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**2002 Report**

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**of the Environmental**

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**Activities of JAE Group**

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**From April 2001 to March 2002**

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## Greetings from the President

Mankind was able to achieve tremendous scientific and technological progress in the 20th century.

However, we realized that mass production of products and waste material had an impact that extended beyond pollution and was creating problems on a global scale. These problems included destruction of the ozone layer by the use of chlorofluorocarbon, destruction of forests by acid rain and deforestation, and global warming caused by greenhouse effect gasses.

We therefore recognized that the 21st century would have to be the century of the environment. In order that that we might leave the irreplaceable earth to future generations, all inhabitants of the earth must seriously tackle these problems together and must undertake aggressive countermeasures.

Our company has resolved that a significant policy in our business will be not only to find solutions for pollution, but also to be involved in projects to preserve the global environment. We have already totally abolished the use of chlorofluorocarbon, and in February of 2000 all production companies of the Japan Aviation Electronics Group in Japan acquired environmental ISO14001 certification. By the end of 2001, we had achieved the goal of the zero emissions campaign.

Currently we are working toward a recycling-oriented society, and are engaged in environmental campaigns including lead-free production, elimination of global warming gasses, and green procurement.

Previously we have informed you of our environmental activities in a pamphlet called "Environmental Activities of JAE," but we have decided to publish an environmental report for the JAE Group. We value your esteemed opinions in engaging in our company's future environmental activities.

June 2002

President **Masami Shinozaki**



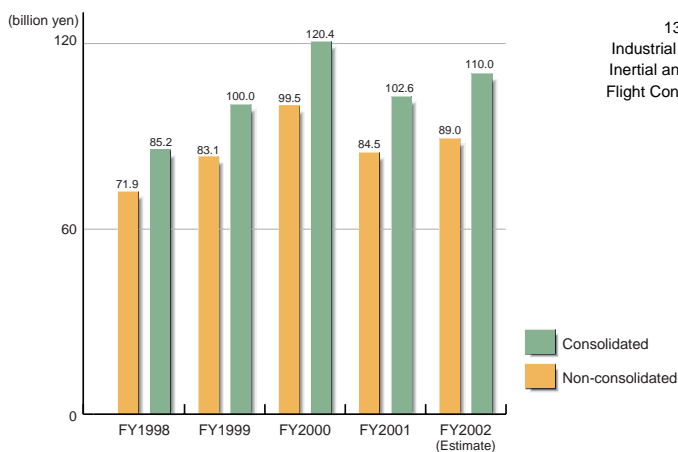


# Overview of Company

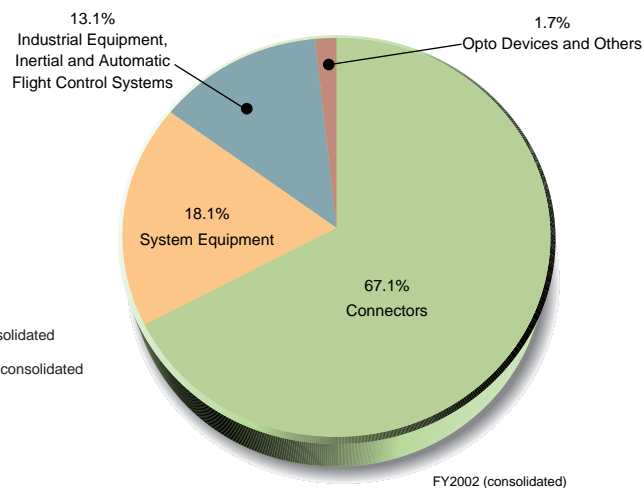
## Overview of Company

Company Name	Japan Aviation Electronics Industry, Limited
Established	August 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-shi, Tokyo 196-8555, Japan Tel +81-42-549-9112 Fax +81-42-549-9559
Number of Employees	4,000 (consolidated)/1,800 (non-consolidated) (March 2002)
Sales	¥102.6 billion (consolidated)/¥84.5 billion (non-consolidate) (Year ended March 31, 2002)
Business Sectors	Manufacture and sales of connectors, system equipment, opto devices, aerospace and related applications
JAE Group	domestic 8 companies, overseas 10 companies
Web Site	<a href="http://www.jae.co.jp">http://www.jae.co.jp</a>

