plastic resin being used</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implementation of support and education to green suppliers and subvendors</td>
<td>Nt Enough</td>
</tr>
</tbody>
</table>

#### Komaki Works

<table>
<thead>
<tr>
<th>Objective / Target (FY 1998 to 2004)</th>
<th>Objective for FY 2002</th>
<th>Result in FY 2002</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Task for reduction of environmental impact</td>
<td>Monitoring development process products</td>
<td>Reduction of environment impact</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of energy-saving products</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selection of materials for recyclability</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selection of materials for resource protection</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resource protection</td>
<td>FY 2002</td>
</tr>
<tr>
<td>2. Reduction of energy use</td>
<td>Reduction of energy power consumption</td>
<td>Reducing energy power consumption to 75% of FY 2002</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduction of waste</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduction of waste at weight of 75% of FY 2002</td>
<td>FY 2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reducing paper recycled by 10% relative to FY 2003</td>
<td>FY 2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recreational shopping by 10% relative to FY 2003</td>
<td>FY 2003</td>
</tr>
<tr>
<td>3. Prevention of contamination</td>
<td>Prevention of contamination</td>
<td>Prevention of contamination by recycling</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prevention of water and etc.</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prevention of contamination by recycling</td>
<td>Nt Enough</td>
</tr>
<tr>
<td>4. Social activities for reduction of environmental impact</td>
<td>Support installation of green supplies and subvendors</td>
<td>Implementation of support and education to green suppliers and subvendors</td>
<td>Nt Enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planning and implementation of environmental statement</td>
<td>Nt Enough</td>
</tr>
</tbody>
</table>
In order to promote the environmental protection activities together with the continuous development of business of the organization, it is desirable to grasp the investment costs and benefit related to such activities.

For that purpose, Daifuku has adopted the environmental accounting system to be used as the measurement of its performance since 2001. As an example of positive effects of environmental accounting on environmental protection activities, lighting is changed to the inverter-controlled ones.

Daifuku has implemented the environmental management system as the bases of its environmental protection activities to identify and assess the impacts and results of performance for further development of their effectiveness.

This will be expanded and strengthened by establishing “Total Daifuku Environmental Management System” covering also the non-manufacturing sectors while developing its logistic system business activities.

### Environmental Accounting

In order to quantitatively grasp the costs and benefits related to environmental protection activities, Daifuku started the accounting system in accordance with the Guideline for Environmental Accounting System for Machinery Industry based on the guidance by the Ministry of the Environment of Japanese government.

The table below is the data for the year of 2002 for Shiga and Komaki Works. The total cost is about Yen 225,000,000. As Shiga Works is adjacent to Lake Biwa, the costs for waste water treatment facilities and their running costs became so high as 41% of the total cost. The benefit turned out to be about Yen 60,000,000. The benefit due to the development of new products is not included in this report because it was quite difficult to calculate it accurately at the present time.

We are going to extend the scope to all non-manufacturing sectors while developing its logistic system business activities.

### Environmental Management System

In FY 2002, ISO Steering Committee consisting of environmental management representatives from each Department and the project team as the core organization has been held periodically consisting of Komaki Works General Manager and Shiga Works General Manager. The management review has been held every six months for continual improvement by evaluating the performance of activity plans of each Department and project team. In addition to the existing project teams such as Design and Development, Waste Disposal, Energy Saving, Green Procurement, PR and Statistical Research, the Water Quality Management team was set up FY 2002 for the cross-functional development of the environmental management.

### Environmental Accounting Report for the fiscal year 2002

(Shiga and Komaki Works for the period from April 1, 2002 to March 31, 2003)

#### Costs for Environmental Protection Activities

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (Unit: 1000 yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction of Environmental impact in production activities</td>
<td>91,341</td>
</tr>
<tr>
<td>Measures against industrial waste</td>
<td>57,665</td>
</tr>
<tr>
<td>Use of materials for environmental protection</td>
<td>3,278</td>
</tr>
<tr>
<td>Development of technologies having less environmental impact</td>
<td>17,693</td>
</tr>
<tr>
<td>Improving of Daifuku products</td>
<td>5,486</td>
</tr>
<tr>
<td>Emergency preparedness</td>
<td>410</td>
</tr>
<tr>
<td>Environmental protection of offices</td>
<td>10,999</td>
</tr>
<tr>
<td>Consideration of environment for overseas operation</td>
<td>420</td>
</tr>
<tr>
<td>Environmental management</td>
<td>42,272</td>
</tr>
<tr>
<td>Collaboration with communities</td>
<td>818</td>
</tr>
<tr>
<td>Total</td>
<td>225,084</td>
</tr>
</tbody>
</table>

