

JAE Group
2003
Environmental Report

Environmental Initiatives from
April 2002 to March 2003

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About the Cover

In 1961, whale fossils were unearthed from the riverbed of the Tamagawa River in the Akishima district of Tokyo, where the JAE Akishima Plant is presently located. The discovery led researchers to conclude that this area was formerly part of the coastline of Japan, and the whale has since been adopted as a symbol of the Akishima district. The Akishima district is also one of the few districts in Tokyo to utilize groundwater for its drinking water, and the citizens of this district have developed a strong sense of appreciation of the abundant springs and groundwater resources that have long characterized the district. The cover art combines the symbolism of the whale and imagery of water.



Working to Build a Prosperous and Sustainable Society

The 21st century has been called "the environmental century," a reflection of the serious recognition being accorded the environmental issues that affect the existence of humankind and other living creatures on earth. Efforts to deal with these environmental issues are being undertaken on a global scale. Japan is also doing its part to help create a sustainable society by enacting various recycling and other legislation such as the Law on Promoting Green Purchasing.

The JAE Group is fully committed to regulatory compliance and pollution prevention, and is also dedicated to reducing the environmental impact of its business activities through various initiatives such as efforts to eliminate use of lead and CFCs, and reducing waste emissions to zero. In fiscal 2002, the JAE Group successfully achieved a better than 99% recycling rate on a group-wide basis. Furthermore, we embarked on a group-wide business process reengineering (BPR) effort in order to bolster our reduce-and-reuse initiatives. As part of this effort, the JAE Group set the goal of reducing its paper consumption by 30% within a 2.5-year period. In just the first year of this initiative, the JAE Group successfully reduced its paper consumption by over 20%.

The JAE Group has also established global strategies to facilitate the green procurement efforts of our customers. We are also working closely with our suppliers and have begun to implement an industry-leading initiative to promote green procurement of connectors. Furthermore, the JAE Group has launched a company-wide initiative to improve its logistics efficiency through better packaging and delivery methods. These efforts are aimed at improving customer satisfaction and management efficiency, but also help to conserve the environment.

In the future, we hope to increase the level of collaboration between our group companies in an effort to enhance the environmental performance of our business units. Furthermore, we are committed to providing our customers with superior products and services, while contributing to the creation of a prosperous and sustainable society in close collaboration with all our stakeholders.

This year marks the 50th anniversary of the founding of our firm. It is my desire to see the companies of the JAE Group take this opportunity to work closely together in an effort to strike a harmonious balance between the management of our businesses and the implementation of environmental initiatives, while striving to become a model business enterprise that fulfills all its responsibilities as a good corporate citizen. This goal will require a renewed commitment and effort from each of our group companies.

The JAE Group 2003 Environmental Report summarizes the environmental initiatives carried out by Japan Aviation Electronics Industry, Ltd., and each of its domestic manufacturing subsidiaries during fiscal 2002. Our hope is that the activities described in this report will serve as a starting point for additional environmental initiatives by the JAE Group, and we welcome your frank comments regarding what we have achieved thus far and what we should strive for in the future.

August 2003

Masami Shinozaki
President
Japan Aviation Electronics Industry, Ltd.



Corporate Philosophy, Charter of Corporate Behavior, Environmental Charter

JAE Corporate Philosophy

In response to the boundless, changing needs of society, our duties are never-ending exploration and creation. Business enterprise must essentially be like the earth as it spins and revolves through the boundless universe, in the midst of incessant change. Exploration and creation are born in an environment of freedom and independence, and raised by a relentless quest and actions which vigorously transcend barriers and difficulties. Practicing this principle and further making contributions to society; this more than anything is the goal of our business, and the source of our development.

JAE Charter of Corporate Behavior

Established: 1997

Japan Aviation Electronics will abide by the following eight principles, keep a fair profit, and as a global enterprise will expend efforts toward long-term growth and development. At the same time, social contributions will be made to customers, employees, stakeholders and the local community in gratitude to all those who have a stake in this company.

1. Pursuit of customer value
2. Fair and open competition
3. Growth as a global enterprise
4. Continuous innovation in management
5. Promotion of technological innovation
6. Active performance with vigorous spirit and outstanding ability
7. High activity as a good corporate citizens
8. Assuring adherence to the Charter and thoroughness of preventive action

(a) Achieve harmony between business activities and the environment through production that is friendly to the environment, and strictly abide by the JAE Environmental Charter.

(b) Maintain far-reaching dialogue with the community, and strive for active and just disclosure of corporate data.

(c) Actively promote efforts that contribute to the community

8. Assuring adherence to the Charter and thoroughness of preventive action

* The above list has been abbreviated to include principle headings only, with the exception of Article 7, which shows details closely related to the environment.

JAE Environmental Charter

Established: June 1993 Revised: December 2002

Environmental Philosophy

As a good corporate citizen, the JAE Group pledges to respect the natural environment and contribute toward the creation of a prosperous society, by conducting its business in a manner that is friendly to the environment and full of vitality.

Action Policies

The JAE Group recognizes the significance of the 21st century as "the environmental century." Accordingly, management shall place critical emphasis on the challenge of contributing to socioeconomic prosperity that is in harmony with the environment, in order to aid in the creation of a sustainable society. The employees of the JAE Group shall abide by laws and regulations regarding environmental conservation and the protection of resources. Furthermore, each employee shall make it a priority to employ environmentally friendly practices in each and every aspect of the company's business, by abiding by the following action policies:

1. Establish environmental goals and targets, and execute plans for improvement. Furthermore, implement a framework for periodic reassessment of the goals, targets and improvement plans, in order to prevent pollution and provide a platform for continual improvement of the company's environmental management initiatives.
2. Practice full compliance with environmental laws, regulations and treaties, and establish a code of conduct as needed. Furthermore, strive to improve all efforts to conserve the environment.
3. Establish an environmental management organization and an administrative structure that is headed by the Executive Officer in Charge of Environmental Management. This organization shall be responsible for ensuring that corporate regulations for environmental management are always kept up-to-date.
4. Seek to reduce environmental impact, starting with the product design phase. Furthermore, seek to reduce the use of toxic substances and to conserve energy and resources, while reducing industrial waste and placing a priority on recycling.
5. Conduct periodic internal environmental audits, and strive to improve environmental management systems.
6. Disseminate the JAE Environmental Charter and ensure that all employees are familiar with the Charter, in order to raise the level of environmental concern among employees.
7. When necessary, disclose proprietary environmental technologies and information concerning environmental management.
8. Ensure that the JAE Environment Charter is made available to the public.



Introduction to the JAE Group Environmental Report 2003

This marks the fourth year of my service as the Executive Officer in Charge of Environmental Management. During the initial phase of my tenure, there was a pressing need to maintain the company's environmental management systems (EMS), which are now firmly entrenched within the company. The focus of my position has gradually shifted, and I am now concentrating on ensuring that environmental initiatives are implemented at each of our group companies.