Growth in sales



Sales by products



\* Consolidated affiliates: 6 domestic companies, 5 overseas companies

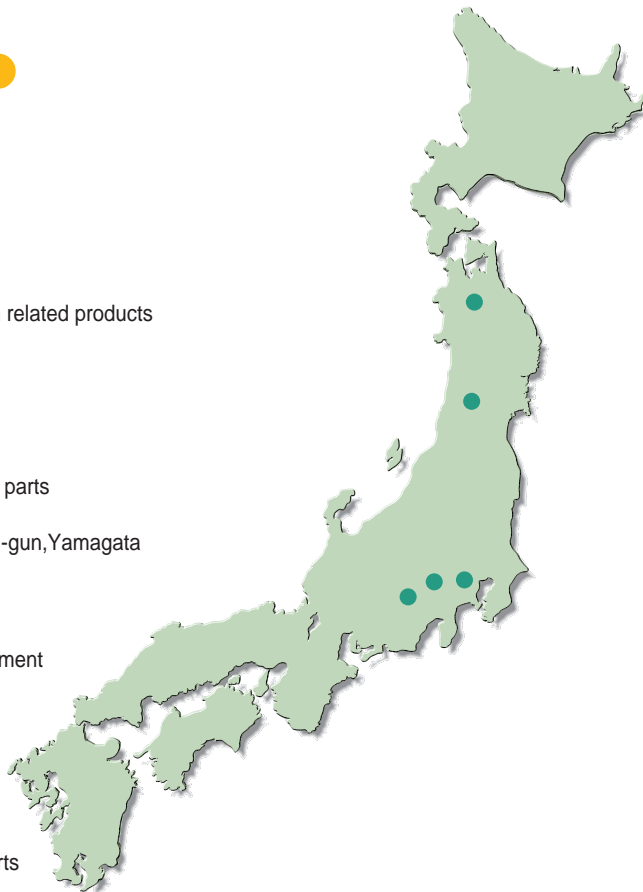


## Coverage of the 2002 Environmental Activity Report

This brochure reports the activities of the JAE Akishima Plant and four domestic manufacturing affiliates for FY2001 (from April 2001 to March 2002).

### Domestic manufacturing centers of JAE Group

- JAE Akishima Plant: Akishima-shi, Tokyo
- JAE Hirosaki, Ltd.: Hirosaki-shi, Aomori  
 Capital: ¥450 million  
 Number of Employees: 505  
 Sales: ¥13.020 billion  
 Manufacture of precision electronic parts and system related products
- JAE Yamagata, Ltd.: Shinjo-shi, Yamagata  
 Capital: ¥400 million  
 Number of Employees: 330  
 Sales: ¥8.140 billion  
 Production of precision electronic parts and stamped parts
- JAE Fuji, Ltd.: Uenohara, Uenohara-machi, Kitatsuru-gun, Yamagata  
 Capital: ¥300 million  
 Number of Employees: 118  
 Sales: ¥2.512 billion  
 Design and production of molds and assembly equipment
- JAE Shinshu, Ltd.: Matsukawa-machi, Shimoina-gun, Nagano  
 Capital: ¥450 million  
 Number of Employees: 106  
 Sales: ¥3.150 billion  
 Production of aeronautical electronic devices and parts



## Acquisition of ISO14001 Certification

As we move toward becoming a global enterprise, in order to be recognized as an ecologically minded company, not only within Japan but also by people in all countries of the world, our Akishima Plant, (JAE Taiwan Inc. also acquired this certification in March 2000) and four manufacturing affiliates acquired the ISO14001 Environmental Management System Certification. We will further promote environmentally favorable activities for acquiring the certificate for our head office, and for comprehensive site accreditation of the entire group (multi-site).

Certified site	Date certified	Certification No.
Akishima Plant of JAE	Aug. 7, 1998 (renewed Jul. 6, 2001)	JQA-EMO198
JAE Hirosaki	Dec. 24, 1999	JQA-EMO658
JAE Yamagata	Nov. 12, 1999	JQA-EMO588
JAE Fuji	Feb. 10, 2000	JQA-EMO713
JAE Shinshu	Feb. 10, 2000	JQA-EMO771

\*All the sites were certified by the Japan Quality Assurance Association (JQA).

Akishima Plant, (JAE Taiwan Inc. also acquired this certification in March 2000)



# Corporate Philosophy and Environment 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 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.

### Environmental Charter of JAE

(established in June 1993)

**Environmental concept** —————  
JAE, as a member of society, respects the natural environment, and through environmentally friendly industrial activity, contributes to the achievement of an abundant society.

**Policies for activities** —————  
JAE contributes to building an affluent economic society in harmony with the environment by making it a critical concern of management. Employees adhere to the laws and regulations related to the preservation of the environment and protection of natural resources. Over the full range of corporate activity, each individual acts with concern for the environment as a top priority as follows:

1. Set environmental goals and objectives. Execute a plan to improve them. Provide a framework for periodical reevaluation. Endeavor to prevent environmental pollution before it happens, and continuously improve environment management activities.
2. Strictly observe laws and regulations as well as agreements related to the environment. As needed, make a personal standard of conduct and become involved in improving environmental preservation.
3. Establish an environmental management organization headed by the executive officer in charge of the environment management as well as an administrative system to always maintain up-to-date environmental regulations.
4. Reduce strain on the environment beginning with the product design phase. Reduce the usage of harmful chemical substance, conserve natural resources and energy, reduce waste, and give priority to recycling.
5. Conduct a periodic internal environmental audit\*, and seek to improve the environment management system.
6. Put these environmental directives in writing, and thoroughly inform all employees of them, and promote environmental awareness.
7. As needed, publicly disclose existing technology and environment management information to improve the environment.
8. This environmental charter may be released outside the company if so requested.