#### Economic Benefit

<table>
<thead>
<tr>
<th>Description</th>
<th>Benefit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit from sales of thick paper</td>
<td>15,391</td>
<td></td>
</tr>
<tr>
<td>Energy saving</td>
<td>36,676</td>
<td></td>
</tr>
<tr>
<td>Development of energy-saving products</td>
<td>6,050</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60,625</td>
<td></td>
</tr>
</tbody>
</table>

*The cogeneration expenses were calculated in terms of marketable waste heat energy in the thermal power generator.
For the purpose of preventing global warming and achieving recycling-oriented society, Komaki Works has been implementing its business activities. In August 2002 Aichi prefecture, where Komaki Works locates, established the environmental policy referring to the importance of the close cooperation of the government, residents, and the enterprises in this area to achieve environmental protection. As a part of it, we are participating in “ISO Network” which was set up under the initiative of local government, Komaki City. With the 25 member companies of ISO Network, we are positively promoting our environmental protection activities among citizens. Daifuku considers Energy Saving, Improvement of Recyclability and Resource Saving in the development and design of products. For Energy Saving, we set up the objective of 10% reduction of consumption power from the existing model when developing the new model. For Improvement of Recyclability, the objective is “the use of more than 95% of recyclable components.” In order to achieve “Resource Saving,” giving a longer life for components is considered in product design. Also for the reduction of waste and energy consumption for which we have been exerting efforts since 1994, we have achieved the objectives consequently and contributed to reduce environmental impact.

In FY 2002, according to the amendment of Energy Saving Law, we reported the electrical power consumption to the government while complying with the laws and regulations. With taking 3R — Reduce, Reuse and Recycle — into consideration, we are planning to positively promote the supply of product with lower environmental impacts and further development of the global environmental protection activities.

At Komaki and Shiga Works

- Komaki Works Profile
  - Address: 1500 Komakihara-Shinden, Komaki-City, Aichi 485-8653, Japan
  - Started operation: In April 1963
  - Site area: 85,000 m²
  - Building area: 48,000 m²

- Shiga Works Profile
  - Address: 1225 Nakazaiji, Hino-Chi, Gamo-Gun, Shiga 520-1302, Japan
  - Started operation: In March 1975
  - Site area: 1,180,200 m²
  - Building area: 1,762,000 m²

Komaki Works (Certified to ISO 14001 in February 1999)
Promoting Environmental Protection Activities Emphasizing 3R

Eijiro Urasuzaki, Executive Director and Komaki Works General Manager

Shiga Works (Certified to ISO 14001 in November 1999)
Establishing Water Quality Project Team to Strengthen Management System

Hikumi Katsuragi, Director and Shiga Works General Manager

Komaki Works has implemented environmental protection activities and contributed to the local society, while discharging a social responsibility by complying with the laws and regulations.

In Shiga Prefecture, the local government is promoting the “Mother Lake 21 Program” to recover the water quality to the level at 1955’s in 50 years. For leaving the beautiful Lake Biwa to the next generation, the close cooperation of the government, residents, and the enterprises in this area is important. Three years have been passed since Shiga Works got certified to ISO 14001. We have been promoting the reduction of CO₂ emission and exerting effort to achieve “zero emission.” In FY 2002 we set up the Water Quality Management team to strengthen implementation system. Also for the products, improvement of environmental performance such as lengthening of product life, downsizing, energy saving and recyclability is taken into account toward establishment of resource recycling society. At the same time, we are improving the productivity to promote the sustainable development of enterprise. We will continue our efforts and improvement to promote the activities considering environmental protection in the close cooperation of the government, residents, and the enterprises by participating in the regional environmental protection workshop held by the local government, implementing local cleanup activities and so on.

Education and Training of Environmental Management

Shiga and Komaki Works are carrying out the training program for all employees and subvendors to enhance their awareness in environmental management for dissemination of the management program. The in-house electrical bulletin board system “ISO 14001” has been operated since 1999 for exchanging opinions and sharing information on environmental protection activities. Shiga and Komaki Works have posted signboards saying “ISO Certified Factories” at their gates and the entrance of factory buildings. This is intended to let the visitors recognize that Daifuku is conscious of environmental issues and to raise employee’s awareness. In addition, we put the idling stop signboards in the parking areas, requesting all employees and visitors to make idling stop for their cars.