In the previous fiscal year, we established a variety of environmental targets such as reducing the use of toxic substances, reducing output of industrial waste, and promoting conservation of resources. Most of these targets were successfully achieved in fiscal 2002 (April 2002 - March 2003). In the future, we will aggressively promote initiatives targeting further reductions in energy consumption, while laying the groundwork for unification of the environmental management systems that are in place at our manufacturing subsidiaries. The JAE Group 2003 Environmental Report primarily focuses on the environmental initiatives taken by our plants and subsidiaries in Japan. However, it is our hope is to broaden the horizons of future environmental reports to include environmental initiatives at our overseas manufacturing subsidiaries. All domestic and overseas manufacturing subsidiaries are scheduled to acquire ISO 14001 certification by September 2003.

August 2003



Tatsuya Sugiura
Executive Officer in
Charge of Environmental
Management

Editorial Policy

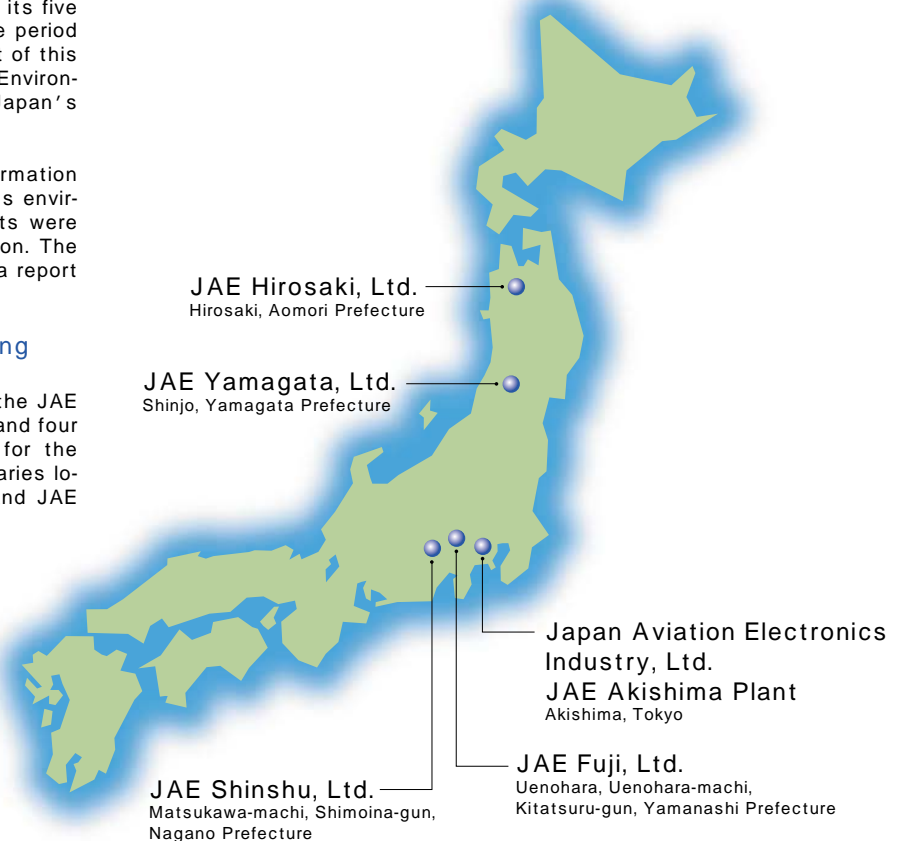
The JAE Group 2003 Environmental Report describes the environmental initiatives undertaken by Japan Aviation Electronics Industry, Ltd., and its five domestic manufacturing subsidiaries during the period from April 2002 to March 2003. The content of this report was produced with reference to the Environmental Reporting Guidelines published by Japan's Ministry of the Environment.

This year's report also features in-depth information regarding various aspects of the JAE Group's environmental initiatives. In addition, improvements were made to the environmental accounting section. The overall aim of this publication was to create a report that would be accessible to a wide audience.

Fiscal 2002 Environmental Accounting Standards

Scope: Domestic manufacturing facilities of the JAE Group, consisting of the JAE Akishima Plant and four domestic manufacturing subsidiaries. Data for the JAE Akishima Plant includes the two subsidiaries located on its premises, JAE Services, Ltd., and JAE Engineering, Ltd.

Period: April 1, 2002 - March 31, 2003

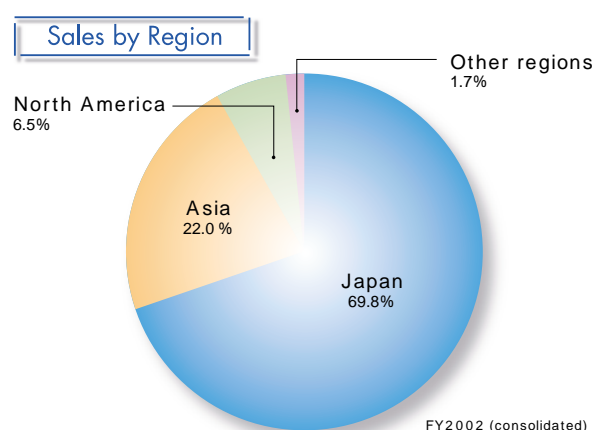
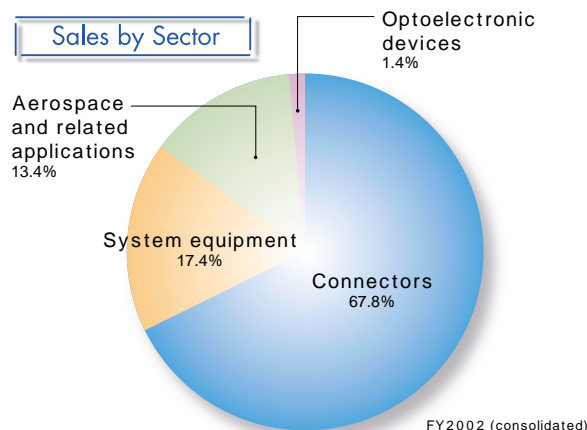
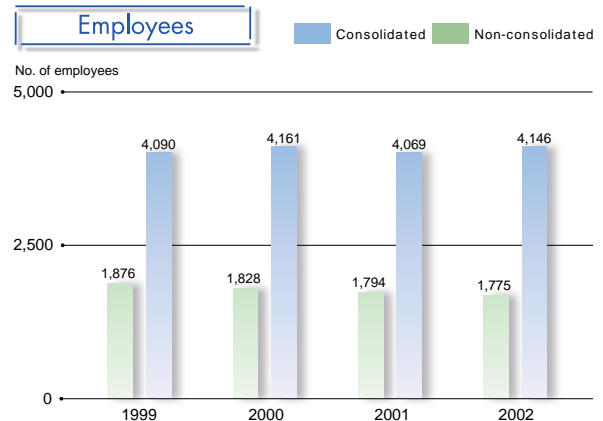
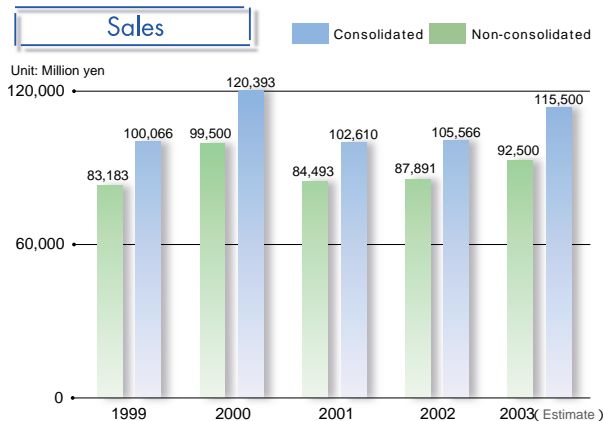