### JAE Charter of Corporate Behavior

(Established in July 1997)

Japan Aviation Electronics will abide by the following eight principles, keep a fair profit, and as a global enterprise will extend efforts toward long-term growth and development. At the same time, social contributions will be made to customers, employees, stake holder 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 activities as good corporate citizens
  - i. For the harmony between business activities and nature through environmentally-conscious manufacturing, the "JAE Environmental Charter" shall be respected.
  - ii. Communication shall be conducted on a broad scale with the society, forthrightly conveying corporate information.
  - iii. Activities that contribute to the community will be promoted.
8. Assuring adherence to the Charter and thoroughness of preventive action

\*Only the title of each article is cited above except for Article 7.

\*Internal environmental audit: In-house audit for verifying whether or not our Environment Management System conforms to the criteria given in our regulations.





# Environmental Management System and Organization of the Promotional System

## Organizational System

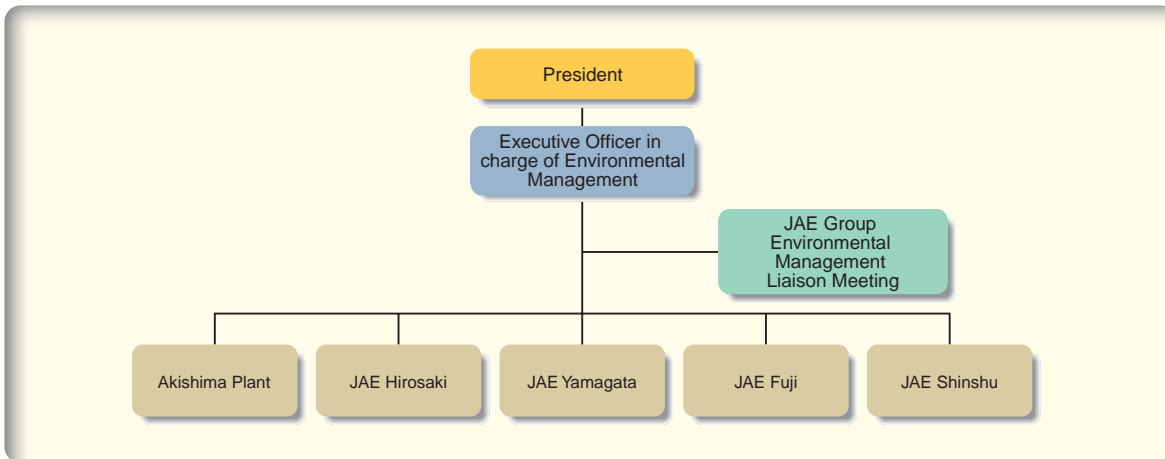
In order to include environmental management activities in everyday business operations, there must participation starting with management at the top and moving down to all personnel in the development of activities.

### ● Promotional System for the JAE Group

The director in charge of environmental management is the chairman of the JAE Group Environment Management Coordination Conference. He assembles the conference to work toward mutually encouraging environmental management activities, and improving environmental technology.

Moreover, with regard to important issues common for the whole group, company-wide projects shall be established aiming at responses that transcend the framework of existing organization structures.

Furthermore, we are commencing activities aimed at receiving comprehensive ISO14001 evaluation (multi-site).

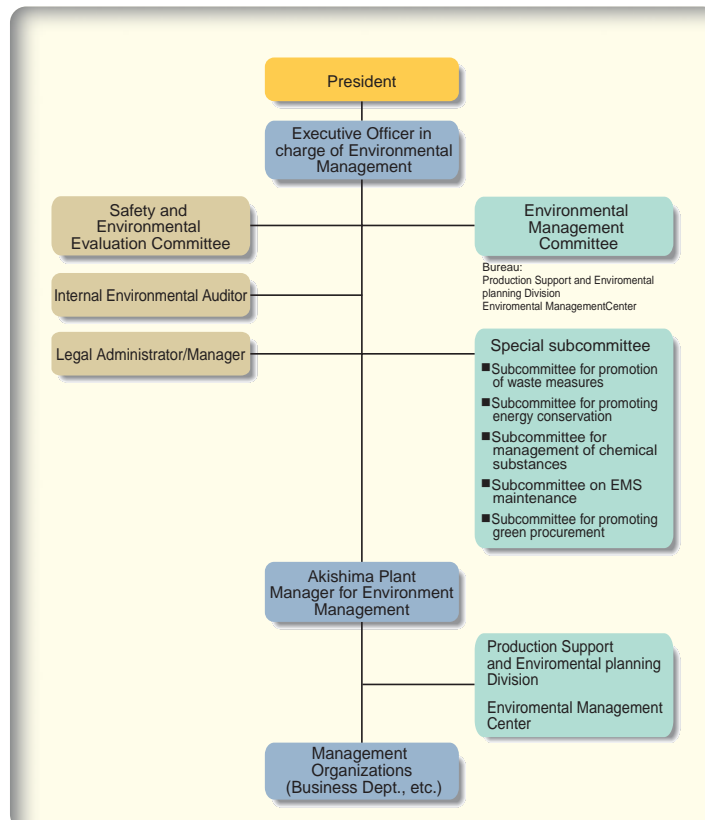


### ● Organizational Charts for each Site(Example: JAE Akishima Plant)

The Environmental Management Committee chaired by the director in charge of environmental management is the nucleus of environmental management system operations. This committee checks progress made toward achieving environmental management objectives, makes decisions on the environmental aspects, and discusses important environmental issues.

