

# Environmental Report 2005



FDK Group Environmental Report 2005

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### Editorial policy

This FDK Group Environmental Report offers to disclose the environmental activities of the FDK group, aiming at informing its environmental policies, activities and the like to various stakeholders including investors, customers, regional societies, local governments and so on

To create this report that is easy to understand, we used many graphs, charts, and so on, referring to the "Environmental Report Guideline (FY 2003 edition)" by the Ministry of the Environment, etc.

This 2005 edition covers the extended environmental information especially on overseas manufacturing subsidiaries and English version is now available.

This report aims at promoting interactive communications between the FDK group and you. It is scheduled to issue every year to make our best effort to explain you our environmental activities clearly. We welcome your feedback. Please send us your comments by fax or letter using an enclosed questionnaire.

### Scope of the Report

### Reporting period:

Fiscal year 2004(April 1, 2004 - March 31, 2005)
Please note, some descriptions in this report partially contained some past activities and some plan of fiscal year

### Organizations covered:

All three plants in FDK CORPORATION and 14 major subsidiaries.

FDK CORPORATION : Kosai Plant, Sanyo Plant, and Iwaki Plant  $\cdots$  3 Plants

Major subsidiaries: (Six subsidiaries in Japan)

FDK ENERGY CO., LTD., FDK MECHATRONICS CO., LTD., FDK ENGINEERING CO., LTD., FDK LIFETEC CORPORATION, FUJIDENKA RESEARCH AND ANALYSIS CENTER CO., LTD., and FDK ECOTEC CO., LTD. (Eight subsidiaries in Overseas) FUCHI ELECTRONICS CO., LTD., PT FDK INDONESIA, FDK LANKA (PVT) LTD., FDK TATUNG (THAILAND) CO., LTD., XIAMEN FDK CORPORATION, SHANGHAI FDK CORPORATION, SUZHOU FDK CO., LTD.,

FDK (THAILAND) CO., LTD.

### Scope of collation:

The scope of the performance data including the global warming prevention, waste reduction and chemical substance elimination was from FDK CORPORATION and its major domestic subsidiaries. The numerical data on overseas manufacturing bases were partially described in "Global Effort for Environmental Care in all Manufacturing Bases".

### Message from the President



Actions to realize the environmentally sustainable society are expanding in the world, today. The background for such actions is the idea shared among the countries that the protection of global environment is one of the most important issues for the survival of human beings.

After the enforcement of the "Kyoto Protocol" in February 2005 for the prevention of global warming, each country has started to make a step forward to the realization of such society by setting numerical targets for greenhouse gas emission.

Having a high awareness for environmental issues since early days, the EU Directive on Restriction of Hazardous Substances (RoHS) was enforced in February 2003, and becomes applicable in July 2006.

For us, manufacturers, such restrictions and rules on environmental protection would pose a significant impact on our activities. However, we consider it extremely important to learn how much burden is being imposed to the environment by global citizen including countries, regions, enterprises and individuals and to take efforts for reducing it.

We, at FDK Group, aim at realizing the sustainable society where business and environmental protection activities amicably coexist, by deeply recognizing that realization of such aim deeply depends on the quality of our corporate activities. Under such an understanding, we are thriving to reduce environmental burdens generated by our activities as a whole, and each member in our group companies is contributing to the environmental preservation and solving various environmental issues through providing environmental measurement/analysis, environmental consultations and various recycle projects. We have been decided to continue providing products with low environmental burdens through analyzing chemical composition of materials we use, employing alternative materials of low environmental impacts, developing of green and Super-Green products and other activities, through which the requirements of the RoHS are met and generation of hazardous substances are reduced at our companies. In addition, we will push forward the activities of reducing environmental burdens at all of our production sites in and out of Japan.

The "Environmental Report 2005" delineates how FDK Group thinks and plans its environmental protection activities in order to realize the sustainable society. It is our utmost pleasure and privilege if you could understand our thought, attitudes and activities for protecting the environment, and provide us your candid opinions for raising the quality of our environmental protection activities.

Toshiharu Sugimoto President & CEO FDK Corporation



### Corporate Profile

Company Name: FDK Corporation

Head Office : 5-36-11, Shimbashi, Minato-Ku, Tokyo

President & CEO: Toshiharu Sugimoto

Foundation : Feb. 1, 1950

Capital : 22,756 million yen (As of the end of April 2005)

Sales : 100,441 million yen (consolidated sales in fiscal 2004)

57,960 million yen (non-consolidated sales in fiscal 2004)

Electronics business: 76,367 million yen (76%)

Battery business: 24,073 million yen (24%)

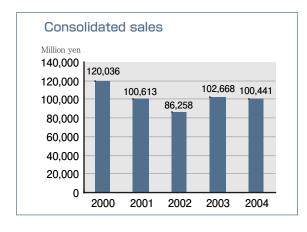
(Incl. overseas sales of 52,660 million yen or 52.4% of the total consolidated sales)

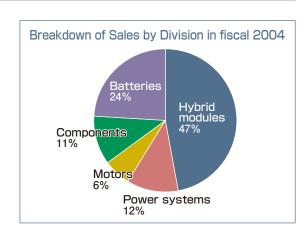
The number of consolidated subsidiaries: 17 (5 in Japan/12 in overseas)

**Employees**: Consolidated: 11,708 Non-consolidated: 1,368

Major Products : Electronic materials and parts for electronics-related products, and batteries and their applied products

	Business	Major products	
	Hybrid modules	Hybrid module for LCDs and PDPs, and VCOs	
Electronics	Power systems	Switching power supplies, coil devices and converters	
Liectionics	Motors	Stepper motors for office automation equipment, small diameter motors, and stepper motors for vehicles	
	Components	Optical devices, toner and piezoceramic parts	
Batteries	Batteries	Alkaline batteries, manganese batteries, lithium batteries, high power lights and battery manufacturing facilities	

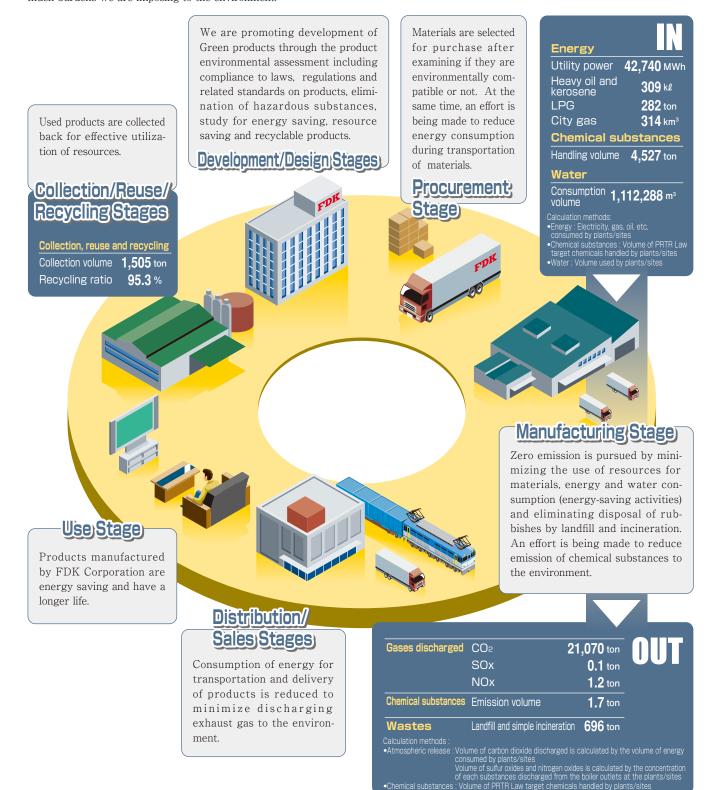




<sup>\*</sup> The above corporate profile indicates the data as of the end of March 2005 except for capital.

### Business Operations and Environmental Burdens

We recognize that our business activities including R&D, design, production and sales generate environmental burdens by using resources such as parts and materials and consuming scarce resources including energies and water. We, therefore, will continue decreasing of such environmental burdens generated through the life cycle of products from using, transporting and disposing of them, by grasping how much burdens we are imposing to the environment.



### Highlights of fiscal 2004

### All the Production Sites of FDK Group Obtains ISO14001 Certification

FDK Corporation has been promoting to obtain ISO14001 certification to its environmental management system for not only implementing its voluntary environmental protection activities at all the production sites in the group but also for horizontal development of environmental management in its entire organization. In 2002, all of our production sites in Japan became ISO14001 certification holders. After obtaining the certification to Suzhou FDK in China in fiscal 2004, all production sites of FDK Group companies in and out of Japan are now the holder of the certification as planned. This has marked an establishment of foundation for environmental management system in the FDK Group. (See page 9 for further information.)

### Start the development of Super Green Products which have top-level environmental characteristics

From the onset of product design, FDK Group develops environmentally compatible products incorporating energy- and resource-saving, recyclable performances and eliminating use of hazardous substances. FDK Group has started developing "super green products" since fiscal 2004. The super green products which have top-level environmental characteristics in terms of "world's 1st," "world's smallest," "nation's 1st," "industry's 1st," "nation's smallest," and "industry's smallest." (See page 11 for further information.)

### Elimination of Hazardous Substances in Products

There have been severer demands for controlling hazardous chemical substances included in products, namely, the EU's RoHS Directive. In order to comply with such demands, FDK Group established "the Committee for Controlling Products Containing Hazardous Chemical Substances" in October 2004. The aim of the committee lies on setting criteria for controlling hazardous chemical substances to comply with the standards demanded by relevant laws and the market, and establishing a control system to assure quality of products through the entire process from purchasing and receiving of materials to production and shipment of products in FDK Group companies in and out of Japan. (See page 14 for further information.)

# Won the Prize for the Excellent Energy Management Factory (electric section) from Chubu Bureau of Economy, Trade and Industry, METI.

Kosai Plant has been promoting various types of energy saving activities through introduction of a cogeneration system, improvement of its production system and employment of efficient control methods from the perspective of measures against global warming and efficient use of resources. Due to this, the plant won "the Prize for the Excellent Energy Management Factory (electric section) in fiscal 2004" from the Chubu Bureau of Economy, Trade and Industry, METI.

Aiming at promoting rationalized use of energy and effective use of fuel and resources, the Bureau recognizes factories and offices which energy saving efforts are significant and exemplary to others, in order to further promote energy saving activities. (See page 15 for further information)

### Achievement of Zero Emission of Wastes

FDK Group has been addressing zero emission of wastes in addition to 3R activities. Following to Iwaki Plant in fiscal 2001, and FDK Ecotec Co., Ltd. in fiscal 2003, zero emission of wastes was achieved in Kosai Plant, Sanyo Plant, FDK Energy Co., Ltd., and FDK Engineering Co., Ltd. at the end of fiscal 2004. These achievements completely fulfill our target of "zero emission of wastes at all FDK premises in Japan". In the future, we will establish an internal check system to ensure that zero emission is maintained throughout its premises in Japan, and develop similar activities at its overseas sites as well. (See page 18 for further information.)

- \*1: ISO refers to International Organization for Standardization.
- \*2: ISO 14001 is the international standard for management of environment requiring establishment of an environmental management system and continuous improvement of environmental activities.
- \*3: RoHS stands for Restriction of the use of certain Hazardous Substance in electrical and electric equipment
- \*4: Zero emission of wastes means a continuous and persistent effort to eliminate emission of industrial wastes and chemical substances to the environment.
- \*5: 3R stands for Reduce, Reuse and Recycle

### Environmental Accounting

In order to grasp the cost and effect of its environmental protection activities in a quantitative manner, FDK Group introduces an environmental accounting system and discloses the data to the public. We aim at associating the data to our environmental management system and promoting more efficient environmental activities.

### Environmental Accounting Result in fiscal 2004

	lt	ems	Scope	Result	
	Costs in	Pollution prevention costs	Costs incurred to prevent air pollution and water contamination (fees for water treatment facilities) and other activities	74	
	business operations	Environmental protection costs	Costs of energy-saving measures, as well as costs of global warming reduction measures	52	
	operations	Costs of resources recycling	Costs incurred for waste reduction and disposal, as well as for water conservation, rainwater usage and other measures aimed at efficient resources usage	96	
10	Upstr	eam/downstream costs	Costs of lowering the environmental burden imposed upstream and downstream by manufacturing and service activities (costs incurred for recycling/reuse of waste products and packaging, Green Procurement, etc.)	25	
Costs	Ma	nagement costs	Management-related environmental protection costs including personnel expenses for environmental promotion activities and costs associated with acquiring and maintaining ISO14001 certification, measuring the environmental burden, greenification programs, environmental reporting and environmental publicity	65	
	R&D and solutions business costs		Environmental protection costs for R&D activities and costs of environmental solutions business activities (Green Product/environmental technology design and development costs, environmental solutions business costs, others)	60	
	Social activities costs		Environmental protection costs stemming from participation in social activities, such as participation in organizations concerned with environmental preservation		
	Environmental restoration costs		Costs of environmental restoration operations (eliminating soil and groundwater contamination, environmental compensation, etc.)	0	
			Total	372	
	Effects on	Pollution prevention effects	Savings from avoidance of operating losses stemming from failure to observe(1),environmental laws and regulations as well as contribution by environmental protection activities to value added in manufacturing(*2)	43	
	business operations	Environmental protection effects	Cost savings from reductions in electricity, oil and gas consumption	101	
		Resource recycling effects	Cost savings from reduction and effective use of waste	73	
Sts	Upstream	n/downstream effects	Sales value of recycled and reused products		
Effects	Management effects		Efficiency enhancement through ISO14001 system implementation, effects of employee training, corporate image enhancement from environment-related publicity	135	
	R&D/solutions business effects		Contribution to sales made by Green Products, other Eco- friendly products and the environmental solutions business		
	Enviro	nmental restoration effects	Savings of compensation payments to residents for ground-water and soil contamination (*3)	0	
			Total	406	

- We indicated "0" for items whose value is less than 1 million yen.