Corporate Data

Company Outline

Company name: Japan Aviation Electronics Industry, Ltd.
Established: August 20, 1953
Capital: ¥10.69 billion
Head Office: 21-2 Dogenzaka 1-chome, Shibuya-ku, Tokyo 150-0043, Japan
Tel: +81-3-3780-2711
Fax: +81-3-3780-2733
Akishima Plant: 1-1 Musashino 3-chome, Akishima, Tokyo 196-8555, Japan
Tel: +81-42-549-9112
Fax: +81-42-549-9559
No. of employees: 4,100 (consolidated) / 1,800 (non-consolidated) as of March 2003
Sales: ¥105.6 billion (consolidated) / ¥87.9 billion (non-consolidated) for year ended March 2003
Group companies: Japan, 9; overseas, 11 (as of March 2003)
Website: <http://www.jae.co.jp>

Consolidated subsidiaries: Japan, 6; overseas, 5



*Consolidated data includes overseas subsidiaries. Employee data excludes temporary and contract employees. All transfer employees were included based on their current place of employment.



Business Overview

Since its foundation, the JAE Group has supplied customers with a wide range of leading-edge products, including connectors, electronic components, aviation and aerospace equipment, optoelectronic devices and system equipment. The JAE Group has developed very sophisticated technologies, based on its corporate philosophy to "Explore, Create and Put into Practice."



Connectors

The JAE Group manufactures various internal connectors and external connectors used for system and device connectivity. These essential components are used in a wide range of applications including data communications equipment, industrial equipment and automobile electronics.



System Equipment

The JAE Group manufactures human-machine interface equipment, input devices and LCD-related products to satisfy the needs of modern system applications. These products are used in a wide range of market sectors, and have received high marks from customers.



Aerospace and Related Applications

Since its foundation, the JAE Group has manufactured inertial sensors and related products for the aviation and aerospace industries, which are renowned worldwide for their quality.



Optoelectronic Devices

The JAE Group manufactures optoelectronic devices for a wide range of applications requiring optical fiber technology. Entry into this field was made possible by the proprietary technology that was developed by the JAE Group over many years. Applications include optical communication equipment, optical measuring equipment, data equipment and industrial equipment.

ISO 14001 Certification

The JAE Group is committed to acquiring ISO 14001 certification as a means of promoting environmentally friendly initiatives both in Japan and on a global scale. JAE has already acquired certification for its ISO 14001-based environmental management systems at the Akishima Plant and all four of its domestic manufacturing subsidiaries. On July 11, 2003, the scope of JAE's ISO 14001 certification for the Akishima Plant was expanded to all employees and sales divisions of the Head Office.

Site	Certification Date	Certification Body	Certification No.
Japan Aviation Electronics Industry, Akishima Plant	August 7, 1998(Recertified: July 2003)	JQA	JQA - EM0198
JAE Hiroasaki	December 24, 1999(Recertified: December 2002)	JQA	JQA - EM0658
JAE Yamagata	November 12, 1999(Recertified: November 2002)	JQA	JQA - EM0588
JAE Fuji	February 10, 2000(Recertified: February 2003)	JQA	JQA - EM0713
JAE Shinshu	February 10, 2000(Recertified: February 2003)	JQA	JQA - EM0711

*JQA: Japan Quality Assurance Organization

Overseas ISO 14001 Certification

Efforts are also underway to acquire ISO 14001 certification at overseas subsidiaries by the end of the first half of fiscal 2003.

Site	Certification Date	Certification Body	Certification No.
JAE Taiwan, Ltd.	March 22, 2001	Bureau of Standards, Meteorology and Inspection, Ministry of Economic Affairs (Taiwan)	5E5E001 - 01
JAE Philippines, Inc.	January 30, 2003	TÜV ManagementService GmbH	12 104 15177 TMS
JAE Wuxi Co., Ltd.	October 29, 2002	DNFCertificationB.V., Netherlands	0126-2003-AE-RGC-RvA
JAE Wujiang Co., Ltd.	October 22, 2003	SGS Societe Generale de Surveillance SA	CH03/0920
JAE Oregon, Inc.	August 20, 2003	Underwriters Laboratories Inc. (UL)	A12142

Environmental Management Systems

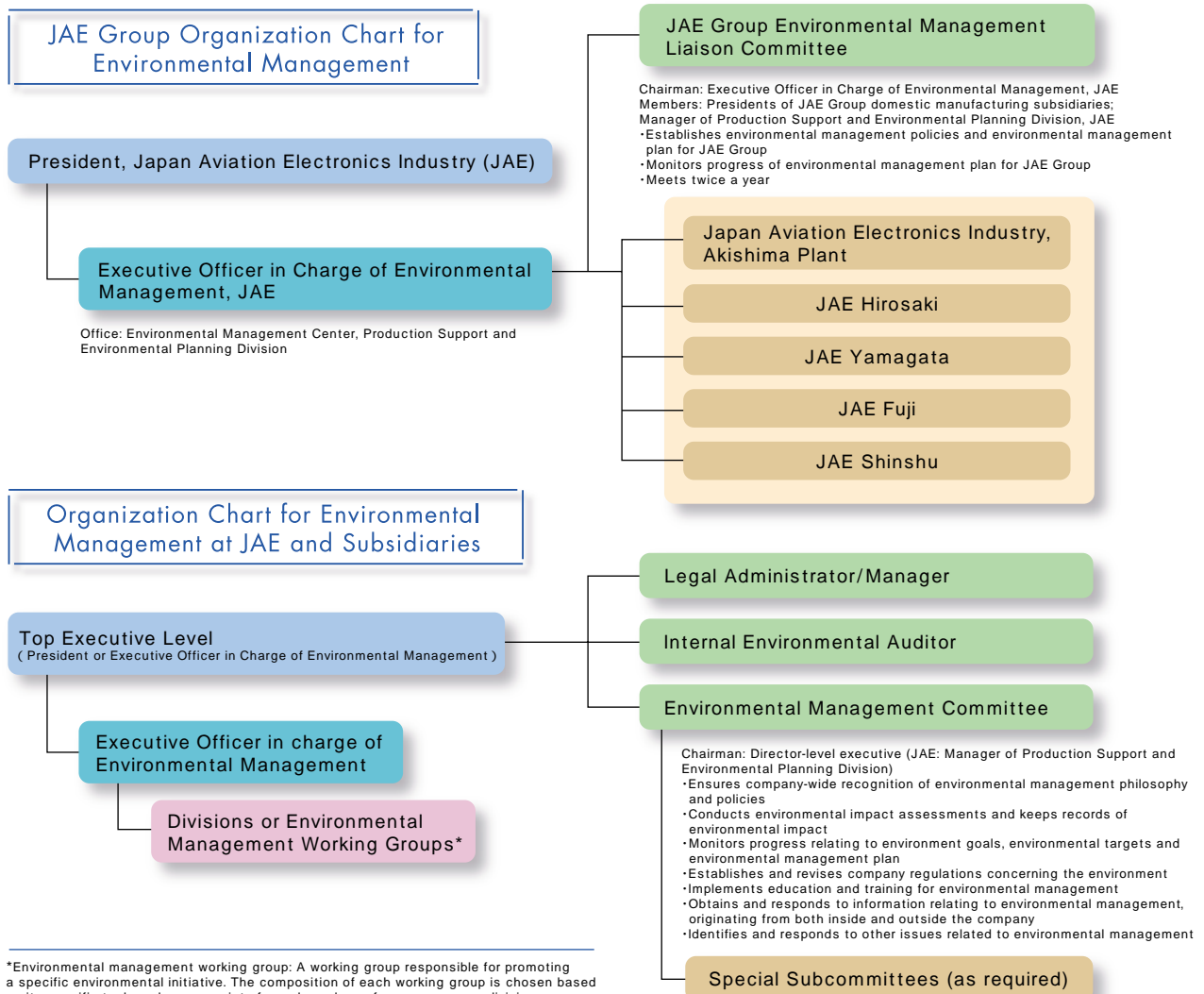
The JAE Group is committed to establishing environmental management systems based on the ISO 14001 standard, in order to promote environmental conservation initiatives as part of its day-to-day business. Environmental policies and goals are established based on the company's business activities and current social trends. The JAE Group then forms annual targets and action plans that outline the initiatives to be undertaken in the coming year. The results of these initiatives are later assessed and reviewed in order to improve the environmental management systems on a continual basis.