Risk Management System

To prevent the environmental impacts by the emergency situation and its escalation, each factory is conducting the training for simulated virtual emergency situations once a year.

For the internal auditors, the environmental management system and internal auditing procedures are being taught to the candidates for the consistency and uniformity of audits and professional development of internal auditors or candidates. The number of internal auditors is gradually increasing. Currently there are 153 auditors in Komaki Works, 68 in Shiga Works and 16 in Osaka Head Office.

Employees’ awareness regarding the environmental issues is also increasing and now about 10% of all proposals and suggestions from employees (total of 3740) are related to environmental improvement.

Compliance with the Environment Related Laws and Regulations

Daifuku is in compliance with the environmental related laws and regulations applicable to the environmental aspects of its activities, products and services. In FY 2002, no violation of law and regulations was made and no fine was imposed.
**Challenges in Design and Development of Products**

In design and development of products, Daifuku is taking into consideration the total life cycle of products including the environmental impact at the stage of usage and disposal by the customer, besides the impacts at the production stage at our facilities. We will positively implement the research and development of products and proceed the continuously improvement to reduce the environmental impact.

**Reduction of Product Weight and Number of Parts**

Daifuku is challenging the energy saving at the design and development of its products, by reducing the product weight and the number of their parts.

- **Car production line conveying system “Flexible Drive System (FDS)”**
  The weight of trolley bracket, which is a part of Overhead type, was reduced by 20% by brushing up the casting components of it. For Floor type, the weight of basic modules (merge, divergence, turn drive, straight drive and stopper) was reduced by 9% and the number of parts by 11%.

- **Cleanroom storage system “Clean Stocker (CLS-50)”**
  Compared to the existing model, the weight was reduced by 12%.

**Reduction of Number, Capacity of Motor Drive**

Reduction of energy consumption at the time of product use has the great effect in the life cycle of the product. Therefore, Daifuku has given high priority to it at the stage of product design and development.

- **Car production line conveying system “Flexible Drive System (FDS)”**
  The number of motor drives was reduced by 10% by placing the driving section and storage at a regular interval. In addition the use of energy saving operation control reduced the operation time of motor drives to one-third.

- **Cleanroom conveying system “Cleanway (CLW-07)”**
  Compared to the existing model, the power consumption was reduced by 20% by reducing the weight, downsizing and changing motor capacity.

**Analysis of Materials, Indication of Names of Materials such as resins**

At the time of product development, the materials to be used for the product are analyzed and the type of plastic resin materials being used for the product are indicated on the product body, in order for the user to identify the material upon disposal or recycling of plastic resin materials.

In FY 2002, FA & DA Division and AFA Division calculated the quantities of plastic resin materials used for their products like they did in 2001. From now, this practice is going to be applied to all products.

**Supporting Customer’s Environmental Impact Reduction Activities**

Car-Washing Machine Division developed the wastewater recycling equipment called “Fresh Membrar.” It uses the condensation, deposition and UF membrane filter for the first time in the industry. It allows cleaning up 75% of wastewater for reusing. It solves several problems reported to the existing recycling equipment such as bad smell in summer time, deceleration of wax effect and damage to car washing machine. This equipment also contributes to lower water and sewage bills and to reduce environmental impact.

The division also developed new shampoo, wax and water-shedding coating material used for the car washing machine. These are the highest level of green liquids without including any chemicals subject to the PRTR law, environmental endocrine disrupter and regulated phosphorus and are both human friendly and environmental friendly.

**Column**

**Message from Environmental Representative**

Shiga Works
To Be an Environmentally-advanced Company in Material Handling Industry

Three years have been passed since Shiga Works got certified to ISO 14001. In early stage we evaluated the environmental effect of the aspects having larger environmental impact and have reviewed and improved such aspects. From now on we are going to develop products with improved environmental performance that can be a sales point in the competitive market. Also we will positively implement the reduction of industrial waste by revising production processes. Although the Japanese economy is sluggish, Japanese enterprises are now considered as environmentally-advanced companies in the world, especially in the automobile industry and consumer-electronics industry. Daifuku is trying to be an environmentally-advanced company in the material handling industry by continuously raising employee’s awareness regarding the environmental issues.
Waste Reduction

Daifuku is exerting efforts to reduce all types of waste including waste plastic resin materials, waste oil and sludge from each factory. The project team for waste reduction is promoting the activity to accomplish “Zero Emission” for the objective of 95% recycling of waste materials. We will improve our recycling system by centrally controlling emission of waste.