  1 Value of avoidance of operating losses: (Added value)/(Days of operation)×(Estimated days lost)
- (Added value) × (Ongoing operating costs of all environmental protection facilities)/(Total cost generated) \*3 Value of avoidance of compensation payments to residents: Estimated savings assuming that risks were able to
- be averted.

CUST	U	nit: million yen
Depreciation Investment in fiscal 2004		2
Depreciation	Past investment	88
To	282	

Effects Unit	t: million yen
Actual effects	193
Assumed effects	213
Assumed effects	213

Actual effects include profits generated by saving public utility consumption and selling of recyclable wastes. Assumed effects mean profits assumed as economically effective under a certain definition. (Environmental protection effects against the added values obtained from our production activities)

Environmental protection effects (Total burdens in fiscal 2003 – Total burdens in fiscal 2004)

CO₂ emission	11,198 t -CO <sub>2</sub>
Total wastes generated	265 t
Total wastes in the PRTR list generated	2 t

### Shift of costs and effects

Unit: million yen

	Fiscal 2001	Fiscal 2002	Fiscal 2003	Fiscal 2004
Costs	650	506	486	372
Effects	917	588	521	406

### Characteristics of fiscal 2004 **Environmental Accounting**

### **Environmental costs**

Reductions of environment-related costs in fiscal 2004 include pollution prevention measures done in-house instead of outsourcing them and the depreciation cost was decreased due to the environmental protection facility totally depreciated in the previous fiscal year.

Whereas, increases of the cost in this fiscal year include introduction of lead-free soldering equipment and R&D cost consisting of labor cost for developing eco-friendly products.

### **Economical effects**

Energy-saving effects were significantly reduced due to the closure of economical effect calculation period for facilities invested in the past, and recycle effects of materials for manufacturing ferrites reduced to zero due to the termination of manufacturing the product domestically.

Operation of the ECO-DB, a unique database of FDK Group on the environmental burden of chemical substances helped reducing person-hours for tabulating total chemical substances included in products. Estimated effects showed an increase due to the uplifted sales of eco-friendly products.

### **Basic Data for Environmental** Accounting in fiscal 2004

### **Accounting Period**

April 1, 2004 - March 31, 2005

### Scope of Data Collation

Plants of FDK Corporation in Japan (incl. FDK Engineering Co., Ltd. and FDK Energy Co., Ltd.)

### Calculation Standards for Environmental Protection Costs

- · Method of depreciation cost collation
  - Calculated using the straight-line method for a use life of five years.
- Rules for apportioning mixed costs
- Only the portion related to environmental preservation is counted.
- · Labor cost

Labor costs incurred in the scope of data collation are included in the environmental accounting

### Calculation Standards for Effects of **Environmental Protection Measures**

- · Scope of economic effect
  - It includes actual and estimated effects on environmental protection activities.
- · Accounting period for calculating investment effects Accounting period of actual effects is set to five years same as the depreciation period.

As of fiscal 2004, FDK Group calculated its environmental accounting separately from that of Fujitsu Corporation. However, the calculation is made in accordance with Fujitsu Group's Environmental Accounting Guideline 2003, in order to maintain

# Basic Policy for Environment and Action Plan

In 2002, FDK Group revised its "Environmental Charter" into the "FDK Environmental Policy" to strengthen its environmental protection activity, which is implemented in the entire FDK Group based on the "FDK Environmental Action Plan."

### FDK Group Environmental Policy

FDK Group considers it necessary to address environmental protection as a part of its corporate activities. This includes prevention of global warming, reduction of wastes and thorough control over hazardous chemical substances, all of which should be implemented not only based on laws and regulations of central and regional governments of Japan, but also based on the wider global perspectives. This must be a shared idea among other companies toward the sublime proposition of realizing the sustainable society. In addition to its own activities, FDK Group is decided to promote environmental protection in cooperation with Fujitsu Ltd. and adapt an environmental policy, a fundamental for environmental activities of Fujitsu Ltd. The "FDK Environmental Policy" is the essence of the group's environmental activities, aiming at promoting robust environmental protection activities through a synergy effect of voluntary reduction of environmental burdens and cooperative actions with Fujitsu Ltd.

### **Philosophy**

The FDK Group recognizes that environmental protection is a vitally important business issue. By utilizing our technological expertise in the IT industry and our creative talents, we seek to contribute to the promotion of sustainable development. In addition, while observing all environmental regulations in our business operations, we are actively pursuing environmental protection activities on our own initiative. Through our individual and collective actions, we will continuously strive to safeguard a rich natural environment for future generations.

### Slogan

FDK Group Loves Nature for the Future of the Earth

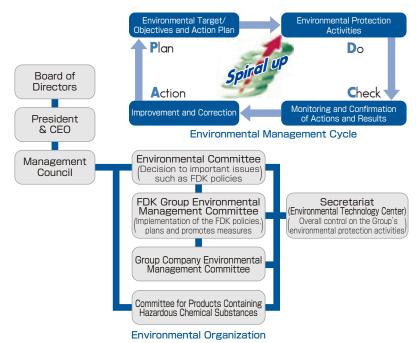
### **Principles**

- 1 We strive to reduce the environmental impact of our products throughout the product life cycle.
- 2 We are committed to conserving energy and natural resources, and practice a 3R approach (reduce, reuse, recycle) to create best-of-breed eco-friendly products.
- 3 We seek to reduce risks to human health and the environment from the use of harmful chemical substances or waste.
- 4 Through our IT products and solutions, we help customers reduce the environmental impact of their activities and improve environmental efficiency.
- 5 We disclose environment-related information on our business activities, products and services, and we utilize the resulting feedback to critique ourselves in order to further improve our environmental programs.
- 6 We encourage our employees to work to improve the environment, bearing in mind the impact of their business activities and their civic responsibilities.

### Organizational Structure

The "Environmental Committee" discusses and decides important issues such as the environmental policy for the entire FDK Group. Decisions made at the Environmental Committee are implemented after obtaining an approval at the Management Council consisting of top management members. Detailed action plans including policies and measures are decided at the "Environmental Management Committee" established at each group company. The plans are implemented by repeating the cycle of PDCA (Plan, Do, Check and Action) for continuous improvement to achieve "spiral up."

Hazardous chemical substances contained in products are managed at the "Committee for Products Containing Hazardous Chemical Substances," a newly established internal organization, to eliminate use of hazardous substances and appropriate control of them. (See page 14 for further information.)



### Environmental Action Plan

FDK Group revises its "Environmental Action Plan" once in three years. In fiscal 2004, the first year of the "Third Environmental Action Plan (fiscal 2004 – 2006)," FDK Group was successfully achieved a significant result in energy saving, reduction of wastes and hazardous chemical substances and promotion of green procurement. FDK Group will continuously dedicate to further improve the environment.

### Achievements of the Third Environmental Action Plan (fiscal 2004 – 2006)

Items	Action Plan	Achievement in fiscal 2004
Reinforcement of environmental management	To establish own frameworks of environmental management in all the Group's affiliates and subsidiaries, which are based on the environmental management system (EMS), by the end of fiscal 2005	After examining various types of EMS, Eco- Stage was chosen as the most appropriate system for FDK's head office and sales offices.
management	• EMS to be introduced in the entire corporate structure of FDK in Japan including its head office and sales offices.	(See page 9 for further information.)
Green procurement	Promotion of EMS to suppliers  • To encourage suppliers in Japan with no EMS to introduce it.  • The scope of EMS include those certified by a third party certification organization such as ISO14001, EMAS, Eco-Action 21, Eco-Stage, local environmental management system equivalent to them, Fujitsu Group Environmental Management System (FJEMS), FDK Group Environmental Management System (equivalent to FJEMS), and other EMS systems unique to each supplier approved by FDK.	FDKEMS was offered to the suppliers in two stages of difficulties so that it can be introduced to them easily and swiftly. Explanation meetings and guidance were offered to suppliers. As a result, 22 suppliers introduced the system.  (See page 10 for further information.)
	Provision of Super-Green Products by the end of fiscal 2006  "Super Green Products" are the advanced form of green products incorporating such properties as energy saving, 3R (Reduce, Reuse and Recycle)-based design, and elimination of hazardous chemical substances. They are forerunners having the "world's lst" "world's smallest" "nation's first" "industry's first" "nation's smallest" and "industry's smallest" characteristics, which are intended to be released by the end of fiscal 2006.	Investigations were done and prototypes were manufactured for Super Green electronics materials and parts.  (See page 11 for further information.)
Environmentally compatible products	To eliminate use of hazardous substances designated by Fujitsu Group in manufacturing products by the end of fiscal 2005, except for those designated by RoHS whose elimination target is the end of December 2004  • Use of hazardous substances listed in 31 categories of Fujitsu Group's list will be totally eliminated by the end of fiscal 2005.  • For products shipped to Europe and covered under the RoHS Directive, use of mercury, hexavalent chromium compounds, PBB and PBDE will be totally eliminated by the end of December 2004.	As for hazardous substances designated by Fujitsu Group, we are in the process of examining and switching to alternative substances aiming at total elimination of using them at the end of fiscal 2005. Hazardous substances under the RoHS control used for manufacturing new products were able to be totally eliminated within the designated time limit. However, there were some substances still used in existing products as of the end of December 2004. (See page 14 for further information.)
	Energy consumption and emission of CO <sub>2</sub> reduced at the end of fiscal 2006 by 15% of those in fiscal 2000  • The scope of these reductions includes FDK's plants and offices in Japan.	Energy consumption and CO <sub>2</sub> emission were successfully reduced by 61% on those in fiscal 2000. (53,998 t in fiscal 2000 -> 21,070 t in fiscal 2004) (See page 15 for further information.)
Measures against global warming	Contribution to the reduction of greenhouse gas emission • Reduction of CO <sub>2</sub> emission is promoted through improvement of logistics, recycled use of products and packaging materials, and development and purchase of energy-saving products.	We are promoting the curtailment of fuels through the improvement of loading efficiency on a truck and revision of distribution routes. Also the returnable trays (TP trays) are encouraged for recycled use of packaging materials. (See page 16 for further information.)
Promotion of	Discharge of chemical substances under the Pollutant Release and Transfer Register (PRTR) reduced at the end of fiscal 2006 by 15% of those discharged in fiscal 2001  • The scope of the reductions includes FDK plants and offices in Japan.	The emission of chemical substances was able to be curtailed by 68% of those emitted in fiscal 2001. (5.5 t in fiscal 2001 -> 1.74 t in fiscal 2004) (See page 17 for further information.)
green factory	Generation of wastes reduced at the end of fiscal 2006 by 3% of those generated in fiscal 2003  • The scope of reductions includes FDK plants and offices in Japan.  • Zero emission of wastes will be achieved by the end of fiscal 2004 ahead of the target shown in the "Second Environmental Action Plan" by 1 year.	Generation of wastes was successfully curtailed by 13% of that in fiscal 2003. (2,081t in fiscal 2003 -> 1,816t in fiscal 2004) As of the end of fiscal 2004, zero emission of wastes was achieved at all the production sites in Japan. (See page 18 for further information.)

Since fiscal 2004 is the middle of the "Third Environmental Action Plan (fiscal 2004-2006)," only the activity results are reported here.

Recognizing the environment as a determining factor of a corporate future, FDK Group promotes environmental management by proactively involving itself into environment-related businesses not limited to observing environmental laws and regulations and eco-friendly approaches from the development to disposal of products.

### Establishment of the Environmental Management System

FDK Group is involved in introducing the Environmental Management System as a foundation for eco-friendly corporate management. So far, the efforts have been directed to the establishment and introduction of it to our production sites in and out of Japan to protect the environment and prevent environmental pollutions. In the future, the EMS will be expanded to the entire Group including non-production sites.

### **Targets of the Third Environmental Action Plan**

To establish own frameworks of environmental management in all the Group's affiliates and subsidiaries, which are based on the environmental management system (EMS), by the end of fiscal 2005

· EMS to be introduced in the entire corporate structure of FDK in Japan including its head office and sales offices.