Framework for Environmental Management

Environmental management at JAE Group companies occurs under the direction of the JAE Group Environmental Management Liaison Committee and the Environmental Management Committees from each subsidiary. The JAE Group Environmental Management Liaison Committee is responsible for promoting environmental management initiatives for the entire JAE Group, and is chaired by the Executive Officer in Charge of Environmental Management. The members of the Committee are comprised of the Manager of the Production Support and Environmental Planning Division and the various presidents of the JAE Group's domestic manufacturing subsidiaries. The Committee is responsible for

establishing environmental management policies and the environmental management plan for the entire JAE Group.

Each JAE Group company has an Environmental Management Committee that is responsible for managing the company's environmental management system. The committees also monitor the progress of environmental management plans, set goals and targets, and identify the key areas for environmental management. The committees are in turn assisted by the work of special subcommittees that establish concrete targets and strategies relating to the key areas for environmental management.





Environmental Education and Environmental Audits

The JAE Group implements environmental education and training for its employees in order to improve the quality of its environmental initiatives. In addition to environmental education for general employees, the JAE Group provides education and training for employees who are engaged in environmentally sensitive activities. Other programs include specialized training for internal environmental auditors and subsidies for employees to gain work qualifications.

Environmental Education

General Employee Education

All employees of the JAE Group receive a standardized program of environmental education that includes periodic classes. Other education is conducted for new employees and newly promoted supervisors and team leaders. This education gives employees the opportunity to learn about environmental issues and the environmental initiatives of the JAE Group.



General employee education

Emergency Response Training

The JAE Group conducts emergency response training to ensure the safety of employees involved in environmentally sensitive activities. Joint emergency response training is made possible through inter-divisional collaboration and serves to effectively promote communication within the company.



Emergency response training for clean room spillage scenario

Environmental Audits

Environmental audits are conducted at the Akishima Plant and all four of the JAE Group's domestic manufacturing subsidiaries. The following types of environmental audits are used to monitor the status of environmental management initiatives at each company.

1. ISO 14001 inspections by a qualified certification body, including periodic inspections and reinspections
2. Internal environmental audits* by environmental management working groups, which are used to monitor the progress of environmental management initiatives

The table below summarizes the environmental audits performed in FY2002.

Fiscal 2002 Internal Audits

Audit Site	Strong Points	Other Findings		
		Nonconforming Items	Items to be Monitored	Corrective Action Request
Japan Aviation Electronics Industry, Akishima Plant	1 incidence	1 incidence	15 incidence	30 incidence
JAE Hirosaki	0 incidence	0 incidence	4 incidence	12 incidence
JAE Yamagata	0 incidence	2 incidence	20 incidence	0 incidence
JAE Fuji	2 incidence	1 incidence	6 incidence	2 incidence
JAE Shinshu	3 incidence	0 incidence	4 incidence	4 incidence

ISO 14001 Inspections for Fiscal 2002

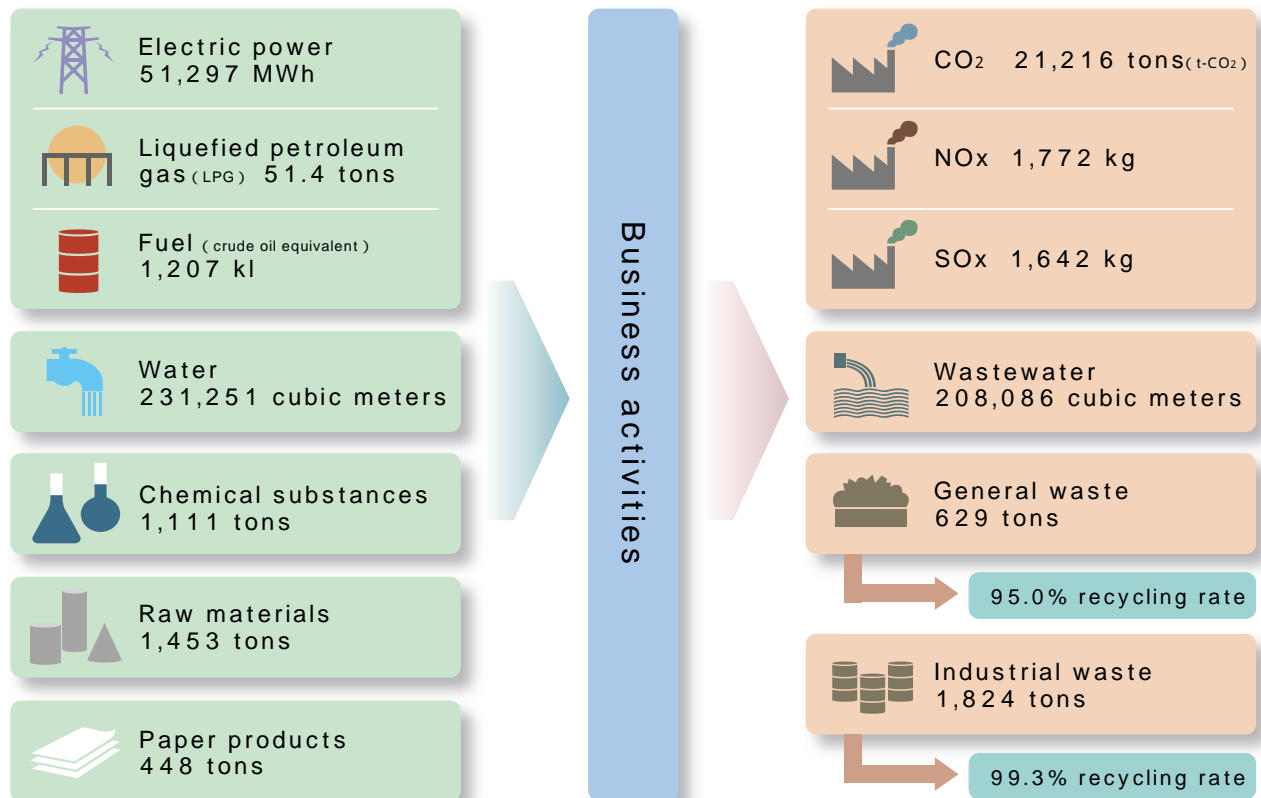
Inspection Site	Strong Points	Other Findings		
		Category A	Category B	Areas for Improvement
Japan Aviation Electronics Industry, Akishima Plant	4 incidence	0 incidence	0 incidence	8 incidence
JAE Hirosaki	3 incidence	0 incidence	0 incidence	11 incidence
JAE Yamagata	2 incidence	0 incidence	0 incidence	11 incidence
JAE Fuji	2 incidence	0 incidence	0 incidence	9 incidence
JAE Shinshu	2 incidence	0 incidence	0 incidence	5 incidence