Segregated Collection of Waste

Daifuku set up the standards for the containers, collection methods and collecting stations for each type of waste such as waste plastic resin materials, waste oil and sludge to promote the environmental conservation.

Shiga Works is collecting the refuse and waste following the similar methods to those of Shiga toward Zero Emission. In FY 2002, training for waste segregated collection was performed for each division under the initiative of Waste Disposal Project Team and, with the cooperation of each division, contributes to attain the reduction objective (by 55% of FY 1998). Consequently 60% of waste was reduced as compared with the year of FY 1998.

Komaki Works is collecting the refuse and waste following the similar methods to those of Shiga toward Zero Emission. In FY 2002, training for waste segregated collection was performed for each division under the initiative of Waste Disposal Project Team and contributed to attain the reduction objective (by 75% of FY 2002). Consequently 89% of waste was reduced as compared with the year of FY 2000.

The effort to reduce waste by segregated collection will be continued actively from now on.

Reduction of Paper Consumption and Recycling

Daifuku is exerting efforts to reduce waste paper. Daifuku is promoting waste paper recycling to protect forest resources which has a great effect for environmental protection.

Shiga Works is mostly purchasing and consuming the high-grade paper recycled from waste paper, while using backside of all waste paper at the office. The waste paper used for both sides is to be recycled for the high-grade paper.

At Komaki Works, in order to reduce the purchase volume, the use of backside of all waste paper is carried out thoroughly. Also the waste paper used for both sides is to be recycled as used paper.

Promotion of Recycling

Daifuku is promoting the recycling of used or waste materials, taking them not as the waste but as the resource.

In FY 2002, Daifuku verified a suitable treatment method for recycling vinyl chloride and cannot be used for thermal recycling.

In 2002, Daifuku verified a suitable treatment method for recycling vinyl chloride as material. New all recyclable IC cases generated in Daifuku are collected and recycled.

These IC cases are crushed and changed to reusable material by treatment plant and then processed to car stops and placed on the market.

Column Recycling of IC Case Material

Used as Car Stop

Disposible IC cases used for transportation and storage of IC boards at Komaki Works are made of vinyl chloride and cannot be used for thermal recycling.

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These IC cases are crushed and changed to reusable material by treatment plant and then processed to car stops and placed on the market.

Reduction of Garbage Disposal Volume to 1/5 !

Shiga Works has installed the biological garbage disposal machine to reduce the garbage from the staff canteen being sent to the municipal incineration site. Both First and Second Canteens have started their operation and the garbage volume was reduced by 6 ton from 30 ton per year, which is one fifth of the previous year. The garbage processed through the machine is recycled as the fertilizer to the plants in the site. It is also used for vegenutrition trial in employee’s farm.

Column In-house Recycling of Garbage

Dust carts for segregated collection of waste (office)

Vegetable farming

Origin of Segregation of Waste

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The effort to reduce waste by segregated collection will be continued actively from now on.
Green Procurement

Daifuku is thinking that the green procurement and its purchasing activities are important factors for environmental consideration because they are giving the impact to the products though indirectly.

Therefore, Daifuku is promoting the “Green Procurement” practice for establishing and implementing management system to ensure to supply the products with environmental consideration to the customer in cooperation with subvendors and suppliers of parts, components and materials.

Promoting Green Purchasing

Daifuku is promoting “Green Purchasing” also for office supplies and expendables. As the basis for selection for it, network database and Eco labels of products are being used.

For office supplies, the purchasing guideline was established for convenience in selection of suppliers that are considerate of environmental impact of their products.

From FY 2002, the “Office Supplies Reuse Box” is placed at each office to promote the reuse of office supplies which are not used and just left in the desk of each employee.

Reduction of Packaging Materials

As a part of resource saving activities, Daifuku is promoting the reduction of consumption of packaging materials for the products as well as for the parts and components from suppliers in cooperation with them. Especially, the increase in use of plastic containers is contributing to the reduction of waste considerably. In FY 2002, the packaging of geared motor was changed to tote box (Palletainer). Daifuku is planning to increase items for which such tote boxes can be used.