### **EMS at Production Sites**

At our production sites, an effort was directed to obtain the ISO14001 environmental management certification. After obtaining the certification to Suzhou FDK in China in fiscal 2004, all production sites of FDK Group companies in and out of Japan are now the holder of the certification as planned\*. In the future, based on the objectives of ISO14001 (2004 revision), a renewed effort will be made to further upgrade the performance of EMS (incl. environmental improvement and contributions).

\* Taichong Plant of Fuchi Electronics Co., Ltd. (established in April 2005) will apply for obtaining the certification in the near future.

### EMS at Non-Production Sites

During the fiscal 2004, FDK Group took efforts for introduction of EMS at all of its non-production sites in Japan. More precisely, the efforts included examination and investigation of environmental management system for small- and medium-sized enterprises (SMEs) such as Eco Action 21 and Eco Stage (ISO14001 not included), and preliminary investigation for acquiring licenses for environmental management certification examiners. As a result, it was decided that Eco Stage is most fit for us. In the future, we will make preparations for introducing the Eco Stage for starting operation in fiscal 2005.

# Integrated Certification with Quality Management System

FDK Indonesia has already been an integrated certification holder of ISO14001 and ISO9001, international quality management system which has recently become a world trend. As it is desirable to control products containing hazardous chemical substances under the integrated management system of quality and environment, FDK will promote obtaining the integrated certification in other sites as well.

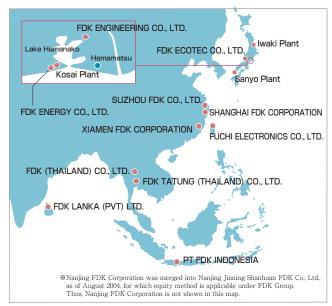
### Environmental Education and Training

In the production sites of FDK Group, general and special education on environment are being held for all employees, aiming at continuous improvement of its Environmental Management System. Each site has its own education system on waste separations and emergency measures.

### <ISO Certification at FDK Group Production Sites>

	Kosai Plant	
apan	Date of renewal	October, 1998 October, 2004 FDK CORPORATION: Kosai Plant, Sanyo Plant FDK ENERGY CO., LTD., FDK ENGINEERING CO., LTD., FDK MECHATRON- ICS CO., LTD., FDK LIFETEC CORPORATION, FUJIDENKA RESEARCH AND ANALYSIS CENTER CO., LTD., and FDK ECOTEC CO., LTD.  Development and design of various electronic parts, batteries, and machines, and environmental businesses
	lwaki Plant	
	Date of renewal	January, 1998 July, 2004 FDK CORPORATION: Iwaki Plant, FDK LIFETEC CORPORATION: Iwaki branch office  Development, design and manufacturing of electronic parts relating to telecommunication equipment

2	Subsidiaries	Country	Date of Acquisition
idiar	XIAMEN FDK CORPORATION	China	January, 1999
subsidiary)	FUCHI ELECTRONICS CO., LTD.	Taiwan	February, 2000
ted	SHANGHAI FDK CORPORATION	China	December, 2000
onsolidated	FDK TATUNG (THAILAND) CO., LTD.	Thailand	May, 2002
Sons	FDK LANKA (PVT) LTD.	Sri Lanka	February, 2003
)) se	PT FDK INDONESIA	Indonesia	June, 2003
ersea	FDK (THAILAND) CO., LTD.	Thailand	June, 2003
O	SUZHOU FDK CO., LTD.	China	December, 2004



In order to provide eco-friendly parts to our customers, FDK Group is promoting green procurement or to purchase materials, parts and packaging materials with low environmental burdens.

### Promotion of Establishing Environmental Management System in Suppliers

As a part of its green procurement, FDK Group purchases "materials and parts free hazardous chemical substances designated by FDK Group from its suppliers having a firm Environmental Management System." The scope of services in helping establishment of environmental management system offered by FDK Group has expanded to include distributors (or trading companies) in addition to manufacturers since fiscal 2004.

### Targets of the Third Environmental Action Plan

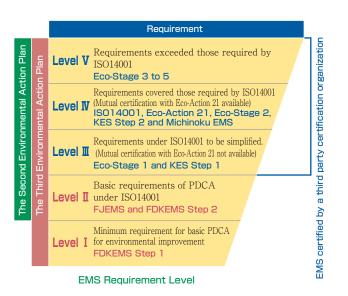
Promotion of EMS to suppliers

- · To encourage suppliers in Japan with no EMS to introduce it.
- · The scope of EMS include those certified by a third party certification organization such as ISO14001, EMAS, Eco-Action 21, Eco-Stage, local environmental management system equivalent to them, Fujitsu Group Environmental Management System (FJEMS), FDK Group Environmental Management System (equivalent to FJEMS), and other EMS systems unique to each supplier approved by FDK.

### **Procedures and Actions**

The scope of companies to extend support of establishing EMS has been expanded in order to raise the awareness of distributors toward the environment, as they are in the position to give proposals to manufacturers. By doing so, FDK Group intends to further raise the quality of green procurement.

In extending the support, the types and levels of requirement for environmental management system are revised from 4 stages to 5 stages. For suppliers which have a difficulty in obtaining environmental management system certified by a third party certification organization, our own environmental management system (FDKEMS) was proposed at the explanation meetings. The FDKEMS is in lieu of Fujitsu Group Environmental Management System (FJEMS) that we requested our suppliers to introduce up to fiscal 2003. The FDK's environmental management system incorporates basic requirements of ISO14001. The suppliers which introduced FDKEMS are of course required to upgrade the system to an EMS certified by a third party certification organization.





**Expansion of Requirement for EMS** 

### Green Procurement

In fiscal 2004, FDKEMS was introduced to 22 companies including distributors that were newly included in the scope of promoting EMS. In the future, we will promote establishment of environmental management system to more than 10 suppliers and distributors a year.

As for hazardous chemical substances, we will strengthen our control over the chemical substances controlled by the RoHS Directive. Purchasing of products free of hazardous chemical substances will be promoted as explained in the "Approach for the Elimination of Poisonous Substances," in the latter section. (See page 14 for further information.)





Guidance for Establishing FDKEMS (left) and Registration Certificate (right)

### Green Procurement of Office Supplies

FDK Group has been promoting green procurement of office supplies with an Eco-Mark on them since fiscal 2003, which is not mentioned in its Third Environmental Action Plan, though. The Eco-Mark is given to an office supply whose saving of energy and resources, recycle-orientation, elimination of hazardousness and easiness for disposal are recognized.

### Promotion of Environmental Measures on Products

In order to provide eco-friendly products to customers, FDK Group emphasizes on designing eco-friendly products and developing products containing no hazardous chemical substances for reducing environmental burdens contained in products.

FDK Group is stressing on providing eco-friendly products that imposes little environmental burdens through the entire life cycle of products from development and design phases to disposal. For this purpose, FDK Group is addressing reduced volume of materials used, utilizing and applying materials with little environmental burdens, use of recycled materials and reducing energy consumption in manufacturing process. The efforts of providing small-in-size products with superior energy efficiency have resulted in development of multi-layer chip inductors.



Hiroshi Rikukawa
Corporate Vice President in charge of
technological R&D and environmental affairs

### Offering Super-Green Products with the Top Environmental Elements

In fiscal 2004, in addition to green products, FDK Group has been involved in development of Super-Green Products with Top Environmental Elements

### Targets of the Third Environmental Action Plan

Provision of Super-Green Products by the end of fiscal 2006

· "Super Green Products" are the advanced form of green products incorporating such properties as energy saving, 3R (Reduce, Reuse and Recycle)-based design, and elimination of hazardous chemical substances. They are forerunners having the "world's 1st" "world's smallest" "nation's first" "industry's first" "nation's smallest" and "industry's smallest" characteristics, which are intended to be released by the end of fiscal 2006.

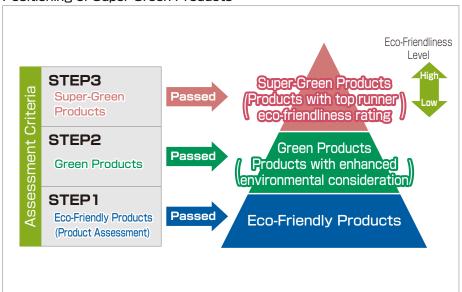
### Development of Super-Green Products

Super-Green Products refer to products with top environmental elements clearing all the assessment criteria from Step 1 to 3 shown below. In fiscal 2004, a preliminary investigation was conducted on the Super-Green Products and 20 potential items were identified for development. FDK Group will further involve in study and development of the products so that, by the end of fiscal 2006, Super-Green Products will be provided to customers as many as possible from the 20 items identified.

### Research and Development for Improving the Global Environment

The activities of FDK Group are not limited to R&D on electronic parts, but include R&D on improving the global environment. So far, the efforts have resulted in application of a recycled block, "Rictor Mat," for flooring purposes. The Rictor Mat, made of sludge, was originally developed aiming at combating with deterioration of the water quality of rivers and removing odors. FDK Group also researches and develops environmental purification filters utilizing photocatalyst. FDK Group continues its efforts for research and development to improve the global environment.

### Levels of Eco-Friendly Products and Positioning of Super-Green Products



# Eco-Friendly Product Assessment Category (Large Category)

# Products Hazardousness (including hazardous chemical substances) Resource-saving and recycle-oriented design Reusability as resources Easiness for decomposition Energy-saving Easiness for disposal by disassembly Packaging Materials Resource-saving and recycle-oriented design Reusability Using materials Others Disclosure of information Eco -friendliness

### Eco-Friendly Products Developed in fiscal 2004



### Application:

Power inductors used for DC-DC converter circuits of small electronic products such as mobile phone, PDA and digital camera

### Multi-layer power inductor (MIPF2520D Series)

### Product characteristics

This is a power inductor applying the multi-layer technology. Compared with the conventional coils, it is smaller in size with enhanced performance. It contributes to realize smaller and thinner electronic products such as mobile phones.

### **Eco-Friendliness**

Compared with the similar products of FDK Group, the product is smaller in size by 40%. Application of this product to a converter circuit reduces power consumption due to its high conversion efficiency. The product is free of lead and can be mounted using lead-free solder.

### From the developer

In order to decrease the size while maintaining the performance level, the internal structure of the conventional products was changed. Based on the design of the conventional ones, shortened development time was realized by selecting the optimum internal pattern structure by fully utilizing computer simulation (CAE technology).

Makoto Kawaguchi Multi-Laver Inductor Section Ceramic Component Div. Component Business Department





### Application:

Removal of noise for highspeed differential interface ①IEEE1394a interface @USB2.0 interface ③HDMI/DVI interface

### Common-Mode Choke Coil

### Product characteristics

This is a small-in-size and low serial current resistance choke coil utilizing low temperature ferrite sintering technology, high resolution multi-layer printing technology and CAE. The size is 1.20×1.00×0.50mm. It has a superior compatibility with various interfaces having differential impedance characteristics. Realization of high common mode impedance has enabled sufficient level of reducing EMI\*.

\* EMI refers to electromagnetic interference which prevents normal operation of electronic equipment.

### **Eco-Friendliness**

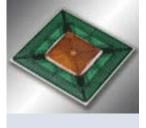
The small-in-size product reduces the volume of materials used. Lead-free plating is employed to its outer electrode, and lead-free solder can be used for mounting it.

### From the developer

Miniaturization and high-speed orientation of electronic devices such as a notebook PC requires a small-in-size and high-speed noise removal part. High EMI reduction requires high common mode impedance. The challenge in developing this product is to prevent decrease of common mode impedance due to the downsized product and of ferrite magnetic permeability due to the higher frequency.







### Application:

Optical information processing equipment for the next generation ultra high capacity optical disc system (hologram memory devices)

### Magneto-Optic Spatial Light Modulator

### Product characteristics

This is an ultra high speed special light modulator with the picture cell response time of several tens of a nano second, which is developed jointly with Professor Mitsuteru Inoue of Toyohashi University of Technology based on FDK's magneto-optic material technology. The product enables to make a high speed data access to a large capacity optical disc.

### **Eco-Friendliness**

The combination of a magneto-optic garnet film, epoch-making cell formation method and driving mechanism have realized a decrease in driving current and energy saving. No hazardous chemical substances such as lead are used from the formation of the film to mounting of a flip chip.

### From the developer

In order to develop this product, a series of technology was developed including functional design using a simulation method, comparison of the design and prototype experiments, manufacturing process development and assessment method. Starting from processing of substrate board to running the finished device, there was a process of repeated trials and errors by fully using our research facilities. In the future, we will further challenge to

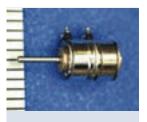
make the device more energy-saving and ecofriendly.

Katsuhiro Iwasaki Kazuma Takahashi Project S Dept.

Technology R&D Div.