Remedial actions have been taken for all audit findings.

*Internal environmental audit: A self-audit used in determining whether the company's environmental management system satisfies in-house judgment criteria.

Environmental Impact

The data below summarizes the resources consumed by the JAE Group's Akishima Plant and its four domestic manufacturing subsidiaries, and their environmental impact. The data for fiscal 2002 has been expanded to include the consumption of plastic containers and paper packaging products.



Consumption

Electric power ▶ Power purchased from power utilities for plant operations
 Liquefied petroleum gas (LPG) ▶ LPG used for energy
 Fuel ▶ Heavy oils and kerosene used for energy
 Water ▶ Running water and groundwater
 Chemical substances ▶ Chemical substances under regulatory control including designated control substances, poisonous and deleterious substances, hazardous substances, organic solvents and specialty gases
 Raw materials ▶ Metals and plastics used as raw materials for production
 Paper products ▶ Copy paper, paper packaging, and cardboard used at plants

Output

CO₂ ▶ Carbon dioxide generated from electric power, gas and fuel use
 NO_x ▶ Nitrogen oxide generated from gas and fuel use
 SO_x ▶ Sulfur oxide generated from fuel use
 Wastewater ▶ Industrial and household wastewater from plants
 General waste ▶ Non-industrial waste generated from business activities
 Industrial waste ▶ Industrial waste generated from business activities, as defined by Japan's Waste Management and Public Cleaning Law



Environmental Design and Initiatives to Reduce Hazardous Substances

The JAE Group is committed to reducing the environment impact of its products starting from the product design phase, as mandated by the JAE Environmental Charter. Furthermore, the JAE Group has taken aggressive steps to reduce the environmental impact of its products in response to increasing social concerns about the use of hazardous substances.

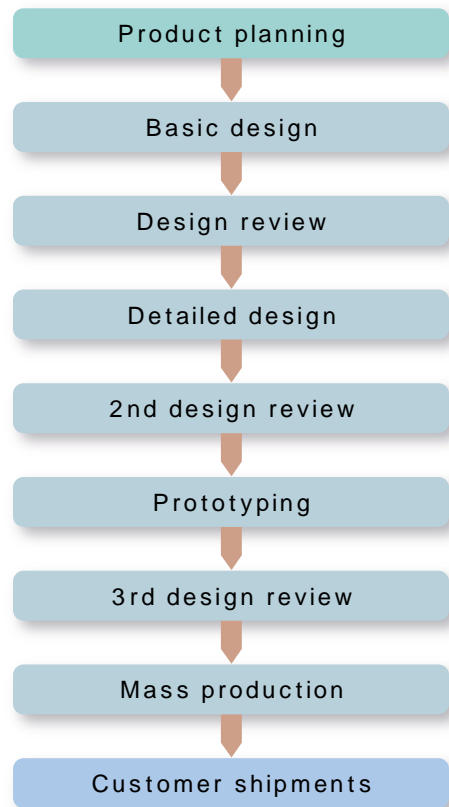
Product Assessments

Product assessments are carried out during the design review phases of the product development process. The product assessments are designed to minimize the environmental impact by designing products from the standpoint of energy conservation, recyclability and user safety. All phases of the product life cycle are assessed, starting from the production and marketing phases, and continuing through to the product use and product disposal phases.

Elimination of Lead and Other Hazardous Substances

The JAE Group has accelerated its efforts to eliminate the use of lead and other hazardous substances in its products, following the European Union's adoption of the WEEE¹ and RoHS² Directives in February 2003. All connector products developed since fiscal 2001 are lead-free, and the use of lead is being systematically phased out in other products according to customer demand. The JAE Group intends to completely phase out the use of lead in all of its products by fiscal 2004.

The graph below summarizes the JAE Group's roadmap for eliminating the use of chemical substances designated by the EU's RoHS Directive. The JAE Group is also systematically phasing out hexavalent chromium in its products according to customer demand, and will completely phase out the use of hexavalent chromium by December 2005.



Roadmap for Elimination of Hazardous Substances Designated by RoHS Directive

Connectors and System Equipment

Substance	2002	2003	2004	2005	2006
Lead (used in plating and soldering)	Systematic reduction			Complete disuse December 2004	
Hexavalent chromium	Systematic reduction				Complete disuse December 2005
Mercury, PBBs, PBDEs: Not used in accordance with ban on usage Cadmium: Banned except for designated imported plating products					

¹ WEEE Directive: waste electrical and electronic equipment
² RoHS Directive: restriction on the use of certain hazardous substances in electrical and electronic equipment

Energy Conservation Initiatives

The JAE Akishima Plant conducted a review of its energy conservation initiatives in fiscal 2002, which led to the decision to install power monitoring equipment as a means of further reducing energy consumption at the plant. This technology enables machinery to be operated more efficiently from an energy consumption standpoint, and will eventually be adopted by other JAE Group companies. The JAE Group is also involved in initiatives to recycle water used in plating processes and boilers.