Toward Zero Emission

Aiming at realizing the environment-conscious society living with nature, Daifuku is implementing zero emission activities to recycle all waste. The following points are especially considered.

1. Evaluates the qualification of each waste treatment plant for the treatment of waste classified according to the laws and regulations.
2. Selects recycling method having less environmental impact. For example, selects material recycling rather than thermal recycling.
3. Develops products taking recyclability into account. Daifuku is going to promote the production activities generating less waste from the recycling point of view.

Definitions of Waste and Reduction, and Objectives

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<td>Waste treated by subvendor</td>
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<td>Recycled (including recovered)</td>
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<td>Treated by subvendor</td>
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<td>Storage &amp; control</td>
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<td>Total amount of industrial waste</td>
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<td>Non-Eco: 55%</td>
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<tr>
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<td>Non-Eco: 55%</td>
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Support and Education to Subvendors

Daifuku is asking all subvendors to cooperate in our “green procurement” system. In FY 2002, we performed the field inspection of the environmental management implementation status at several main suppliers site. After analyzing and evaluation of inspection, we exchanged information to improve the environmental activities. Daifuku is continuing to enhance the environmental consciousness of employees and suppliers for raising the level of green procurement, as well as preparation of our own Green Procurement Guideline.

Message from Environmental Representative

Yukio Ozaki

In order to obtain ISO 14001 certification within FY 2003, Osaka Head Office established the ISO 14001 Steering Committee in February 2003 and has tackled several environmental issues such as waste reduction, energy saving and resource reusing.

While each division sufficiently understands the importance of these activities and has implemented positively, educational activity subject not only to all Daifuku employees but also to all subcontractors and temporary employees is performed simultaneously.

Under combined effort of all related persons, these activities are implemented as scheduled.
Energy Saving and Resource Saving

As the energy consumption results in emission of carbon dioxide, it is pointed out that it will cause the impact on environment through global warming. Daihatsu is trying its best to reduce the consumption of electric power and LPG for energy saving. Also, Daihatsu adopted the demand control system for reduction of power consumption. Daihatsu is exerting effort to reduce the consumption of resources with efficient use and recycling.

Reduction of Power Consumption

Daihatsu is promoting the efficient use of electrical power; the main energy of each Works. Shiga Works is proceeding with various research and development activities for the energy saving for the production equipment and facilities. It covers the study of energy saving of such equipment as compressors, hydraulic equipment, lighting equipment and air conditioners, and the development of low temperature baking paints and coating materials. As an energy saving measure for pumps used in cogeneration air conditioners, control system of three pumps used for the cleanroom air conditioning in the Building I was changed to the inverter control (55 kW, 37 kW, and 18 kW) to reduce consumption power. In office buildings, energy consumption has been reduced by adopting one-light-照明 utilizing reflection panels, control fan of ventilator by timer, inverter control of air conditioning system and sensor control of toilet lighting. Applying low-temperature baking paint to lighting also contribute to power consumption reduction. The power consumption at Shiga Works was reduced by 6% as compared with the previous year. Komaki Works employed power control (on-off control of compressor) to air conditioning system, inverter control of lighting and partial lighting using string switches. The power consumption at Komaki Works was reduced by 4% as compared with the previous year. Daihatsu is going to continue the energy saving activity for further efficient utilization of electric power.

Reduction of Fuel Consumption

Daihatsu is also actively promoting the reduction of fuel consumption. Shiga Works, where the liquified petroleum gas (LPG) is employed at the drying of coating line, is reducing the thermal energy consumption by adopting the low-temperature drying system for paint drying. Komaki Works is changing the city gas consumption by energy saving setting of the temperature of air conditioning in the buildings (at 28°C for summer time and at 25°C for winter time). Also, in order to reduce the gasoline consumption, they reduce the use of company-owned cars and encourage all employees to use public transportation instead of their own cars.

For Efficient Transportation of Products

Since 2000, both Shiga and Komaki Works started to grasp the data on transportation volume, running distance and frequency of all trucks for product transportation for centralized control of shipping information, improvement of transportation system and reduction of space for loads by reviewing product construction, in order to reduce the emission of carbon dioxide.
Control of Pollutant Emission

Daifuku uses various types of chemicals including the ones having large impact against environment. Daifuku is trying to reduce the amount of pollutant emission by conducting regular inspection and promoting strict control as well as encouraging the use of safer substitution materials.