Promotion of Green Factories



### Application:

Auto focusing and zooming of a digital camera and a built-in camera of a mobile phone

### Stepper Motor (M4.3 Series)

### Product characteristics

Applying our unique coil design technology and magnetic circuit design technology as well as magnet manufactured consistently from powder molding, the world's smallest and high-output torque stepper motors are developed. The size is as small as 0.074cc with the diameter of 4.3mm. The torque is higher than conventional stepper motors. Though small in size, decrease in torque is contained to a minimum. Use of this stepper motor enables to realize further miniaturization both in size and weight and saving power consumption for applicable equipments.

### **Eco-Friendliness**

Compared with SM5 series products, the smallest of its kind in FDK, the size and use of resources have been reduced by approx. 30%. Lead-free solder is used for soldering of coil terminals where ultra fine magnet wire is used. making the product in compliance with the RoHS Direc-

### From the developer

The basic structure of the product series basically employs the same as that of our conventional product series in order to maintain its superior performances. The appearance, therefore, is quite similar with the conventional products of its kind. However, within a small body, various element technologies and know-how is filled, such as molding of small magnets, magnetization and magnet circuit parts processing. This product is realized by integrating and arranging these technologies in a well-managed way.

Nobuyuki Sueyoshi, Yuuji Murata, Yosuke Takahashi, Mitsuo Kinoshita, Hideki Takeuchi. Isao Koiima. Shohei Sawada, Naoya Ova, Hiroki Tatara, Kazuhiko Nakayama and Kyoko Nishio

1st. Engineering Dept. FDK Mechatronics Co., Ltd.





### Application:

This is a high power and highly durable alkaline battery. This is the most fit for application to the devices requiring high current such as digital cameras and PDAs, as well as video games and portable AV equipments.

### New Generation Alkaline Battery "G Plus"

### Product characteristics

A new conductive material is used to reduce significantly the internal resistance of cathode mix. At the same time, use of a new separator has improved its discharge efficiency. All of this has enabled the battery to increase the power by approx. 20%\* compared to a conventional AA and AAA batteries, making it the highest performances in alkaline batteries. This product is suitable to digital cameras, remote controllers of electric devices and any other electric products.

Compared to the conventional alkaline batteries of FDK (AA battery: 2,000mA, 0.5S/300mA 59.5S when used, AAA battery: 600mA when used continually)

### **Eco-Friendliness**

The uplifted durability of this product (by approx. 20%\*) has enabled the cycle of replacing batteries longer, and resources can be used efficiently. The packaging materials (blister pack) is made of recycled PET bottles and the inner boxes and the label of multiple pack are printed using sovbean ink, thus the product considers ecofriendliness.

### From the developer

The key points in developing this battery are to uplift the stable performance, to secure product safety during the life of the product. Batteries have recently been applied to digital cameras and other devices requiring high current. Therefore, the aim of developing the new generation alkaline batteries is placed on high performance and widened application. At the same time, upgrading customer satisfaction is also included in the development objectives, by the use of a special gasket to prevent leakage of electrolyte, new type of surface treated steel to reduce contact resistance

with the devices, and employment of universal design.







### Application:

Precision polishing and processing of precision machines, electronic and optical parts

### Non -contact Magnetic Polishing System

### Product characteristics

Unlike conventional polishers, the non-contact magnetic polishing system employs a polishing bite that does not contact with the item for polishing. Therefore, no stress is imposed on the item (maximum distance from the bite and the item: 5mm). Due to this, items of irregular surface can be polished such as thin films and soft materials of irregular shape that has conventionally been unable to be polished. These features have reduced the cost for mirror polishing of nano-level that was only done by a large-sized and expensive polisher in the past.

### **Eco-Friendliness**

Compared with the conventional system, the power consumption is significantly reduced. The waste liquid containing magnetic body can be recycled for other applications as EMC\* materials after removing water. This is a wet type polishing machine that polishes a vessel by putting polishing liquid of a certain volume, no chips and particles are scattered.

\* EMC refers to electromagnetic compatibility, which is to reduce

### From the developer

The system currently uses magnetic polishing solvents, but we are in the process of developing water solution type magnetic polishing liquid using the FDK's ferrite materials and recycled Mn-Zn sludge. The polishing liquid of this type will greatly contribute to reduce environmental burdens from the view point of working environment and effluent treatment.





### Approach for Elimination of Poisonous Substances

FDK Group is taking an effort to totally eliminate the use of hazardous substances in production. In order to respond to the requests of customers for assurance of non-use and control of such materials as well as to comply with the requirement of the RoHS Directive, FDK Group established the "Committee for Products Containing Hazardous Chemical Substances" in October 2004 to commence control of products containing hazardous chemical substances in our premises in and out of Japan.

### **Targets of the Third Environmental Action Plan**

To eliminate use of hazardous substances designated by Fujitsu Group in manufacturing products by the end of fiscal 2005, except for those designated by RoHS whose elimination target is the end of December 2004

- · Use of hazardous substances listed in 31 categories of Fujitsu Group's list will be totally eliminated by the end of fiscal 2005.
- · For products shipped to Europe and covered under the RoHS Directive, use of mercury, hexavalent chromium compounds, PBB and PBDE will be totally eliminated by the end of December 2004.

### Hazardous Substances Elimination **Activity and Result**

In fiscal 2004, an investigation was made to 1403 substances designated by FDK, including those designated by Fujitsu Group. The results were accumulated in ECO-DB (the database system of the FDK Group on the environmental burden of chemical substances) and an examination was made to change designated hazardous substances to alternative ones. The Committee for Products Containing Hazardous Chemical Substances discussed the possibility of strengthening controls on hazardous chemical substances, and a rule for controlling and elimination of them as FDK Group was examined.

As a result, the hazardous substances designated in the RoHS Directive were totally eliminated in manufacturing newly developed products by the end of December 2004 as aimed by the company. However, some of them were not able to be eliminated in manufacturing current products because of unconfirmed reliability of alternative substances. For these materials, we will gradually shift to use alternative ones by checking the quality of them. As for hazardous substances designated by Fujitsu Group, we will examine and change to alternative materials aiming at eliminating the use of hazardous substances by the end of fiscal 2005.

### Hazardous Substances Designated by Fujitsu Group

Ozone

depleting

- •Polychlorinated biphenyls (PCBs) Polychlorinated naphthalenes
- (with 3 or more chlorine atoms) Asbestoses
- •CFCs
- Specified halons
- Carbon tetrachloride 1.1.1-Trichloroethane
- Bromochloromethane Methyl bromide
- •HBFCs
- Polybrominated biphenyls (PBBs)
- Polybrominated diphenyl ethers (PBDEs) Short-chained chlorinated paraffins.
- Bis (tri-n-butyltin) oxide (TBTO)
- Tributyl tins (TBTs), Triphenyl tins (TPTs)
   ●Mirex

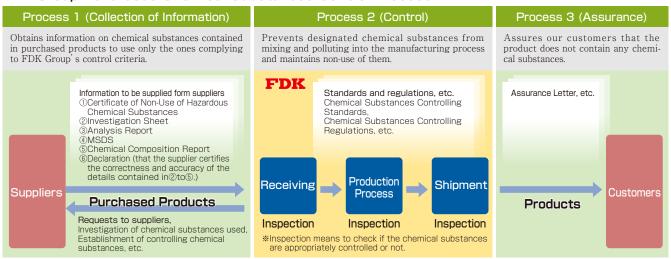
- Specified amines
- (Those which contact to skin directly and for a long time only ·Azo dyes and azo pigments that generate specified amines
- (Those which contact to skin directly and for a long time only
- Chlordanes •DDT
- Aldrin
- Endrin substances •Dieldrin
  - Hexachlorobenzene
  - N,N'-ditolyl-p-phenylenediamine, N-tolyl-N'-xylyl-p-phenylenediamine
  - and N,N'-dixylyl-p-phenylenediamine •2,4,6-tri-tert-butylphenol
  - Toxaphene

- •Cadmium and its compounds
- Hexavalent chromium compounds
- •Lead and its compounds
- Mercury and its compounds

### How to Control Hazardous Chemical Substances

With the idea that any product containing hazardous substances is a defect, FDK Group determines to strengthen control of such substances by incorporating it into the Group's quality assurance system. More precisely, standards in relation to them will be improved and implemented in a three-stage process of "collection of information" "control" and "assurance."

### FDK Group Hazardous Chemical Substances Control Process



# Measures for Global Warming Prevention

FDK Group is enthusiastically involved in various global warming prevention activities including energy saving in offices, development of energy-saving products as well as improving logistics and promotion of recycle activities.

### Measures to Energy Conservation

Any corporate activity requires consumption of a good deal of electricity and fuel at factory offices and facilities. In order to conserve the limited energy and prevent global warming, it is essential to reduce the volume of energy consumed in corporate activities. FDK Group contributes to reduce energy consumption by introducing energy-saving facilities such as a cogeneration facility and improving operation of existing facilities.

### **Targets of the Third Environmental Action Plan**

Energy consumption and emission of CO2 reduced at the end of fiscal 2006 by 15% of those in fiscal 2000

· The scope of these reductions includes FDK's plants and offices in Japan.

### **Energy Saving Activities**

In fiscal 2004, FDK's energy saving activities included revising control and operation method of its production facilities and effective utilization of heat generated from them. In addition, the shift of production changed from the energy consuming ferrite production to assembly of modules contributed to reduce energy consumption by the Group.

As a result, the volume of  $CO_2$  emission was reduced to 21,070 ton in fiscal 2004 or 35% of that in the previous year. Against the target set out in the Third Year Environmental Action Plan i.e. 15% reduction on the volume of  $CO_2$  emission in fiscal 2000, the reduction ratio achieved was 61%, which is a quite significant contribution to reduce the emission of the greenhouse gas.

All plants of FDK Group in Japan have already achieved the reduction target set out in the Kyoto Protocol. We determined to further curtail CO<sub>2</sub> emission by additional improvements and operation control of our production facilities and reduction of air conditioning expenses through the introduction of "Cool Biz."

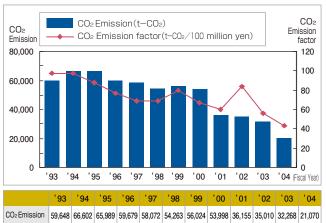
As CO<sub>2</sub> is the single greenhouse gases emitted from FDK Group, we will take a further effort in reducing the gas emission.

# Won the Prize for the Excellent Energy Management Factory (electric section) from Chubu Bureau of Economy, Trade and Industry, METI.

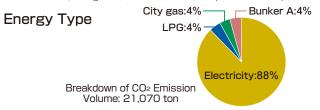
Kosai Plant won the prize for the excellent energy management factory (electric section) from Chubu Bureau of Economy, Trade and Industry, METI in fiscal 2004. Aiming at promoting rational use of energy and effective use of fuel and resources, the Bureau recognizes factories and offices which energy saving efforts are significant and exemplary to others, in order to further promote energy saving.



### Transition of CO2 Emission



※Due to a revision of CO₂ emission coefficient for calculating the emission volume of CO₂, the figures are modified from those published in the past.



### Main CO₂ Emission Reduction Activities in fiscal 2004

- Electric power consumption reduced in Kosai Plant by installing a power monitoring system
- Heat energy loss reduced in Kosai Plant by heat insulation of steam pipes
- Electric power consumption reduced in Sanyo Plant by revising the operation mode of air compressor at night
- Electric power consumption reduced in Iwaki Plant by revising the operation mode of air conditioner outdoor units
- Electric power consumption reduced in FDK Engineering Co., Ltd. by optimized control of air conditioners



Air conditioner control system (FDK Engineering Co., Ltd.)

### CO<sub>2</sub> Reduction Activities by Improvement of Distribution, etc.

Besides the efforts for reducing CO<sub>2</sub> emission from its production activities, FDK Group is enthusiastically addressing to reduce CO<sub>2</sub> emission in the entire corporate activities from procurement of parts and materials to transportation, use, disposal and recycling of products.

### Targets of the Third Environmental Action Plan

Contribution to the reduction of greenhouse gas emission

• Reduction of CO<sub>2</sub> emission is promoted through improvement of logistics, recycled use of products and packaging materials, and development and purchase of energy-saving products.

### Reduction of CO<sub>2</sub> Emission through Improving Logistics

As an important part of its production innovation activities, FDK Group is involved in "logistics innovation" which includes improvement of product flow from suppliers to FDK and FDK to customers. This will greatly contributes to improve production efficiency in the group companies and is directly associated to reduce environmental burdens.

### Reduction of CO<sub>2</sub> Emission through Revision of Logistics Modes

The mode of distributing products from suppliers to FDK has been changed from conventional shuttle system to a "route distribution system" whereby a truck picks up products from more

than one supplier by making rounds. FDK Group expects that this will help not only decreasing delivery lead time and work-in-process items, but also shortening total traveling distance of a truck by which total CO<sub>2</sub> emission volume is decreased.



Route shipment ceremony

### Change in Distribution Modes



**Current Status:** A shuttle truck (owned by FDK and charter service) goes back and force between FDK to one supplier scattered around the plant.