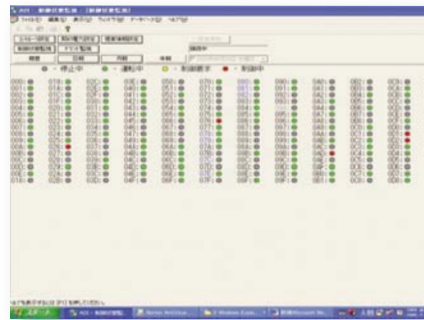
Energy Savings from AD Controller Use

In July 2002, the JAE Akishima Plant installed AD controllers to manage the operation of air-conditioning units used at the plant. The AD controllers force each of the plant's 186 air-conditioning units to randomly shut down for a period of three minutes for every 30 minutes of operation, in order to reduce both the working power consumption and peak power contract levels.

During the forced shutdown periods, the air-conditioning units continue to blow air so that room temperatures remain constant and the comfort of the plant's employees is not compromised. This initiative has proven to be a very effective means for reducing energy consumption at the JAE Akishima Plant.



AD controller unit



Control monitoring screen

Energy Savings from AD Controller Use

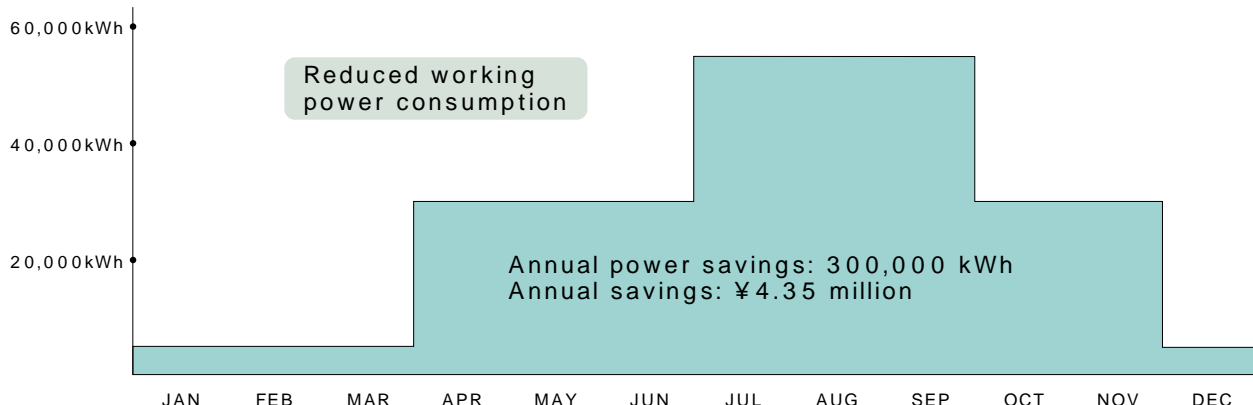
Forced shutdown of A/C units

- Installation of AD controllers to force three-minute shutdown for every 30 minutes of air-conditioning operation (186 units)
- Wireless control of all AD controllers throughout plant
- Centralized control using existing wireless technology

- Reduces energy consumption
- Controls peak power (contract levels)

Reduced from 6,700 kW to 6,400 kW
Annual savings: ¥5.58 million

Monthly power consumption





Working on Power Consumption

The use of AD controllers was forecasted to result in annual energy savings of 300,000 kWh at the JAE Akishima Plant. However, due to production increases at the plant, the actual energy savings will exceed the forecast based on data compiled as of March 2003.

Wireless Control

The AD controllers used between facilities are centrally controlled using existing wireless technology, which has kept construction costs to a minimum.

Peak Power Contract Levels

The use of AD controllers enabled the JAE Akishima Plant to reduce its peak power contract levels by 300 kW, for an annual savings of ¥5.58 million.



Transmitter antenna



Receiver antenna

Water Conservation

The JAE Group actively promotes initiatives to collect and reuse water used in its manufacturing processes. At the JAE Shinshu plant, boiler blow down is reused as cooling water in air-conditioning units and for toilet running water. At the JAE Akishima Plant, approximately 430 cubic meters of water is used daily for plating processes used in connector production. The wastewater from these processes is treated using softening resins, which enables the plant to recycle approximately 400 cubic meters of water per day.



Ion exchange tank used for wastewater treatment (JAE Akishima Plant)

Green Procurement

The JAE Group promotes initiatives to procure and supply environmentally friendly products. In February 2002, the JAE Akishima Plant established its own subcommittee to promote green procurement initiatives, which led to the publication of the JAE Green Procurement Guidelines in May 2002. However, rapid changes in the regulations that govern the use of environmentally harmful substances prompted the JAE Group to later form a special working group whose purpose was to establish in-house standards concerning the use of chemical substances. In October 2002, a revised version of the JAE Green Procurement Guidelines that incorporates the new in-house standards was published.

In November 2002, the JAE Akishima Plant held its first green procurement seminar with the participation of 90 of its major suppliers. This seminar was followed by other green procurement seminars that were hosted by the JAE Group's domestic manufacturing subsidiaries and overseas subsidiaries. As a green supplier, the JAE Group has been responsive to the requests of its customers to disclose information about the use of environmentally harmful substances, and to establish environmental management systems. The JAE Group has been certified as a green supplier by Sony Corporation and NEC Corporation.



Green procurement seminar at domestic subsidiary



Green procurement seminar hosted by JAE Taiwan

History of Green Procurement Initiatives

	Green Procurement Milestones	Audits and Certification as Green Supplier
April 2002	Published JAE Green Procurement Guidelines	
October 2002	Published revised JAE Green Procurement Guidelines	
November 2002	Green procurement seminar hosted by JAE Akishima Plant	
December 2002		Sony audit passed by JAE Akishima Plant
January 2003	Green procurement seminars hosted by JAE Hiroasaki and JAE Yamagata	
February 2003	Green procurement seminars hosted by JAE Fuji and JAE Shinshu	Certified by NEC as green supplier; Sony audit passed by JAE Hiroasaki and JAE Yamagata
March 2003	Green procurement seminars hosted by JAE Taiwan and JAE Philippines; green procurement seminar held for presidents of JAE Group overseas subsidiaries	Sony audit passed by JAE Taiwan



Surveys and Declarations by Suppliers

The JAE Green Procurement Guidelines asks suppliers to complete various forms in order to assess their environmental initiatives. The JAE Group then reviews the completed forms as the basis for establishing supplier

agreements with companies who satisfy the requirements contained in the JAE Green Procurement Guidelines.

Future Green Procurement Initiatives

The information contained in the assessment forms collected from suppliers has proven to be invaluable in terms of encouraging a dialogue between the JAE Group and its suppliers. Future green procurement initiatives will focus on the following areas:

- Conducting detailed surveys of environmentally harmful substances used by suppliers

- Establishing a database of chemical substances
- Visit suppliers in order to observe the environmental initiatives take by suppliers and providing suggestions for improvement.

Approach to Green Procurement

The green procurement seminars held by JAE Group companies are designed to communicate the JAE Group's basic approach to green procurement. These seminars place strong emphasis on gaining the cooperation of suppliers so that they reduce their reliance on environmentally harmful substances. Suppliers are also made to understand the

environmental impact of each product phase from production to product use, and are encouraged to adopt environmentally friendly production methods. A sample of the presentation material is included below.