The various sub-committees hold concrete discussions regarding setting and implementing goals, and serve to support the Environmental Management Committee.

As a member of the NEC Affiliates Environmental Operations Exchange Committee composed of 31 companies affiliated with NEC, our company is making efforts to exchange information and to investigate and respond to various types of environmental issues.



\* Management Organizations: These are environmental management activity groups in project units for encouraging environmental management activities. Depending on the nature of the work, they may be composed of members from one department or several departments.



# Results of the 2001 Environmental Activities

The magnitude, items produced, and production equipment are significantly different between the manufacturing centers of JAE the group which includes the Akishima Plant and four domestic affiliates. In the daily environmental activities, each site sets up its own environment objectives and targets, and is working toward accomplishing those goals

## ● Main activities at each site

Legend: ○ achieved, △ achievement ratio of 70% or more, × achievement ratio less than 70%

### JAE Akishima Plant

Environmental aspects	Targets (FY2001)	Results	Evaluation
Wastes	Reduce the industrial waste amount (excluding recycled amount) to 6% (26 t) or less of the total annual waste emission.	Target achieved: reduction to 4.5% (19.5 t) of the total annual waste emission	○
Chemicals	Reduce the number of types of chemicals to 89% (1,772) or less compared with FY1995 (1,992).	Target achieved: reduction to 84 % (1,677 types)	○
	Reduction of chemical consumption		
	1) Gradually shift to lead-free products (for items required by customer). 2) Reduce the consumption of high global warming potential gases* to 77% (748 kg) or less compared with FY1998 (972 kg).	Under promotion as planned Target achieved: reduction to 12% (115 kg) of the level in FY1998	○ ○
Energy	Reduce the specific power consumption per unit sales volume by 13% or more (2.61 or less in specific power consumption) in comparison with FY1998 (21.70 million kWh, 3.0 in specific power consumption).	Target not achieved: specific power consumption of 2.81	△

△achievement ratio of 90% or more: to be improved in FY2002, reviewing the condition for calculating the specific consumption.  
Note: Specific power consumption per unit sales volume is expressed by the ratio kWh/100 million yen of sales.

### JAE Hirosaki

Environmental aspects	Targets (FY2001)	Results	Evaluation
Wastes	Recycle 90% or more of industrial wastes.	Target achieved by drying sludge, reducing glass, etc.	○
Chemicals	Reduce the consumption of sodium cyanide (poisonous) to 1,788 kg or less.	Target achieved: consumption of 813.6 kg	○
	Reduce the consumption of sodium dichromate (deleterious/specified substance) to 315 kg or less.	Target achieved: consumption of 93.5 kg	○
	Reduce the consumption of methanol to 5,280 kg or less.	Target achieved: consumption of 2,896 kg	○
Energy	Reduce the specific power consumption per unit sales volume by 1% or more (0.940 or less) in comparison with FY2000 (0.955).	Target not achieved. Although the power consumption was reduced by 16.5%, but the specific power consumption was 1.0.	△

△achievement ratio of 90% or more: to be improved in 2002, reviewing the condition for calculating the specific consumption.

### JAE Yamagata

Environmental aspects	Targets (FY2001)	Results	Evaluation
Wastes	Reduce the general wastes by 1,800 kg or more.	Target not achieved: reduction of 1,411 kg	△
Energy	Reduce the power consumption excluding the energy for manufacture by 1% (64MWh) or more in comparison with FY2000.	Target achieved: reduction of 77MWh	○

△Achievement ratio 70% or more: To be improved in FY2002, by more thorough implementation of item sorting.

### JAE Fuji

Environmental aspects	Targets (FY2001)	Results	Evaluation
Wastes	Reduce the industrial wastes (excluding recycled amount) by 10% or more on the basis of FY1998.	Target achieved: 75.8% reduction (3.7 t of waste)	○
Chemicals	Reduce the consumption and reserve by 10% or more on the basis of FY1998, to 12,601 kg or less.	Target achieved: reserve of 9,841 kg	○
Energy	Reduce the power consumption by 10% (86 MWh) or more on the basis of FY1998.	Target achieved: reduction of 11.1% (95 MWh)	○

### JAE Shinshu

Environmental aspects	Targets (FY2001)	Results	Evaluation
Wastes	The industrial wastes shall be not more than 2,879 kg.	Target achieved: industrial waste of 1,894 kg	○
Chemicals	The number of chemical types shall be not more than 221.	Target achieved: 216 chemical types	○
Energy	The oil equivalent specific energy consumption per unit sales volume shall be not more than 22.88 (kl/100 million yen).	Target not achieved: specific consumption of 24.47 (kl/100 million yen)	△

△achievement ratio of 90% or more: to be improved in FY2002, reviewing the condition for calculating the specific power consumption.