**Proposals:** Using a regular consolidated truck of a fixed route service covering more than one supplier, efficiency of distribution will be enhanced.

### Improvement of Load Efficiency and Reuse of Packaging Materials

Packaging materials used by FDK Group is designed highly resource and space saving. Decreasing the size of a package will

increase the number of packages that can be loaded onto a truck, which helps decreasing CO<sub>2</sub> emission. The TP trays aiming at reuse of packaging materials are appropriately sized to increase the load efficiency.



TP tray



### Reduction of CO2 Emission through Recycled and Energy-Saving Products

FDK Group determined to increase the ratio of using recycled products and promotes energy-saving product design in the future and will numerically monitor them to grasp the volume CO<sub>2</sub> emission reduced through these activities.

### Development of Dielectric Material Paste (Energy-Saving Type)

FDK Group has developed a new type of dielectric material paste for its multi-layer inductors, multi-layer baluns and other high frequency

chip inductors. Use of the paste has enabled drying and sintering at low temperature and for a shortened time. Moreover, the heat for sintering has been decreased by 20 to 30% of that required for conventional products. Currently the paste is used at FDK Kosai Plant.



FDK Group promotes "green factory" which is an eco-factory incorporating such environmental measures as energy and resource saving, reduction of discharging chemical substances, prevention of air, water and soil pollutions, and noise and vibration.

### Elimination of Designated Chemical Substances

In order to reduce discharge of chemical substances from its offices and factories and to alleviate environmental burden, FDK Group set out and operate "Chemical Substances Handling Regulations" which requires all its offices and factories to handle them appropriately. For those used in production processes, each office/factory grasps the volume used and discharged to the environment, as well as those moved out of the premises as effluents. In addition to the continuous activities to achieve its environmental targets, FDK Group is involved in raising accuracy of such data and promoting use of alternative substances.

### Targets of the Third Environmental Action Plan

Discharge of chemical substances under the Pollutant Release and Transfer Register (PRTR) reduced at the end of fiscal 2006 by 15% of those discharged in fiscal 2001

· The scope of the reductions includes FDK plants and offices in Japan.

### PRTR-targeted Substances Emissions Reduction

FDK Group is addressing reduction of PRTR-targeted chemical substances (354 Class I designated chemical substances). In fiscal 2004, the chemical substances discharged from FDK offices in Japan was 1.74 ton of toluene only which was reduced by 51% over the previous year. This means the target of the Third Environmental Action Plan was achieved by a significant reduction of 68% over the level in fiscal 2001 in the first year.

In FDK Group, toluene is used as a washing agent of products, jigs and facilities, and a large volume of vaporized toluene is discharged into the air. In order to reduce the volume of toluene used, FDK Group has been examining the quality and performance of alternative washing agent for a gradual change over to

PRTR Law requires reporting to public offices if a target chemical substance is used more than 1 ton annually. In FDK Group, those used 0.1 ton or more annually are compiled in a data.

### PRTR Chemical Substances Conditions in fiscal 2004

As a result of count in fiscal 2004, in accordance with shifting ferrite production to overseas sites, "nickel and its compounds" and "cobalt and its compounds" were no more used in the FDK Group facilities in Japan, and the handling volume of "manganese and its compounds" were reduced.

In addition, thanks to the promotion of lead-free campaign, the volume of lead handled during the year came to 7.57 ton which is a decrease by 11% over the previous year.



Lead-free soldering dip machine (Kosai Plant)

### Total Chemical Substances Handled in FDK Group Plants in Japan (100kg or more)

Unit: ton/year

	Handling	Discharged		Volume of transfer		-Consumption	
Chemical substances	volume	To the air	To the watershed	Discharged to sewerage	Contained in wastes	volume	Recycled
Manganese and its compounds	4505.30	0.00	0.00	30.80	0.00	4474.50	0.00
Toluene	4.21	1.74	0.00	2.47	0.00	0.00	0.00
Lead and its compounds	7.57	0.00	0.00	1.93	0.00	4.92	0.72
Bisphenol A epoxy resin	6.38	0.00	0.00	0.05	0.00	6.33	0.00
Boron and its compounds	1.14	0.00	0.00	0.001	0.00	1.14	0.00
Di-n-butyl phthalate	1.26	0.00	0.00	0.004	0.00	1.26	0.00
Silver and its compounds	0.61	0.00	0.00	0.00	0.00	0.39	0.22
Antimony and its compounds	0.40	0.00	0.00	0.04	0.00	0.36	0.00

PRTR refers to Pollutant Release and Transfer Register. Under the Law concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management enforced in March 2003, companies are required to report the volume of chemical substances emitted and/or transferred as wastes to the relevant authorities and to publish the data in order to alleviate the risks of pollutions to the environment by chemical substances and endocrines discharged from corporate activities

### Zero Waste Emission (Measures to Waste reduction)

FDK Group is addressing 3R (Reduce, Reuse and Recycle) activities in order to effectively use the limited resources and to reduce environmental burdens to the global environment by waste. The 3R activities include to reduce generation of wastes and to separate wastes by category for reuse. In view of forming the recycling society, FDK Ecotec Co., Ltd., a group company, collects information equipment such as personal computers and separate waste plastics, glass, metal and other resources from them for reuse to other applications. (Refer to page 29)

### Targets of the Third Environmental Action Plan

Generation of wastes reduced at the end of fiscal 2006 by 3% of those generated in fiscal 2003

- · The scope of reductions includes FDK plants and offices in Japan.
- · Zero emission of wastes will be achieved by the end of fiscal 2004 ahead of the target shown in the "Second Environmental Action Plan" by 1 year.

### Waste Reduction Activities

In fiscal 2004, the efforts of FDK Group was directed to reduce the total volume of wastes generated for disposal, and to achieve zero emission of wastes by the end of fiscal 2004 ahead of schedule by 1 year. More precisely, in stead of packaging products, returnable boxes were used, wastes were reused as a resource in the process, and waste plastic vessels were reused for other inhouse applications.

Due to these activities, the total volume of wastes generated and disposed during fiscal 2004 was reduced to 1,816 ton or 13% reduction over the previous year.

### Achievement of Zero Emission

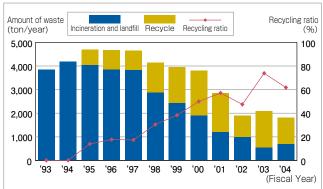
In fiscal 2004, all wastes generated in FDK plants were identified and examined for recycle and reuse. This was resulted in formation of "FDK Group Zero Emission Guideline."

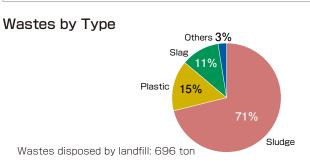
Along with the guideline, efforts were made to reuse sludge into the subbase course soil and cement materials, and to totally eliminate generation of sludge in septic tank using biotechnology.

Waste plastics were recycled after separating them into finely segmented categories in cooperation with FDK Ecotec Co., Ltd., whereas waste papers were shredded for reuse as packaging materials. Other wastes were recycled as a material of paper.

Thanks to these efforts, a recycle system was established in our company group by the end of fiscal 2004, and thus, all types of waste are now able to be recycled, including those were not possible to do so before. Now, our target of zero emission of wastes at all offices and plants of FDK Group in Japan was achieved. In fiscal 2005, it is likely that zero emission is achieved throughout the year.

### Transition in waste emissions volume





### Actions for Maintaining Zero Emission of Wastes

In the future, FDK Group will continue efforts in further decreasing the total volume of wastes and establish a system to check internally whether each offices well manages its own zero emission activities in preparation for emergence of new types of wastes.

### Zero Emission of Wastes in FDK Group

Definition: Zero emission is defined as utilizing all wastes generated in the group effectively to eliminate disposal of them by incineration and landfill.

Wastes: Sludge, waste acids, waste alkali, waste plastics, waste oil, metal slag, glass, ceramics, dusts, waste wood chips, waste paper, waste textile, animal and plant residues (food wastes) and sludge in septic tanks

### Environmental Preservation Measures to Plants

FDK Group promotes environmental preservation by preventing air, soil and underground water pollutions, which is mainly done by cooperating with its subsidiary, Fujidenka Research and Analysis Center Co., Ltd. The subsidiary mainly handles environmental investigation and prevention of pollutions. In doing so, severer than public environmental limit for each pollutant is set as voluntary standards, and regularly report the measured data to the public offices. In fiscal 2004, there were no cases of violating environmental laws and regulations and accidents relating to the environment occurred in FDK Group.

# Prevention of Soil and Underground Water Pollutions

Since October 1999, FDK Group has proactively disclosed the data on pollution of soil and underground water and has promoted purification measures of soil and underground water pollution at its four plants, which are Washizu, Hosoe, Osuga and Sanyo. In 2002, soil and underground water pollutions at Hosoe Plant were totally removed.

In fiscal 2004, in order to confirm the healthiness of soils in Osuga Plant, another series of pollution investigation was held in accordance with the Soil Contamination Measures Law. As a result, it was turned out that the level of pollution was within the limit set by the authorities, and the healthiness of soils in the plant was

confirmed. For other plants, we will continue purification of soils and monitoring investigation.



Soil Boring Investigation at Osuga Plant

### **Emergency Drills**

As it is said that a massive earthquake may happen at any time around the Tokai Region, an earthquake and fire drills is held annually at Kosai Plant in Shizuoka Prefecture. This includes evacuation drills, rescue drills and fire control drills. The drills are also practiced assuming that environmental pollutants are

leaked out of the plant premises. In fiscal 2004, an emergency training was held assuming that hazardous chemical substances are leaked from their storage warehouse.



Training for leakage prevention of chemical substances (Kosai Plant)

### Storage and Control of PCB

Following to the special law on treatment of PCB, FDK Group submitted a report on the volume of PCBs at hand. PCBs are numerically controlled using a PCB ledger and are appropriately controlled. In the future, PCBs will be appropriately disposed after establishing a proper treatment method on the substances.

### Effluent Analysis Report (Kosai Plant)

Chemical substances	Unit	Control limit (Japan)	Voluntary limit (FDK)	Actual value (max.)
PH (Hydrogen- ion concentration)	-	5.8~8.6	6.0~8.4	7.6~8.0
COD (Chemical Oxygen Demand)	mg/l	160	15	6.6
BOD (Biochemical Oxygen Demand)	mg/l	160	15	5.6
SS (Suspended Solids)	mg/l	200	20	10
N-hexane extract	mg/l	5	3	<0.5
Copper	mg/l	3	0.5	<0.05
Zinc	mg/l	5	0.5	0.2
Soluble iron	mg/l	10	3	<0.3
Soluble manganese	mg/l	10	3	<0.1
Nitrogen	mg/l	120	40	18
Phosphorus	mg/l	16	5	2.2
Nickel	mg/l	_	0.5	<0.05
Lead	mg/l	0.1	0.05	<0.01
Dichloromethane	mg/l	0.2	0.1	< 0.02

The following substances were found as significantly below the voluntary standards and official detection limits: benzene, fluorine, arsenic, trichloroethylene, tetrachloroethylene, 1-1-1-trichloroethane, total mercury, carbon tetrachloride and cadmium.

In order to be one of the good global citizen at each country and region, as well as in order to amicably exist with the local and international communities, FDK Group promotes environmental management for realization of the recycling society by efficient use and protection of natural resources and prevention of global warming.

### Social Action Program

Aiming at handing over the "beautiful global environment" to our next generations forever, FDK Group dedicates to social action programs continuously through amicable coexistence with the local communities and effective utilization of the limited natural resources with the integrate efforts of labor and management.

# The 11th Forestation Volunteer Activity "Children's Forest Program"

As a part of activities of Japanese Electrical Electronic & Information Union "Chikyu-Ai no Kikin (Earth and Charity Foundation)," the 11th forestation volunteer program was held in Sri Lanka from

July 31 to Aug. 7, 2004. This is a program organized by "Children's Forest Program." Two people took part in the activity from FDK Group.



Forestation activity in Sri Lanka

### **Resources Collection Activity**

Workers in Kosai Plant (Shizuoka), Iwaki Plant (Fukushima) and Sanyo Plant (Yamaguchi) and sales offices in Japan are committed to collect "aluminum pull-tubs," "used postal stamps," "used prepaid cards," "foreign coins" and donate them regularly to Council of Social

Welfare at each region. In Kosai region, 28kg of aluminum pull-tubs and some used postal stamps were donated to Kosai City Council of Social Welfare on June 29, 2004.



At Kosai City Council of Social Welfare

# The 2nd Well Drilling Voluntary Activity in Cambodia

This is organized by Shizuoka Regional Committee of Japanese Electrical Electronic & Information Union. The activity was held

from Feb.9 to 15, 2005. In Cambodia, many babies and children lose their lives because they are lacking clean water to take medicine. One person was sent to Cambodia from FDK to take part in the well drilling activity.