What is green procurement?

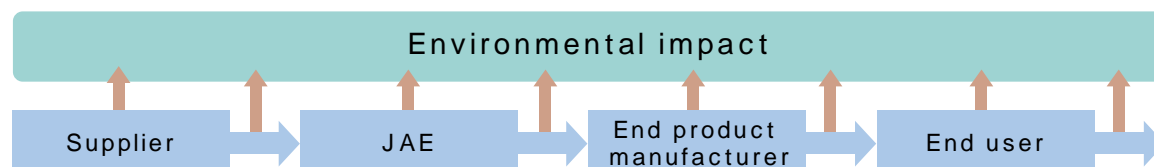
- Suppliers that display a high level of environmental awareness
- Manufacturing processes that cause less environmental impact
- Materials and parts that reduce the environmental impact

- 1) A sustained collaborative effort based on the assumption of long term action
- 2) Environmentally friendly suppliers = Environmentally friendly products
Assessment of suppliers based on environmental standards (starting from FY2003)

Approach

To minimize the environmental impact at each phase, starting from the product design and product development phases, and continuing through to the manufacturing, distribution, product use, product disposal, and collection phases.

End product manufacturers do not purchase from parts manufacturers who do not incorporate environmental management practices, nor do they allow the use of environmentally harmful substances.



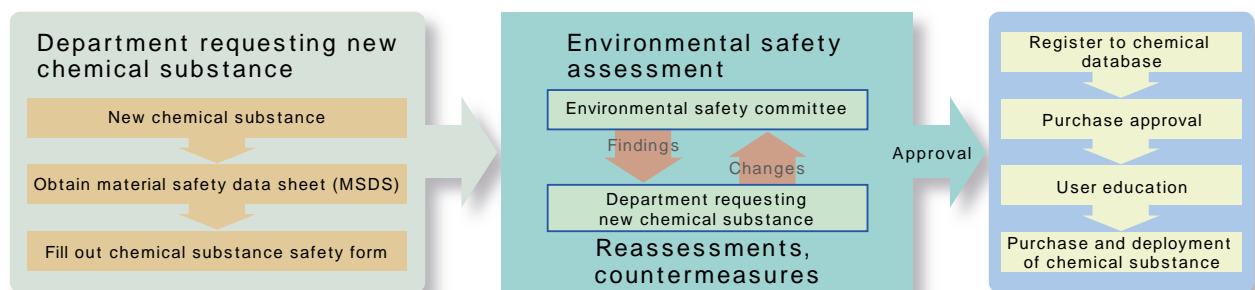
Chemical Substance Management

The JAE Group conducts assessments prior to the adoption of any new chemical substance, or when considering a new application for an existing chemical substance. As part of this process, chemical substances are evaluated to determine their safety. If the substance or application is approved for use, the chemical substance is adopted for carefully managed use.

Flowchart for Chemical Substance Management

The flowchart below describes the assessment process conducted prior to the adoption of a new chemical substance. Before any new chemical substance is purchased, the department requesting the chemical

substance must fill out a chemical substance safety form. Before approval is granted, each request is subjected to a rigorous assessment process that includes an internal audit.



Pollutant Release and Transfer Register (PRTR)

During fiscal 2002, only two of the JAE Group's five domestic manufacturing plants used chemical substances that were designated under Japan's Pollutant Release and Transfer Register (PRTR) Law, which requires businesses to report the use of any designated substance that exceeds the specified reporting amount. Of the two plants that used PRTR-designated substances

in fiscal 2002, only one plant used more than the designated reporting amount.

Starting from the next fiscal year, the reporting amount for PRTR-designated substances will become one ton or above. The number of PRTR-registered substances for the JAE Group will increase by one chemical substance used at two plants.

PRTR Reporting by JAE Group

	Total Volume	Volume Released into Air	Volume Released into Water	Volume of Waste Transferred	Volume Used in Product
Total volume of PRTR-designated substances	8.1	0.001	0.002	1.2	6.8

Units: Tons

PRTR-Designated Substances for FY2002

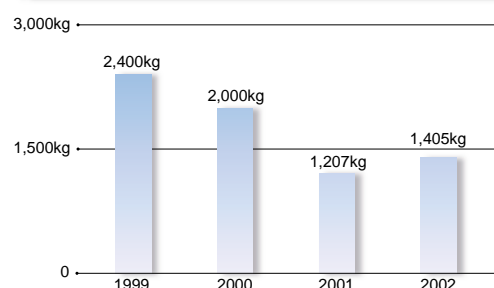
Nickel: Type 1 designated chemical substance (Reporting amount: 5 tons or more)

Nickel compounds: Special type 1 designated chemical substance (Reporting amount: 0.5 tons or more)

Prevention of Ozone Depletion

In 1993, the JAE Group eliminated its use of trichloroethylene and CFCs after these substances were banned from production following the ratification of the Montreal Accord. Currently, the JAE Group is working to install equipment in order to eliminate the use of hydrofluorocarbons (HFCs), which are approved for use as an alternative to CFCs but have been indicated as contributing to ozone layer depletion. The use of HFCs is being replaced with cleaning agents that cause less environmental impact.

HFC Consumption at JAE Akishima Plant





Waste Reduction and Regulatory Compliance

Japan continues to face a severe shortage of available landfill disposal space, which has prompted the JAE Group to adopt a zero emissions policy of producing zero landfill waste.

Zero Emissions Initiative

The JAE Group began its zero emissions initiative in fiscal 2000 when it formed a special project team whose goal was to achieve at least 95% recycling of all industrial waste from JAE Group companies. This target was successfully achieved during fiscal 2001. In the

following fiscal year, the JAE Group disbanded its special project team in favor of a strategy in which zero emissions initiatives are promoted at each manufacturing plant. Since then, the JAE Group has successfully achieved a 99% recycling rate for all industrial waste.

Status of Regulatory Compliance

Environmental Regulations and Compliance

The JAE Group is committed to a policy of regulatory compliance in order to maintain its standing as a good corporate citizen. In addition to constantly monitoring changes in environmental laws and regulations, the JAE Group has established in-house standards for air and

water pollution that are stricter than the regulatory levels. Routine monitoring and testing is also carried out in order to ensure compliance with these in-house standards.

Comparison of In-house Standards and Regulatory Levels

Law/Regulation	In-house Standard	Compliance (No. of incidences meeting in-house standards / Total number of measurements taken = Rate of compliance)
Air Pollution Control Law	Not to exceed 80% of regulatory maximum levels (except for separate in-house standard for pH levels)	100%
Water Pollution Control Law		100%
National Effluent Standards		96%
Municipal ordinances		98%

Compliance with In-house Environmental Standards

During FY2002, two incidences occurred in which in-house standards for wastewater were exceeded. These incidences were immediately followed by internal investi-

gations and remedial action. Measures were also undertaken to prevent similar incidents from occurring again.