### Pollutant Release and Transfer Register (PRTR) Control

To prevent the increase of the pollutant generation and emission in accordance with the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (also called the PRTR Law), Daifuku formed PRTR task forces at each factory.

At each sector for Procurement, Environmental Control, General Affairs, and Design/Parts Production, the quantities of purchase, consumption, use, disposal and inventory are being investigated, and the data on chemicals are being gathered to be input into the safety data sheet. Up to now, such chemicals were identified, and their use will be prohibited or reduced hereafter.

Such activities at these sectors will be reinforced for more in-depth control and its promotion.

### Soil Pollution Prevention

At production process where heavy metals and organic solvents are used, the scrupulous care is taken to prevent their leakage to the environment.

Shiga Works is always monitoring lines and processes to prevent the soil pollution by the leakage of heavy metals, oil, grease, and organic solvents, and planning the measures for the leakage by unforeseen incidents. For example, the concrete paved leakage stopping fence was installed in the area of the facilities to trap the emitted oil and metal pollutants to prevent their emission to soil. Also the oil trapping fence was installed around the oil and vegetable oil feeding equipment. All these devices are being periodically checked with the checklists for each of them.

Komaki Works has changed operating oil and lubricant of machining center to vegetable oils having lower environmental impact. Also to reduce environmental impact as low as possible, cutting fluid is changed from the one containing 60% oil to 10% one.

### Prevention of Water Pollution

Recognizing the water pollution has the significant impact on the soil, agricultural produce and living environment, each factory is exerting efforts to control and reduce the wastewater emitted from its production process and activities, as well as to maintain compliance with the laws and regulations.

At Shiga Works, the wastewater from production lines are treated at its own treatment facilities and discharged to Sakura River which is Class 1 river. The rainwater from its conduits is released in the fire-fighting reservoir. In addition to the maintenance of wastewater treatment equipment and facilities, the discharged water quality is being measured periodically; once a year for living environment elements, and twice a year for hazardous materials elements.

At Komaki Works, car washers, canteens for employees, and cooking facilities are the subjects of wastewater discharge control. The wastewater discharged from them is, after being treated by Daifuku’s own water treatment facilities, drained to the public sewage conduit. The water quality control is being ensured in accordance with the local standards and Daifuku’s voluntary standards, and being measured and monitored by the external organization once a month. In FY 2002, the Water Quality Management Team was set up to strengthen water pollution prevention activities.

Taking advantage of an opportunity of Fire Defense Law amendment, Daifuku is trying to change paints to water-based paints in order to reduce the use of chemicals designated in the PRTR Law. The use of water-base paints has been realized since January 2003 for several items. Daifuku is promoting the use of safer substitution materials.

### Air Pollution Prevention

Shiga Works is designated as an “Air environmental impact reduction plan implementing company” according to the first paragraph of Article 25 of the ordinance related to the reduction of impact to air environment regulated by Shiga prefecture. Shiga Works is exerting efforts to control and reduce the emission of soot and smoke from cogeneration facilities to prevent the air pollution. All the equipment and facilities are being checked and maintained in accordance with the applicable laws and regulations, besides routine self-checks.

### Final effluent quality measurement result

To comply with the Standard of Clean Water Law, all the items are within the standard. The average measurement result is as follows. Noise and vibration are within legal limit as well.

### Message from Environmental Representative

We are implementing environmental activities focusing on the observation of laws and regulations, recycling of waste and reduction of electricity consumption. Also in cooperation with Toyota City local government as well as our customers, we have shared environmental activities and awareness of environmental protection with local communities.

In order to obtain ISO 14001 certification within FY year of 2003, we are doing our best in close cooperation with all related divisions.
In order to let the public know of Daifuku’s environmental activities, Daifuku is promoting various events and making the information open to the public through various media. For beautification of local environment and expressing our feeling of gratitude to the people in the local community, Daifuku is vitally having its employees participate in the cleaning activities. As a good global citizen, we will continuously keep smooth communication with society.

Each Works of Daifuku is promoting to make contribution to local communities. Shiga Works attended the meeting for Environment Protection in East Shiga Area held by the Environment Protection Institute of Shiga Prefecture Government in July 2002 and made presentations and vivid discussion about updated regulations, recent incident cases, and activities at each of Daifuku factories. In the Regional Environmental Protection Seminar held in September 2002, Daifuku participated in the explanatory meeting on the soil pollution prevention law and risk communication presented by the local government and exchanged opinions. Also, Shiga Works participated in “Fresh Water Eco Foster Program**” instituted by Shiga Prefecture government and performed the environment beautification campaign once a month and employees are cleaning their commute routes periodically.