\*High global warming potential gases refer to HFC (hydrofluorocarbon) and PFC (perfluorocarbon).





# Targets of the Future Environmental Activities

● Main activity targets at each site (The items in the column "Environmental aspects" may be different from those for FY2001, because of review of the items)

## Akishima Plant of JAE

Environmental aspects	Objectives	Targets	
		FY2002	FY2003
Wastes	Reduce the ratio of industrial wastes (excluding the recycled amount) to the total wastes for each year to 1% or less by the end of FY2004, and maintain the reduced level.	3% or less	2% or less
Chemicals	Shift to lead-free products upon the customer demand by the end of FY2004.	lead-free	lead-free
	Reduce the consumption of CFC alternatives by 40% or more (less than 60%) by the end of FY2004 on the basis of FY1998 (2,963 kg).	2,055kg (69.4%) or less	1,955kg (66.0%) or less
Energy	Reduce the specific power consumption per unit sales volume to 14.4 or less by the end of FY2004.	14.7 or less	14.5 or less

## JAE Hirosaki

Environmental aspects	Objectives	Targets	
		FY2002	FY2003
Wastes	Increase the recycling ratio of industrial wastes to 97% or more by the end of FY2004.	95% recycled	96% recycled
Chemicals	Reduce the consumption of sodium cyanide (poisonous) by 50% against FY2001, by the end of FY2004.	20% reduction against FY2001	40% reduction against FY2001
	Reduce the consumption of sodium dichromate (deleterious/specified substance) by 100% against FY2001, by the end of FY2004.	50% reduction against FY2001	70% reduction against FY2001
Energy	Every year reduce the specific power consumption per unit sales volume by 1% against the previous year.	1% reduction against FY2001	1% reduction against FY2002
Green purchase	Increase the green purchase item ratio of office supplies to 100% by the end of FY2004.	80%	90%

## JAE Yamagata

Environmental aspects	Objectives	Targets	
		FY2002	FY2003
Energy	Reduce the power consumption by 3% against FY2000 by the end of FY2003.	2% reduction against FY2000	3% reduction against FY2000
Resource saving	Reduce the copy paper consumption by 6% against FY2001.	5% reduction against FY2001	6% reduction against FY2001

## JAE Fuji

Environmental aspects	Objectives	Targets	
		FY2002	FY2003
Wastes	Reduce the ratio of general wastes (excluding the recycled amount) to the total wastes to 4% or less by the end of FY2004.	5% or less	4.5% or less
	Reduce the ratio of industrial wastes (excluding the recycled amount) to the total wastes to 3% or less by the end of FY2004.	5% or less	4% or less
Chemicals	Reduce the storage of chemicals by 10% or more against FY2001 by FY2004.	5% reduction against FY2001	7% reduction against FY2001
Energy	Reduce the power consumption by 3% or more against FY2001 by FY2004.	1% reduction against FY2001	2% reduction against FY2001