People installing a well (Cambodia)

### Japanese Archipelago Cleaning Campaign

Organized by Rengo Yamaguchi Asa Regional Council, a cleaning campaign was held on September 5, 2004 at a special elderly nursing home in Sanyo Onoda City in Yamaguchi Prefecture. 11

workers were participated in the campaign from FDK and cleaned the home by cutting grass in the courtyard and peripheral area of the home. In Kosai Region, 15 workers from FDK, together with the members of local division of the labor union participated in the cleaning of the Kosai area.



Cleaning at a special elderly nursing home

### Furukawa-Kai Beach Cleaning Campaign

This is an annual event of 10 Furukawa Group companies in Iwaki City, Fukushima Prefecture. The cleaning campaign was

held on July 3, 2004 and many people including 15 members from FDK cleaned the Usuiso Beach in Iwaki City.



Cleaning at Usuiso Beach in Iwaki City

### Support to Kawasaki Frontale

Kawasaki Frontale is a Kawasaki-based professional football team, which became a member of J-league in 1999 and is committed to operate professional football business and contributes to nourish young people and develop sport and culture in the region.



© KAWASAKI FRONTALE

### Global Effort for Environmental Care in All Manufacturing Bases

This chapter shows the outline and environmental protection activities of manufacturing plants of FDK Group.

### Kosai Plant

Started operation in	June 1963
Address	2281, Washizu, Kosai City, Shizuoka Prefecture 431-0495
Tel	053-576-2151
Draduction item	Switching nower supplies actuator units microwave components nower induc-

Located at the western edge of Shizuoka Prefecture and facing to Lake Hamanako, famous at eel, Kosai Plant is the center of research and development as well as manufacturing of FDK Group.

In fiscal 2004, the plant took a central role in the environmental activities of FDK Group including planning, guiding and leading other plants in terms of various environmental rules and regulations for the entire group. The activities of Kosai Plant during fiscal 2004 include the following items.

- 1. 13 development items were selected as Super-Green Products having top environmental elements mainly by the plant's research and development function (eco-friendly product development). All the requirements by customers for complying with the RoHS Directive were responded and met.
- 2. Due to an increase in production volume, CO<sup>2</sup> emission was slightly increased. However, the energy consumption per unit of production was reduced due to a through control by compiling electricity control standards. The efforts were recognized from the Japanese Government as an

excellent factory of energy control.

3. All wastes generated by the plant were recycled. For example, waste plastics which had long been a concern of the plant for management were separated by increased separation category. Thus, zero emission of wastes was achieved in the plant.

In the future, the plant will commit itself in efficient use of materials and reducing the volume of waste generated in the plant i.e. using waste paper as resources.

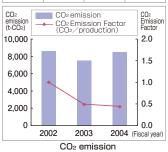


Kosai Plant is involved in the environmental preservation activity of Lake Hamanako.



Osamu Akama, Plant Manager

Activity	Fis	cal 2004						
Wastes								
Volume of was generated (		Volume o		Red	cycling ratio (%)			
359			235		65			
E	Ene	rgy Co	nsump	tior				
Utility Power (MWh)		ty Gas Km³)	Kerosene (kl)		CO <sub>2</sub> eq. (t-CO <sub>2</sub> )			
17,711	314		2	8,469				
00 - 00 - 100								



### Sanyo Plant

Started operation in	January 1970
Address	5-Ku, Honmachi, Sanyo-Onoda City, Yamaguchi Prefecture, 757-8585
Tel	0836-72-1311
Production item	Hybrid modules and piezoceramic parts

Located at Asa in northern Sanyo-Onoda City on the west coast of Seto Inland Sea in Yamaguchi Prefecture and facing to Suonada, Sanyo Plant is blessed with natural beauty.

Sanyo Plant is now in the process of shifting ferrite production to mass production of FPD (flat panel display) and other electronic parts and piezoceramic applied products. The change of production mode will incur significant impact on the plant's energy conditions. In this process, the following items are particularly emphasized.

- 1. Prevention of global warming: to reduce energy consumption
- 2. Promotion of a green factory
  - ①Reduction of toluene emission in the atmosphere
  - 2 Reduction of waste generated
  - 3 Achieving zero emission of wastes

In particular, efficient utilization of waste plastics and waste solvents contributed the plant to achieve zero emission at the end of fiscal 2004. In the future, the plant is determined to promote environmental protection activities and to make utmost efforts in reducing environmental burdens with the entire efforts of the staff in the plant.

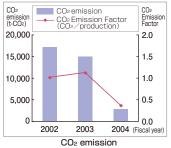


Cherry blossoms planted in the factory premises in full bloom



Kenji Yamada, Plant Manager

Activity Da	Fiscal 2004	
Volume of wastes generated (t)	Volume of wastes recycled (t)	Recycling ratio (%)
658	138	21
Ene	rgy Consump	tion
Utility Power (MWh)	LPG (ton)	CO2 eq. (t-CO2)
4,928	252	2,890
00-		00.



### Iwaki Plant

Production item Hybrid modules

Started operation in April 2002 (by merging former lwaki Electronics which was established in December 1966.) Address 1, Kamanomae, Joban-kamiyunagaya-machi, Iwaki City, Fukushima Prefecture 972-8322 0246-43-4161

Products manufactured in Iwaki Plant where a mass production plant of FDK Group include FPD (flat panel display) modules and parts for mobile communication equipment. Blessed with the abundant nature, cherry blossoms and azaleas are in full bloom in spring.

### Environmental Activity Topics in fiscal 2004

- 1. Compliance to the RoHS Directives was progressed in the development of eco-friendly products. Especially, all the VCOs (voltage controlled oscillator) produced in this plant became RoHS compliant.
- 2. Reduction of toluene, the PRTR targeted substance was addressed for appropriate control of hazardous chemical substances. Alternative washing agents of jigs were examined and selected. The total volume of toluene consumed in the plant was decreased by 44% over that in the previous

- year, coupled with the employment of an alternative washing agent for SMT (surface mount technology) in the previous year.
- 3. Use of returnable containers was started for transporting parts between customers and Iwaki Plant. This is a part of the plant's production innovation to reduce generation of wastes. The activity is expected to reduce the volume of using cardboard boxes in the future.

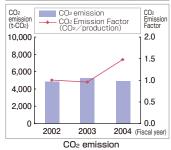


Azaleas planted along the main gate



Tadashi Onizuka, Plant Manager

Activity	Fis	cal 2004				
	Wastes					
	Volume of wastes generated (t)		of wastes led (t)	Recycling rati (%)		
20	209		209		100	
E	∃ne	rgy Co	nsump	tior		
Utility Power (MWh)	Bunker A (kl)		LP0 (ton	-	CO2 eq. (t-CO2)	
9,780			3	80	4,923	
COs		CO₂ amis		COs		



### FDK Engineering Co., Ltd.

Established in September 1990 (by separation of machinery business function of FDK; Former Hosoe Plant started operation in November 1963) Address 281, Hirooka, Hosoe-Cho, Hamamatsu City, Shizuoka Prefecture 431-1302 053-522-5280

Business lines Design, manufacture and sales of various manufacturing facilities

Located at the northeast end of Lake Hamanako and blessed with abundant nature, FDK Engineering is engaged in production of manufacturing facilities. The beautiful climate around the area stimulates the company to be highly environmental conscious in order to keep the local and global environment in good condition. The main environmental preservation activities of the company include; (1) use of production facility with eco-friendly design that aims at prohibiting hazardous chemical substances and materials for the machine and equipment and minitualizing the facilities to reduce the total amount of hazardous substances and materials, (2) reduction of greenhouse gas emission by reducing total energy consumed by its production facilities and (3) zero emission to reduce disposal of waste materials and packaging materials to a minimum and reuse them as materials. After obtaining the ISO14001 certification together with FDK Corporation, various environmental preservation activities have been settled in the company. The ratio of

achieving the above three targets in fiscal 2004 was 95% to 100%.

The company is actively engaged in keeping good friendship with the local community by participating in cleaning campaigns around the company and waterways in the community. Once a year, the cleaning of the local community is held together with the local residents. Voluntary cleaning activity is also held once a year by the employees of the company. These activities help raising awareness of the employees for contributing to the local community and improvement of the natural environment.



Cleaning activity around the plant premises



Activity Data Fiscal						
		Was	stes			
Volume o genera			of waste cled (t)	s Recy	cling ratio (%)	
	11		10		89	
	Ene	rgy Cc	nsum	ption		
	Utility Power CO2 eq. (MWh) (t-CO2)					
		547			239	
CO <sub>2</sub> emission (t-CO <sub>2</sub> )	-	002 emi 002 Em (002/p	ssion ission F roducti	actor ion)	CO₂ Emission Factor	
200					1.5	
100			•	•	0.5	
0	2002	20	003	2004	0.0 (Fiscal year)	

# As a Global Citizen

### FDK Energy Co., Ltd.

Established in August 2002 (by separating battery function of FDK. The former Washizu Plant started its operation in February 1950.)

Address 614, Washizu, Kosai City, Shizuoka Prefecture 431-0431 053-576-2111

Business lines Manufacturing and sales of alkaline batteries and lithium batteries

Located in the blessed nature of Kosai City on the western coast of Lake Hamanako, FDK Energy is a hub of manufacturing and technical development of alkaline batteries and lithium batteries. In fiscal 2004, its environmental activities were centered on reduction of energy consumption and zero emission of wastes under the condition of increased production volumes year by year.

The reduction of energy consumption included introduction of a smaller-sized thermal contraction furnace used in the manufacturing process. To reduce the generation of wastes, segmented separation of waste plastics were thoroughly done and plastics disposed previously by landfill were recycled. Due to such efforts, zero emission was achieved in March 2005. In addition to this, we encourage our suppliers to revise the practice of using boxes to deliver products to us. This has reduced the volume of waste box disposal to a quarter.

The company's effort for eco-friendly products included promotion of controlling products containing hazardous chemical substances. Use of solder containing lead to soldering connecters and other components was totally eliminated. Besides this, use of packaging materials made of recycled PET materials and intermediate boxes printed by soybean ink are also promoted in the company by which eco-friendly company management is practiced from the design phase of products.

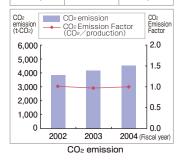


Planting along the main gate



Akira Nagata, President

Activity Da	Fiscal 2004			
	Wastes			
Volume of wastes generated (t)	Volume of wastes recycled (t)	Recycling ratio (%)		
578 529		91		
Ene	tion			
Utility Power (MWh)	Bunker A (kl)	CO2 eq. (t-CO2)		
9,673 103		4,506		



### Fuchi Electronics Co., Ltd. 〈Taiwan〉

Established in January 1981

Address No. 355, Section 2, Nankan Road, Rutsu Shan, Tao Yuan, Taiwan

+886-3-322-2124

Business lines Manufacturing and sales of hybrid modules

Fuchi Electronics, as a Taiwan-based company, contributes to preserve the global environment and making its working environment comfortable and safe to work to respond to the requirement of our customers for providing green products. At the same time, we will pursue realization of sustainable recycling society by applying environmental management to the design and production of FPD (flat panel display) related electric parts manufacturing.

Fuchi Electronics is promoting the following activi-

- 1. Promotion of environmental management system based on ISO14001
- 2. Continuous improvement of environmental preservation efforts by realizing the effect of its products and services on the environment and by continu ously implementing such management technology as upstream control, PDCA cycle (incl. environmental policy making, planning, operation, check, correction and revision).
- 3. Among the environmental impacts caused by products and services of Fuchi Electronics, the following environmental burdens are chosen as

- main theme of reducing environmental burdens.
- ①Provision of green products (green procurements and promotion of lead-free).
- ②Risk minimization (curtailment of using hazardous chemical substances).
- 3 Prevention of global warming (energy saving),
- 4 Reduction of wastes (recycling and reuse of resources),
- (5) Active participation to environmental preservation activities initiated by the communities in Taiwan

In fiscal 2004, the use of energy increased in this company due to an increased production volume. However, we are further placing particular emphasis on provision of green products and risk minimization activities.



EU Directives (WEEE, RoHS and EuP) seminar and education of green products

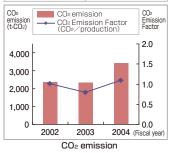


A poster for raising awareness



Takashi Aramaki, President

**Activity Data** Fiscal 2004 Volume of wastes Volume of wastes Recycling ratio generated (t) recycled (t) 318 58 184 Utility Power CO2 eq. 4,944 3,411



### PT FDK Indonesia (Indonesia)

Established in August 1989

Address Kawasan Industri MM2100, Blok MM-1 Jatiwangi Cikarang Barat, Bekasi 17520 Jawa Barat, Indonesia +62-21-89982111 Tel

Business lines Manufacturing and sales of alkaline batteries and lithium batteries

It was in February 2002 when PT FDK Indonesia started its environmental management activities based on ISO14001. Under the recognition that environmental preservation activities are now a part of the social corporate responsibilities, PT FDK Indonesia developed a series of enthusiastic environmental protection activities and succeeded in obtaining the ISO14001 certification in June 2003 together with the quality management certification. The company aims at effective and efficient company management through integrating quality and labor health and safety into one management

Believing that the success of realizing such company management system depends on the efforts of its employees, PT FDK Indonesia provides management system, environmental preservation educations and OJTs to newly recruited employees to upgrade the knowledge and skill of all the people working in it. More precisely, the education and training include efficient utilization of global resources, reduction of wastes, control and reduction of using hazardous chemical substances, plant effluent control, reduction of using utility power and planting around the plant premises.