Komaki Works is having its employees clean the area around its site twice a year and also around the employee’s dormitory house in Komaki. Daifuku participated in the Industrial Festa held in May 2002 and introduced our production system based upon ISO 14001 management system to visitors.

In addition Daifuku used reusable booth materials in the Tokyo International Material Handling Exhibition 2002 (held in October 2002) to appeal our environmental protection consideration.

Hini Arata Kan

Hini Arata Kan is the world largest full-scale private exhibition center for logistics in which all Daifuku know-how acquired through its experience in cargo and material handling equipment business for the period exceeding half a century is compiled.

Building area: 6,049 m²
Building height: 25.1 m
Floor space: 15,482 m²
Parking space: for 5 buses and 50 cars.
Hours open: from 9:00 am to 5:00 pm (Reservations required.)

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* The program for the volunteers from local community to clean and beautify the environment of local area enhance the awareness of residents in the area, supported by Shiga Prefecture government.

Message from Environmental Representative

Yasushi Tanaka
Tokyo Head Office

Tokyo Head Office, which is a non-production sector, set up the ISO 14001 Steering Committee in June 2001 for dealing with several environmental issues such as reduction of office waste as well as increasing recycling rate and reduction of electricity consumption.

Besides promoting the use of backside of used papers that basically leads to very much waste reduction, we set up the sectional committee to take measures against electricity shortage in June 2003 and started electricity consumption reduction activities.

Having global awareness of environmental issues and accumulating small but important activities are essential to implement the effective ISO related activities.

Daifuku Rated to the Top Grade AAA

Daifuku earns the top grade of AAA as a result of corporate information system research carried out by Nikkei Sangyo Shinbun. This research was made for 2,082 top rank manufacturing companies in Japan and 65 companies are rated to AAA.

Daifuku set up the work restructuring project in very early stage to improve the information system. Our positive attitude toward establishment of information system such as assignment of personal computers to whole employees, introduction of groupware, development of INW and LAN, website improvement and development of intranet has been evaluated and did contribute to earn the top grade.

The latest information related to environmental issues as well as the Environmental Report is introduced in our website. Inside the company the intranet dedicated database is used to shear environmental-related information.
Environmental Glossary

- **CO₂ (Carbon Dioxide)**: Carbon dioxide is a non-toxic gas generated as a result of animal breath, burning of fossil fuels such as oil and coal. It has a greenhouse effect and absorbs heat discharged from the ground. Exhaust amount of CO₂ is increasing and causing the serious global warming.

- **NOx (Nitrogen Oxide)**: It is harmful gases causing breathing problem, photochemical smog and acid rain. It is generated as a result of burning of petroleum. The major sources of NOx are boilers used in factories and buildings, and automobiles. One of the most serious sources of NOx is exhaust gas from diesel vehicles.

- **SOx (Sulfur Oxide)**: Sulfur oxide is generated from the combustion of sulfur contents in fossil fuels such as oil and coal. It is harmful gases causing breathing problem, photochemical smog and acid rain. It is generated as a result of burning of petroleum. The major sources of SOx are boilers used in factories and buildings, and automobiles. One of the most serious sources of SOx is exhaust gas from diesel vehicles.

- **COD (Chemical Oxygen Demand)**: Chemical oxygen demand is the amount of oxygen required to chemically dissolve pollutant in the water with oxidant. Higher number indicates that the water is dirtier.

- **BOD (Biochemical Oxygen Demand)**: Biochemical oxygen demand is the amount of oxygen required to chemically dissolve pollutant in the water by the bacteria. Higher number indicates that the water is dirtier.

- **Zero Emission**: Zero emission is the concept of achieving no generation of industrial waste by using the waste from the production process as a reproduced material for other industries.

- **Idling Stop**: Idling stop is to stop engines during stopping at red light or during loading and unloading as much as possible. It contributes to the reduction of energy consumption, resulting in the reduction of air pollutant and CO₂ emission causing global warming.

- **Dioxin**: Dioxin is the generic name of coplanar PCB, polychlorinated dibenzo-p-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF). It is a chlorinated organic compound not intentionally made by human but made during burning products including chlorine. There are more than 200 types having different number of chlorine and different layout. Toxicity of dioxin varies depending on types.