Date	Site	Description
November 21, 2002	JAE Akishima Plant	Volume of sulfuric acid in gas emitted from waste gas cleaning unit failed to meet in-house standard. Investigation was conducted and remedial action was taken.
January 27, 2003	JAE Akishima Plant	Level of biological oxygen demand (BODs) and suspended solids (SS) from cafeteria wastewater exceeded in-house standards. Remedial action was taken to improve the wastewater treatment.

In the five-year period ending in fiscal 2002, the JAE Group has not been involved in any litigation, nor did it receive a single fine or complaint related to an environmental issue.

Summary of Fiscal 2002 Environmental Initiatives

Environmental initiatives for fiscal 2002 were chosen by first examining the environmental impact of the JAE Group's business activities during the previous fiscal year. Items with a strong environmental impact were selected for improvement. Goals and targets were then established as the basis for implementing environmental initiatives.

For fiscal 2002, the JAE Group's environmental initiatives were centered on the themes of energy conservation, zero emissions and resource conservation. Specific goals and targets were established for each domestic plant and manufacturing subsidiary. The majority of these goals and targets were met, with the exception of those that were not met due to increases in production.

Major Targets for Environmental Initiatives

Site	No. of Targets	Target Achievement
JAE Akishima Plant	5	All targets achieved
JAE Yamagata	8	6 targets achieved; 1 target nearly achieved; 1 target missed by wide margin
JAE Fuji	3	All targets achieved
JAE Shinshu	7	All targets achieved
JAE Shinshu	5	2 targets achieved; 3 targets nearly achieved

Environmental Accounting

The JAE Group has adopted environmental accounting practices in order to improve its analysis of the relationship between the costs of environmental initiatives and their benefits. The table below summarizes the investments and costs for environmental initiatives and the gains on sales of reusable materials during fiscal 2002.

Category	Description	Amount (Unit: Thousand yen)
FY2002 investments	Investments for equipment used for lead-free and chromium-free initiatives, equipment for plating wastewater treatment, etc.	112,605
FY2002 R&D costs	R&D labor cost incurred for lead-free and chromium-free initiatives, etc.	44,301
FY2002 gains on sales of reusable materials, etc.	Sales of scrap metal	152,388

■ Fiscal 2002 Environmental Accounting Standards

Scope: Domestic manufacturing facilities of the JAE Group, consisting of the JAE Akishima Plant and four domestic manufacturing subsidiaries. Data for the JAE Akishima Plant includes the two subsidiaries located on its premises, JAE Services, Ltd. and JAE Engineering, Ltd.

Period: April 1, 2002 - March 31, 2003

Unit: Thousand yen (rounded to the nearest thousand yen)

Communication with the Local Community and Contributions to Society



JAE Environmental Initiatives

The JAE Group maintains an active dialogue with the community and participates in social activities aimed at enhancing the environment. In addition, the JAE Group is committed to fulfilling its mandate as a good corporate citizen, as set forth in the JAE Charter of Corporate Behavior.

Ecology Fair November 2002

Employees of JAE Yamagata collected unused goods from local households and held an ecology fair in which the goods were sold at discounted prices. The auction and sale raised 150,000 yen in proceeds, which were partly donated to a childcare facility in the community.



Community Clean-up Day April 2002

Every April, employees of JAE Hirosaki and their families gather to help clean up the areas that surround the JAE Hirosaki plant. With the aid of good weather, 20 persons gathered to participate in this year's clean-up day and approximately five bags of garbage were collected in the space of just one hour.



Kenaf Planting by JAE Yamagata

In June 2002, employees of JAE Yamagata began an experiment in which they planted kenaf plants within the plant grounds. Kenaf plants had been rarely planted in the Tohoku region. However, through a process of trial and error, the employees successfully grew the kenaf plants through the fall of 2002, when the plants reached a height of four meters. The kenaf plants were then harvested and processed into 100% kenaf paper. This paper was used to print a customer brochure pamphlet detailing the company's environmental policies. In addition, business cards were printed using the 100% kenaf paper, which helped to promote awareness of kenaf paper as an ecologically friendly resource.



Tenryu River Environmental Picnic and Cleanup Day June 2002

In June 2002, employees of JAE Shinshu and their families participated in the Tenryu River Environmental Picnic, which promotes the goal of returning Tenryu River to a clean, swimmable river as a way of contributing to the creation of a sustainable society. This event involved a voluntary cleanup of the riverbeds along the Tenryu River system, a major river system that originates at Suwa Lake in Nagano Prefecture and flows southward into the Pacific Ocean via estuaries at the port city of Hamamatsu in Shizuoka Prefecture. The 2002 event drew the participation of 4,000 individuals and 88 firms operating in the Tenryu river basin.



History of Environmental Initiatives

1961	Finished construction of JAE Akishima Plant in scenic Akishima district of Tokyo (April) Installed plating wastewater treatment system at JAE Akishima Plant
1970	Established headquarters for pollution countermeasures at JAE Completed updates to plating wastewater treatment system
1973	Installed comprehensive sewage treatment system at JAE Akishima Plant
1976	Established Safety and Environmental Control Center Established Safety and Environment Evaluation Committee Implemented water conservation measures for washing water at JAE Akishima Plant, in accordance with groundwater pumping regulations
1983	Published list of chemical substances used within Akishima district
1984	Began releasing plating wastewater and household wastewater at JAE Akishima Plant, following completion of Akishima district sewer system
1989	Established CFC Countermeasures Committee
1990	Established Environmental Management Division Established in-house regulations for Environmental Management Committee Established in-house regulations for air pollution management Established in-house regulations for pollution prevention
1991	Started operation of new plating wastewater treatment system Finished construction of JAE Shinshu plant Began paper conservation and paper recycling initiatives Established JAE Group Environmental Management Liaison Committee Began group-wide initiatives to use recycled paper
1993	Published JAE Environmental Charter Published JAE Action Plan for Environmental Management Began environmental audit program
1995	Established product assessment guidelines Began management of toxic substances, deleterious substances and designated chemical substances Established Energy Conservation subcommittee
1996	Established ISO 14001 certification preparation committee
1998	Acquired ISO 14001 certification for JAE Akishima Plant
1999	Began lead-free initiatives
2000	Acquired ISO 14001 certification for four domestic manufacturing subsidiaries Began initiatives to reduce use of chemical substances that contribute to global warming Merged Environmental Management Division into Production Support and Environmental Planning Division Began zero emissions initiative
2001	Began green purchasing and green procurement initiatives
2002	Began initiatives to reduce paper consumption

Postscript The editorial team who worked on the JAE Group 2003 Environmental Report would like to express their appreciation to you for taking the time to read this report. Every effort has been made to provide detailed information regarding the environmental initiatives taken by the manufacturing subsidiaries of the JAE Group, and to document the improved environmental accounting practices that have been adopted by the JAE Group. The planning and editorial work that went into the publication of this report has left the editorial staff with a renewed awareness of the importance of environmental initiatives in the day-to-day activities of the JAE Group. We welcome your frank comments regarding this report, and promise to continue to do our best to document the environmental initiatives of the JAE Group in future reports.



JAE Group 2003 Environmental Report

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Published: December 2003