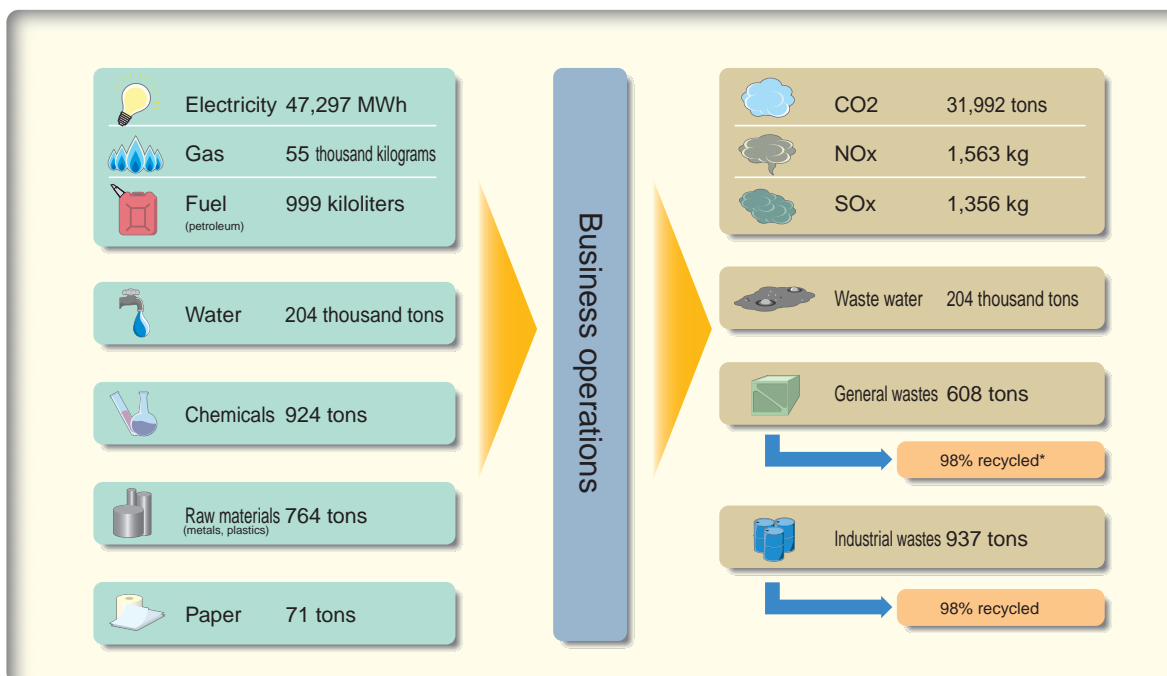
## JAE Shinshu

Environmental aspects	Objectives	Targets	
		FY2002	FY2003
Wastes	Reduce the wastes by 5% or more against 2001 by the end of 2004.	2% reduction against FY2001	4% reduction against FY2001
Chemicals	Reduce the number of chemical types by 3% or more against 2001 by the end of 2004.	1% reduction against FY2001	2% reduction against FY2001
Energy	Reduce the specific power consumption of energy (electricity and fuel oil A) per unit sales volume by 7% or more against FY2001 by the end of FY2004.	3% reduction against FY2001	5% reduction against FY2001

## Activities for Reducing the Environmental Impact

### Environmental Impact Mass Balance

The balance between resources used in the business operations and the resulting environmental impact is shown on the "Environmental Impact Mass Balance Sheet".



INPUTS	
Electricity	Power purchased from utility companies for use in factories
Gas	City gas, LPG used as energy
Fuel	Heavy oil, kerosene used as energy
Water	City water, industrial water, groundwater
Chemical substances	Chemical substances regulated by law such as specified chemicals, poisonous and deleterious substances, hazardous substances, organic solvents, special material gases
Raw materials	Metals and plastics used as raw materials for manufacture
Paper	Copy paper used in factories

OUTPUTS	
CO2	Carbon dioxide generated by the use of electricity, gas and fuel
NOx	Nitrogen oxide generated by the use of gas and fuel
SOx	Sulfur oxide generated by the use of fuel
Waste water	Industrial and domestic waste water from factory
General wastes	Wastes produced in business operation excluding industrial wastes
Industrial wastes	Wastes specified by the "Waste Disposal and Public Cleansing Law", of the wastes produced in business operations



\*The general waste recycling ratios shown above do not include the wastes for which treatment is commissioned to municipalities pursuant to applicable regulations.

## Strict Observance of Legal Regulations, and Monitor and Measurement of Environmental Impact

Gasses that will be released into the atmosphere and water that will be discharged into sewers and rivers are first purified at a detoxification plant before being discharged.

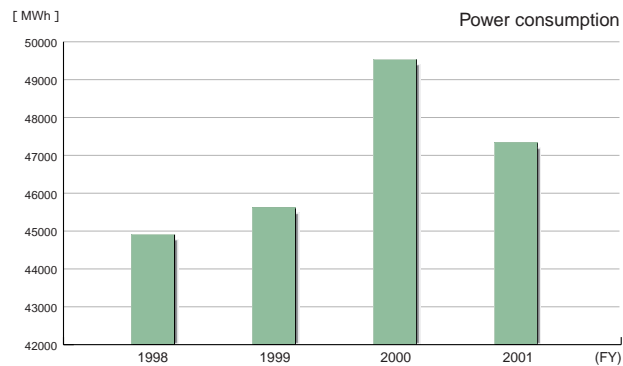
In order to preserve air and water quality, we are implementing monitor and measurements, with our own standards at stricter levels than the standards set by laws and regulations.

Site	No. of monitoring/measuring items		Status
	Atmosphere	Water	
Akishima Plant	13	15	Within the specified limit
JAE Hirosaki	12	15	ditto
JAE Yamagata	3	4	ditto
JAE Fuji	3	2	ditto
JAE Shinshu	3	5	ditto

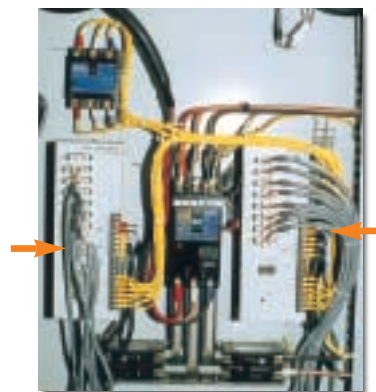
## Energy Conservation Activities

With the energy conservation subcommittee as the nucleus, we are addressing energy conservation in the operation of production equipment, lighting, and air conditioning.

Furthermore, in order to achieve even more effective results, we have installed instruments monitoring electrical power used by facilities and equipment in the company, and are investigating and testing operating conditions.



Intranet energy monitor system



Field server

Data from electric power monitors attached to each piece of equipment is collected by the system server and can be checked and analyzed by each department via an intranet.

## Green Procurement

Each department at the Akishima Plant has implemented activities aimed at green procurement for parts and materials used in products. In order to point toward the next level, in February of 2002 a subcommittee for promoting green procurement was established in the Akishima Plant. We have summarized our standards for green procurement in the Guidelines for Green Procurement and have begun to request cooperation from our customers.