Special effort is placed on recycling of materials used, especially, in the battery manufacturing process from the view point of reducing wastes.

In fiscal 2004, use of utility power increased due to the commencement of lithium coin battery production

PT FDK Indonesia will pursue environmentally efficient businesses and sustainable company management not limited to the compliance with environmentrelated regulations and rules as well as other require-

<FDK Indonesia's Environmental Action> Established the policy on Environmental ISO (2002) Obtained ISO14001 certification (2003)



Planting in the plant premises



Internal audit education

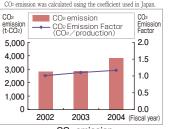


Hideo Yamamoto. President

Activity Data					Fisc	al 2004	
Wastes							
Volume of wastes generated (t)			Volume of wastes recycled (t)		Recycling ratio (%)		
323			*			*	
	Ene	rg)	/ Consui	np	tion		
Utility Power Bunker A (MWh) (ke)			Kerosene (kl)		ght oil (kl)	CO2 eq. (t-CO2)	
8,574	4	2	17		69	4,082	

\*Recycling of resources outsourced to resource recycling companies is not included as the relevant data was not available.

CO2 emission was calculated using the coefficient used in Japan.



CO₂ emission

### FDK Lanka (PVT) Ltd. 〈Sri Lanka〉

Established in November 1990

Address Ring Road 3, Phase II E.P.Z. Katunayake, Sri Lanka

+94-11-225-3492

Business lines Manufacturing and sales of optical devices, magnet heads for FDD and rotary transformers

FDK Lanka (PVT) Ltd. was started in 1990 as a company producing magnet heads for FDDs. In 2001, it started its environmental management activities and obtained ISO14001 certification in 2003. The following items were placed as targets and promoted from fiscal 2002 to fiscal 2004 with the objectives of protecting the global environ-

- 1. 20% reductions in waste generation
- 2. Appropriate control of effluents
- 3. Appropriate use and control of hazardous chemical substances
- 4. 40% reductions in energy consumption (per production)
- 5. 1% improvement in the ratio of greenery area in the plant

Thanks to the separation of wastes generated in the plant as well as recycling activities, the volume of wastes was reduced by 46%. In the future, our activities will be directed centered on reduction of the volume of materials input.

After a revision of using hazardous chemical

substances, the company achieved 27% reduction in using them. As for the energy saving, improvement of facilities made to temperature control of cooling towers for Air Conditioner and the use of power efficient fluorescent lights. In addition, working shift which was made to 1 shift system and consolidation and redesigning of facility layouts helped the per product energy consumption decreased by 48%. The ratio of greenery area in the plant was uplifted by

With the slogan of "FDK Group Loves Nature for the Future of the Earth" FDK Lanka will thrive itself for environmental protection activities to protect the beautiful environment of Sri Lanka.



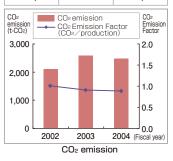
Waste separation boxes



Promotion of green campaign (trees planted along the wall of the factory complex)



Ratoariiko Rono, i reolaorit						
Activity Da	Fisca	2004				
Volume of wastes generated (t)	Volume of wastes recycled (t)		ng ratio %)			
395	139		35			
Ene	rgy Consump	tion				
Utility Power (MWh)	Light oil (kl)	CO2 eq. (t-CO2)				
10,599	139	2,470				
CO <sub>2</sub> emission (t-CO <sub>2</sub> )	CO2 emission CO2 Emission Fa (CO2/productio	ctor n)	CO <sub>2</sub> Emission Factor			
3 000 =			20			



### FDK TATUNG (THAILAND) CO., LTD.(FTT) 〈Thailand〉

Established in July 1991

Address 700/49 M.1 Amatanakorn Industrial Estate Bangna-Trad Rd.,Km.57 TambolBan-Kao Amphur Phan Thong, Chonburi 20160,Thailand

Tel +66-38-213-169

Business lines Manufacturing and sales of ferrite cores

FTT produces and sells various ferrite core electronic parts made of particles as the main materials.

In order to make a growth, FTT believes it essential to obtain enhanced customer satisfaction by providing high quality products and services, and to realize environmental performances meeting the expectation of the society.

In this sense, FTT pursues customer satisfactions and ceaseless improvement of environmental performances in addition to prevention of environmental pollutions and compliance to various laws and regulations.

For obtaining highest customer satisfactions, FTT conducts questionnaire to its customers by sending a check list which is sent back to the company after filling them by customers.

In fiscal 2005, FTT aims at obtaining an integrated certification of quality and environmental manage-

ments, integrating its corporate management organization in the quality and environmental management system and enhance efficiency of the PDCA cycle (plan-do-check-action).

Main activities of FTT in fiscal 2004 included:

- 1. enhancement of wastes recycling ratio,
- 2. promotion of green purchasing,
- 3. environmental educations
- 4. continuous improvement of pollution preventive measures on the environment.

FTT is determined to continue its activities in order to protect the global environment.



Environment and safety education

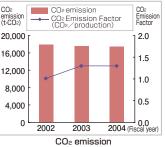


Planting in the plant premises



Kazuo Hasegawa, President

**Activity Data** Fiscal 2004 Volume of wastes | Volume of wastes | Recycling ratio 47 1,163 542 Utility Power LPG Light oil CO2 eq. (MWh) (t-CO<sub>2</sub>) 17,482 13,202 2.446 15



### Xiamen FDK Corporation (China)

Established in March 1994

Address No. 16, Malong Road, Huli District, Xiamen, Fujian, China

Tel +86-592-603-0576

Business lines Manufacturing and sales of switching power supplies, transformers, hybrid modules, stepper motors and VCOs

Being the first production site established by FDK in the mainland China, Xiamen FDK obtained the ISO14001 certification on January 5, 1999. Since then, with the environmental policy of "reducing environmental burdens and improve the environment continuously by observing laws and regulations and pursuing clean production," the company has been actively involved in energy saving, reduction of wastes, control of hazardous chemical substances, environmental education and social contributions.

- 1. Energy saving: The utility power consumed per unit of production in fiscal 2004 was decreased by approx. 21% over that in fiscal 2002.
- Recycling of wastes: The volume of wastes recycled is growing year by year through the introduction of plastic cartons and palettes.
- Lead-free: Starting from the experiment phase in fiscal 2002, the company has achieved the leadfree ratio of 83% in fiscal 2004.
- 4. Environmental education: Various educations and trainings are implemented in the company based on its annual environmental education plan. In addition to classroom style educations, a company environmental circular is regularly issued, and in April, annual "environmental activity reinforcement month," an environmental promotion event is held every year.

- Social contributions: Volunteers from the company take part in environmental cleaning campaigns more than once a year to collect garbage at beaches and parks, and plant trees.
- 6. Recognition system: Since fiscal 2001, the company has been recognized as a "Company of Beautiful Garden," by the city of Xiamen every year. In fiscal 2003, the company was recognized as the environmentally advanced company by the environmental protection bureau of the city. Followed to this is the recognition of "the advanced company of saving and total recycling of resources in Xiamen" by the Government of Xiamen City in April 2005. Xiamen FDK will continue environmental improvement activities based on its environmental policy.



The garden recognized as "Beautiful Garden" by the city of Xiamen

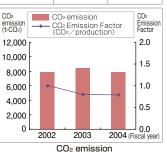


Volunteers of Xiamen FDK employees taking part in the community cleaning campaign



Tadao Ishida, President

**Activity Data** Fiscal 2004 Volume of wastes Volume of wastes Recycling ratio generated (t) recycled (t) (%) 302 261 86 Utility Power Light oil CO2 eq. (t-CO<sub>2</sub>) (kl) 8 8,436 7,913



### Shanghai FDK Corporation (China)

Established in August 1995

Tel

Address 499 Dong Qu Road, Songjiang Industrial Zone, Shanghai, China

+86-21-5774-2028

Business lines Manufacturing and sales of hybrid modules and coil devices

Shanghai FDK Corporation manufactures electronic parts in Shanghai Songjiang Industrial Zone. Since its establishment in 1996, Shanghai FDK has been improving its working environment by planting more than 1,000 trees of various types and beautiful flowers to more than 30% of the total area of the company.

Shanghai FDK sets its management philosophy of 'contributing to the society (Shanghai, China) through the development of the company" and action policy of "manufacturing under amicable coexistence with the nature."

In order to raise awareness of its employees toward protection of the environment, the company has been enthusiastically involved in various activities including distribution of an environmental protection handbook to all employees and placing a board showing the company's environmental policy at each entrance to draw attention of employees. In 2000, the company installed a sewage treatment tank with advanced antipollution system, which was highly recognized by Songijang Environmental Protection Bureau.

In order to comply with severe environmental

standards against electronic apparatus in the world, such as the EU Directive of RoHS, it is necessary to grasp which hazardous chemical substances are used in a product and to reduce them. Under the cooperation of FDK in Japan, the company investigated materials used in various products and switched products with hazardous chemical substances to those not containing them in a gradual manner. As a result, Shanghai FDK has become a cadmium-free company. The next step is to eliminate using lead.

All the employees in Shainghai FDK will thrive themselves in contributing to the protection of the global environment by promoting persistent control on hazardous chemical substances and strengthening compliance with relevant laws and regulations.



Planting in the factory premises



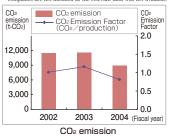
Lead-free coil device production line



Isamu Sasaki, President

Activity Da	Fiscal 2004			
	Wastes			
Volume of wastes generated (t)	Volume of wastes recycled (t)	Recycling ratio (%)		
212	*	*		
Ene	rgy Consump	tion		
Utility Power (MWh)	Natural Gas (Km²)	CO2 eq. (t-CO2)		
8,936	91	8,895		

\*Recycling of resources are not included as the relevant data was not available



### Suzhou FDK Co., Ltd. (China)

Established in June 2001

Address 43 Building Fenggiao Industrial Park 158-88 Huashan Road, Suzhou New District Jiangsu, China Tel +86-512-66619392

Business lines Manufacturing and sales of hybrid modules

After a continued efforts of environmental management activities based on ISO14001 since April 2004, Suzhou FDK successfully obtained the certification on December 31, 2004. Even before April 2004, the company was involved in environmental protection activities. After obtaining the international environmental standard of ISO14001 certification, the internal environmental management system is now firmly established as a wellorganized way.

After the introduction of EMS, the company has enthusiastically committed itself to various environmental management activities such as effect assessment of environmental, examination of environmental laws and regulations, and setting voluntary limits. More precisely, the activities include the following items

- 1. Raising awareness of all employees to the environment
- 2. Control and reduction of wastes
- 3. Improved control over hazardous items
- 4. Reduction of using hazardous chemical substances

- 5. Reduction of using water, electric power and paper
- 6. Reduction of noises emitted from the factory
- 7. Improved control over the safety and fire prevention Due to the increased production volume, the energy consumption tends to increase. Thus, a reduction target (electricity consumption per unit of production) is set for using electricity.

As a course of raising awareness of all employees to the environment, some reference documents are prepared and displayed to educate them the importance of water, scarcity of water resources and how to save using water. Due to such educations, all the targets for fiscal 2004 were successfully achieved.



Education for environmental preservation

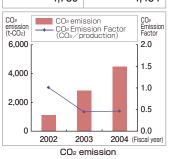


A display of reference materials on water saving



Sumio Watanabe, President

Activity Da	Fiscal	2004			
	Wastes				
Volume of wastes generated (t)	Volume of wastes recycled (t)			ng ratio %)	
154	71			46	
Ene	rgy Co	nsump	tion		
Utility Pov (MWh)		002 eq (t-002)			
4		4	,484		
CO <sub>2</sub> .	CO2 emi:	ssion		CO2 .	



### FDK (Thailand) Co., Ltd. (Thailand)

Established in December 2001

Address 60/118 Navanakom Industrial Estate Zone 3]Moo 19, Phaholyothin Road, Tambon Klongnung, Amphur Klongluang, Pathumthani 12120, Thailand
Tel +66-2529-4930

Business lines Manufacturing and sales of stepper motors

Established in December 2001 at Navanakorn Industrial Estate Zone in Pathumthani Prefecture, the Kingdom of Thailand, FDK (Thailand) Co., Ltd. manufactures and sells stepper motors for office automation equipment and automobiles. When including the operation period of the former Fujitsu (Thailand), the company has been in operation in Thailand for 15 years.

The environmental policy of the FDK Thailand is described as follows.

- Comply with relevant environmental legislation and regulation including with other requirements to which we subscribes.
- Continually improve environmental performance and prevent any pollution caused by our activity, product and service including reduce impacts on the environment as; water, land and atmosphere with waste management activity.
- 3. Utilize of natural resources to the most benefit and promote energy saving activity.
- Enhance environmental preservative awareness to our employees.

FDK Thailand obtained ISO14001 certification in June 2003 and is involved in improving the environment of the Kingdom of Thailand.

More precisely, the activities include ① reduction

of using utility power, ② reduction of wastes (separation and collection of wastes and legal disposal of them) and promotion of recycled use of them, ③ green purchasing and using green products, ④ appropriate treatment of effluents, and ⑤ environmental investigation to our suppliers. For ① and ②, the company implements timely measures by reporting the condition of activities at the in-house sub-committees and examines the corrective measures for the issues of concerns. Environmental education to the employees is held as necessary in the company. All employees are required to carry a pocket size environmental policy card distributed to them.

FDK Thailand will continue integrating the efforts of all the employees to continuously improve the environmental situation and pursue coexistence with the environment to make a leap forward to a growth.





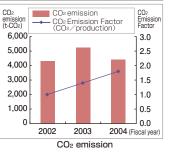


Heat insulation of ceiling



Yasunobu Nakagiri. President

. acanosa managing modiaci				
Activity Da	Fiscal 2004			
Wastes				
Volume of wastes generated (t)	Volume of wastes recycled (t)	Recycling ratio (%)		
382	352	92		
Energy Consumption				
Utility Power (MWh)	LPG (ton)	CO2 eq. (t-CO2)		
4,399	9	4,414		



### **FDK Overseas Production Site Topics**

### Fuchi Electronics Co., Ltd.

Fuchi Electronics Co., Ltd. was recognized of its Green Partner Activities and achievements in reducing and controlling hazardous chemical substances and was awarded "the Sustainable Enterprise Award of Taiwan Sustainable Development Award" from the Executive Yuan. This was covered by the "Economic Daily News," "Safety, Health and Environment Today," etc.



At the award ceremony

### Xiamen FDK Corporation

Xiamen FDK Corporation was recognized as an advanced company of resource saving and recycled use in fiscal 2004 from the Xiamen City Government. Its efforts in energy saving, recycling and reuse of wastes as resources, introduction of a large-sized and eco-friendly generator and informative webpage are highly evaluated.



The plaque awarded



Large-sized and eco-friendly generator

### Business Activity of Fuji Denka Research and Analysis Center Co., Ltd.

Fuji Denka Research and Analysis Center is a total environmental research and analysis company established 30 years ago. Fully utilizing the analyzing and environmental investigation technology, the company is actively involved in protection of local and corporate environment. It serves customers by providing pollution prevention on soils and underground water, investigation and proposal on eco-friendly products, and investigation for sick-house inducing agents.

# Total Pollution Investigation of Soils and Underground Water

Fuji Denka was appointed as a designated research and investigation institute from the Minister of Environment in February 2003, based on the Soil Contamination Measures Law under the license number 2003-1-184. It provides an integrated research and investigation service from investigating the quality of soil and underground water including the concentration of volatile organic compounds, heavy metals and agricultural agents to advising assessments and measures against them, based on its abundant experiences in this field. The assessment items covered include Phase 1 to Phase 3 as shown in the table below.

# Investigation and Countermeasures against Soil and Underground Water Contaminations

Phase 1 Phase 2

Item	(Investigation by Data)	(Conditions and Detailed) Investigation	(Purification)
Outline	Possibility of pollution of the land is investigated by examining how it has been used.	Condition of pollution of the land is investigated.	Based on the investigations in Phase 1 and 2, contaminants are removed from the soil and underground water in the best suitable way.
gation and purification methods	· Investigation of the land usage in the past ①Old maps and aerial photos ②Acquisition of the land register ③Interviews · Investigation of the peripheral area ①Condition of underground water contami-	Soil gas investigation     Surface investigation     for heavy metals, etc.     Surface investigation     for agricultural agent, etc.     Boring investigation     Underground water     investigation     Simulation analysis	Soil Vapor Extraction (SVE)     Groundwater pumping and aeration     Lime mixing method     Reactive water retaining wall     Removal of soil by digging, etc.

### Measurement of VOC Evaporation from Products

Many buildings recently built such as houses and school buildings are highly air-tight and heat-insulated to enhance living comfort and energy-saving performances. However, this is partly a cause of sick house syndrome, which allegedly occur due to a certain chemical substances emitted from building materials, interior materials and furniture.

Fuji Denka has long provided measurement of sick house inducing substances in rooms of newly built houses, flats and offices. In order to respond to the needs of measuring those substances emitted from office equipment and materials, Fuji Denka introduced in June 2005 a chamber-type VOC emission measuring and analyzing equipment. This equipment has a chamber of  $20\ell$  and  $1,000\ell$  that can be applied to the size of the subject for measurement and VOCs emitted from IT equipment such as a personal computer and home electrical appliances to furniture and office automation equipment can be measured using the measuring equipment.

### Subject substances

- · VOC (volatile organic compounds) · Formaldehyde · Toluene
- · Xylene · Styrene · Others

### Investigation of Hazardous Chemical Substances for Green Procurement

In order to manufacture an eco-friendly product, it is essential to measure the content of hazardous chemical substances contained in the parts and materials.

Based on the EU Directives of WEEE and RoHS, Fuji Denka provides analysis of hazardous chemical substances contained in an electric and electronic apparatus and compliance to ELV.

### Subject hazardous substances

- · Cadmium · Mercury · Lead · Hexavalent chromium
- · PBB · PBDE



Gas chromatography mass spectrometer



VOC emission measurement chamber (1,000 L) (VOC-10) Made by Espec Corporation



ICP analyzing machine

### Business lines:

nation

2)Geographical inves

tigation, etc.

Environmental analysis and measurement, Environmental assessment (Analysis of air, water, noise, vibration, odor and soil contamination level, and measurement of work environment)

Investigation and removal of soil and underground water contaminants Material analysis and reliability tests, calibration of measuring devices Measurement of sick house causing substances and VOC emission measurement

### Fuji Denka Research and Analysis Center Co., Ltd.

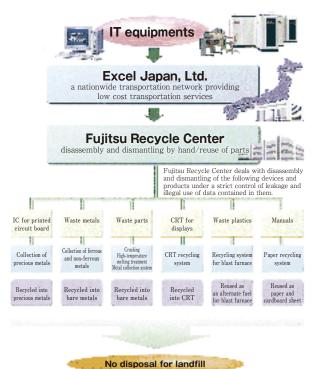
Established on January 24, 1976

Head Office: 2281, Wasizu, Kosai City, Shizuoka Prefecture Tel.+81-53-576-0841 Fax.+81-53-576-5258

### Business Activity of FDK Ecotec Co., Ltd.

Established in 1997, FDK Ecotec is mainly engaged in recycling of IT equipment such as a personal computer. As a recycle center located in Chubu Region under the Fujitsu recycling system, it collects and recycles used personal computers and other IT equipment from 13 prefectures in Tokai, Hokuriku and Kinki Region to contribute to the realization of the recycling society. In fiscal 2003, it achieved zero emission of wastes in handling used office automation equipment.

### Fujitsu Recycling System





### Licenses

- · Collection and transportation of industrial wastes: License No. 2100053003 (Gifu Prefecture)
- The range of collection and transportation:
   All areas of the following prefectures: Gifu, Aichi, Mie, Shizuoka and Shiga
- · Intermediate treatment of industrial wastes: License No. 2120053003 (Gifu Prefecture)
- Types of industrial wastes authorized to treat:
   Waste plastics, metal chips, waste glass and ceramics, concrete chips
   (excluding those generated by new construction or refurbishment of buildings)

### Major Activities in fiscal 2004

In fiscal 2004, FDK Ecotec introduced a fluorescent and a plastic destruction machine in order to expand its lines of business. In order to meet the requirement of protecting data from leakage, FDK Ecotec provides data deletion services by increasing types of media applicable.





Recycled items

Fluorescent light destroying machine

### Data Deletion Service

In order to serve our corporate customers to protect their data from leakage and as a measure to respond to the Act concerning Protection of Personal Information, FDK Ecotec provides data deletion service.

### Applicable media:

- · Hard disk drives
- · Floppy discs
- · ID cards and IC cards
- · Optical discs (CDs, DVDs, and MOs)
- · Magnetic tapes (MTs, DLTs and DATs)



Media applicable to data deletion

- $\boldsymbol{\cdot}$  Others (confidential documents, vouchers and audio visual medium)
  - Please contact us for any specific requirements.

### Lines of Business Recycling of the following equipments

- Computers and their peripheral equipments
- Word processors, fax machines and copying machines
- Telecommunication equipments
- Automated teller machines (ATM)
- Telephone sets, mobile phones, switchboards and POS terminals
- Magnetic tapes, cassette tapes, floppy discs and confidential documents
- OA discs and racks (excl. wooden racks)
- Fluorescent lights and waste plastics

### FDK Ecotec Co., Ltd.

Gifu Office

478, Tsuchikura, Hirata-Cho, Kaizu City, Gifu Prefecture, 503-0322 Tel.+81-584-66-4781 Fax.+81-584-66-4791

### History of Environmental Activities (fiscal year)

- 1992 Established the environmental protection preservation division.
  - Introduced mercury-free manganese dry batteries.
- 1993 Promoted Environmental Education for new employees.
  - Eliminated to use mercury in all layer-built batteries.
  - Eliminated to use designated chlorofluorocarbons(Excluded Iwaki Electronics Co., Ltd.).
- 1994 Established "Environmental Charter".
  - Promoted Environmental Education for mid-careers.
- 1995 Established environmental protection regulations for the FDK group.
  - Developed Environmental Action Plan.
  - Established FDK Environmental Protection Committee.
  - Fully eliminated to use designated CFCs in all plants.
  - Fully eliminated to use of trichloroethane.
- 1996 Established the Environmental Protection Standard Committee.
  - Established the Environmental Protection Standard.
- 1997 Launched activities to acquire ISO14001 certification.
  - Issued the first issue of environmental news.
  - Recruited and selected on the FDK environmental slogan.
  - Established the environmental protection system for ISO14001.
- 1998 Acquired ISO14001 certifications at five domestic plants.
  - Renamed the environmental protection preservation division as the environmental management division.
  - Acquired ISO14001 certification in Xiamen FDK Corporation as a first plant in overseas.
- 1999 Acquired ISO14001 certifications at additional three plants.
  - Announced the result of soil contamination state investigation.
  - Executed countermeasures on soil contamination.
- 2000 Established the Environmental Action Plan for the second term.
  - Joined "Environmental Management Survey" conducted by Nihon Keizai Shimbun Inc.
  - Received Fujitsu Environmental Contribution Prize.
  - Introduced a cogeneration system at Kosai plant.
  - Changed uniforms to reproductions using recycled fabrics from PET bottles.
- 2001 Issued the Environmental Report 2001.
  - Ranked 115th in "Environmental Management Survey" conducted by Nihon Keizai Shimbun Inc.
  - Participated in the environmental activities organized by JIFPRO(Japan International Forestry Promotion and Corporation Center).
  - Started operation of PRTR chemical management system.
  - Established in-house reuse systems of OA equipment.
- 2002 Established the "FDK Environmental Policy".
  - Issued the Environmental Report 2002.
  - Acquired ISO14001 certification in two overseas plants and one domestic plant.
  - Renamed the environmental management division as the quality and environment technology center.
  - Ranked 208th in "Environmental Management Survey" conducted by Nihon Keizai Shimbun Inc.
  - Expanded in-house reuse systems of OA equipment.
  - Promoted various company-wide campaigns.
    - Energy conservation campaign
    - Environmental enlightenment campaign
    - Reduction campaign for copy numbers
    - Eco driving and idling stop campaign
- 2003 Established the Environmental Action Plan for the third term.
  - Posted environmental educational posters of the FDK group drawn by corporate members and their families.
  - Issued the Environmental Report 2003.
  - Ranked 141st in "Environmental Management Survey" conducted by Nihon Keizai Shimbun Inc.
  - Introduced the database system(ECO-DB) of the FDK group on the environmental burden of chemical substances.
  - Received Fujitsu Environmental Contribution Prize.
- 2004 Renamed the quality and environment technology center as the environment technology center.
  - Established the Contained Chemical Substances Management Committee.
  - Issued the Environmental Report 2004.
  - Ranked 124th in "Environmental Management Survey" conducted by Nihon Keizai Shimbun Inc.
  - Awarded "the prize for the excellent energy management factory (electric section) in FY2004" by the Chubu Bureau of Economy, Trade and Industry, METI.
  - Acquired ISO14001 certification in all FDK Group plants.
  - Achieved zero waste emissions in all domestic plants.



The uniforms have changed to the reproduction of PET bottles.

# **FDK CORPORATION**

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FDK Group loves Nature for the Future of the Earth



This booklet was made of 100% recycled paper and used environment-friendly ink made of botanical soybean oil.