Furthermore, all affiliates of the JAE Group employ green procurement standards for the purchase of office supplies as well. At the Akishima Plant, Guidelines for Green Procurement of Office Supplies have been established and implemented. The percentage of products that meet the green procurement standards is about 50% (on the basis of the number of product types).

In the future, along with promotion of green procurement, we want to encourage cooperation of our customers to move to the next level. We will work to develop products that we can provide to our customers that have minimal impact on the environment.

### Reduction of Wastes

Since FY2000, the JAE Group has stressed a zero emissions policy\*. From the beginning we have encouraged recycling of waste material\* based on the goals below. In FY2001 as a result of active promotion, our recycling of resources progressed, (at the end of FY2001, the recycling ratio on a monthly basis was greater than 98% for both industrial and general wastes) and we were able to achieve our goal of zero emissions ahead of schedule.

Goals at the beginning of the campaign

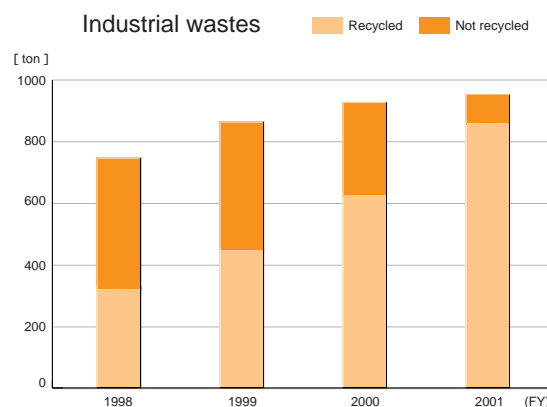
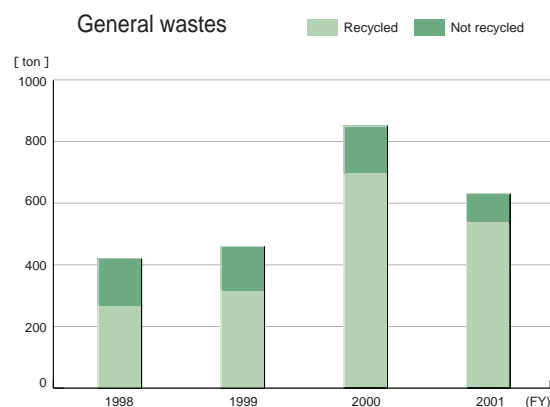
- A recycling ratio for industrial waste of at least 95% by the end of FY2003.
- A recycling ratio for general waste of at least 95% by the end of the first half of FY2002.

#### ● Results of the zero emissions campaign in FY2001

Recycling of resources made progress in FY2001, and we were able to achieve zero emissions earlier than planned. In the future we plan to continue to support recycling of resources and make every effort to reduce the volume of discharged material.

Item	FY2001 target	FY2001 results	Evaluation
Zero emission of industrial wastes	93% or more recycled	98% recycled	Zero emission achieved earlier than planned
Zero emission of general wastes	93% or more recycled	98% recycled	Zero emission achieved earlier than planned

#### ● Change in annual waste amount



Installation of a disposal device for garbage at the Akishima Plant

The garbage disposal breaks down the garbage biologically reducing the volume to about 15%, and it is then able to be recycled into compost (organic fertilizer). The compost can be sold to organic farms for fertilizer. The organic products grown by the farms are then purchased for use in employee cafeterias to achieve circulation of recycled resources in our diet.

\* The term "zero emissions" is defined as recycling of all discharged material. The JAE Group considers a recycling ratio of 95% or more as zero emission.

\* Resource recycling: Using waste material as raw material or resources by reusing, recycling the material, or thermal recycling.



## Management of Chemical Substances

We are committed to reduction of types and consumption of chemical substances by way of improved design and manufacturing technology.

### Record of chemical substance consumption

Classification	Consumption (kg)
Poisonous and deleterious substances	526,269
Hazardous substances	84,046
Specified chemicals	199,873
Organic solvents	7,607
Others	173,664
Total (excluding the overlaps between categories)	924,615

Consumption of chemical substances that fall into two or more categories is included in the figures for each category in the "Consumption" column.

Example: the consumption of methanol is included in the figures of three categories, poisonous and deleterious substances, hazardous substances and organic solvents.

The total excludes the overlaps between categories.

### ● Reduction of types of chemicals

The number of types of chemicals used at the Akishima Plant was reduced from 1,992 (FY1995) to 1,677 (FY2001), and at JAE Shinshu from 225 (FY2000) to 216 (FY2001).

### ● Reduction of consumption

JAE Hirosaki diminished the consumption of sodium cyanide, a poisonous substance, from 1,976 kg (FY2000) to 814 kg (FY2001), and that of sodium dichromate, a deleterious substance, from 450 kg (FY2000) to 94 kg (FY2001).

The Akishima Plant cut down the consumption of high global warming potential gases from 972 kg (FY1998) to 115 kg (FY2001).

## Conservation of Water Resources

A large amount of water is necessary in the connector manufacturing process. We promote collection and reuse of wastewater. At JAE Shinshu, water discharged from boilers is reused as cooling water and in rest

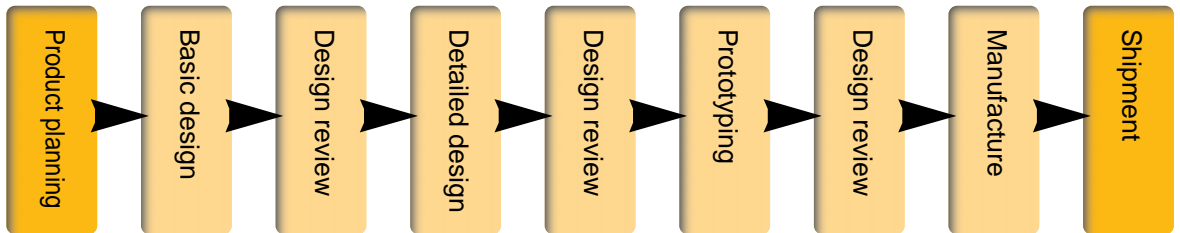


The connector plating process at the Akishima Plant uses about 430 m<sup>3</sup> of water per day. Wastewater of about 400 m<sup>3</sup> is collected and treated with ion exchange resin so it can be reused.

## Environmentally Favorable Products and Technology

### ● Product assessment

At the development and design stage, products are assessed in the scope of design reviews to limit the environmental impact of their manufacture, marketing, use and disposal. We do this while achieving resource preservation, energy conservation, increased recycling ratio, and higher safety.

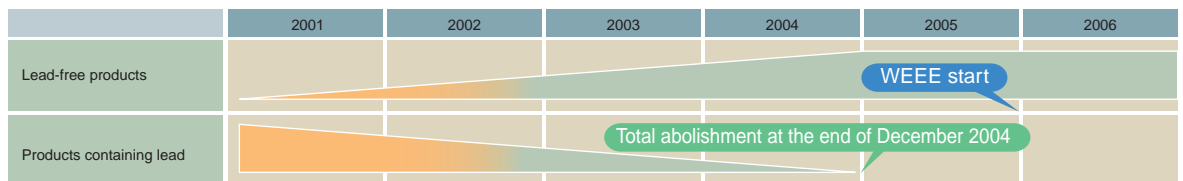


### ● Technological development toward lead-free products

In response to the EU directive on "Waste from Electrical and Electronic Equipment (WEEE)", etc., the activities to limit the use of lead in products are being promoted. We at JAE are striving for development of technology that allows the use of lead-free solder.

#### Time schedule for the lead-free target

We have been manufacturing lead-free products for all newly developed items upon customers' since FY2001. For the existing inventory we are shifting to lead-free products. We will achieve the lead-free target for all product items by the end of 2004.



An example of lead-free product (system equipment)

For system related products, we are shifting to lead-free products for each item upon customer's demand.

### ● Preliminary review

In addition to product assessment, environmental safety and processing are assessed. In the assessment of environmental safety (started in 1983), new factories, facilities, equipment and newly introduced chemicals and wastes are evaluated in terms of safety, hygiene, disaster prevention and environmental impact. If satisfactory results are not obtained in this assessment, purchase of materials and manufacture are not allowed. New processes are subjected to the process assessment.





# Environmental Accounting

To clearly know the costs incurred and effects achieved in the environmental management activities, we are studying the introduction of environmental accounting. This table shows tentative results at JAE.

in thousand yen

Category (defined by the Ministry of the Environment)	Mid-category	Sub-category	Investment	Cost	Economic effect	
Cost inside operation area	Prevention of global warming		6,000	2,000	-	
	Effective use of resources		-	-	-	
	Recycling of resources	Resources recycling	1,388	980	370	
		Waste treatment cost	-	50,388	-	
	Risk management	Pollution prevention		16	10,300	-
		Regulatory compliance		20	10,653	-
Management of chemicals and wastes		-	-	960		
Upstream/downstream costs	Design of environmentally favorable products		-	1,152	-	
Management cost	Management	Manpower cost for environment activities	-	143,333	-	
		ISO certification maintenance and environmental audit	13,556	5,496	-	
		Personnel training	267	20,953	-	
R&D cost	R&D		-	48,170	-	
Social activities cost	Social activities	Nature conservation	-	5,760	-	
		Social contribution	-	890	-	
		Information disclosure	-	10,600	30	
Environmental loss cost (others)	Other actions		-	-	-	
Total			21,247	310,675	1,360	

(The economic effect based on assumption, that is, the deemed profit is not included in the figures above)

## Environmental Training

### General Training

In order to learn about general environmental issues and activities to preserve the environment by the JAE Group, training at different levels is provided to new employees, newly assigned team leaders, and newly assigned supervisors (section managers).

Periodic follow-up seminars are held for internal environmental auditors to improve their level of skill.



### Developing Qualified Personnel

We are making efforts to develop personnel at each site with the required government qualifications for environmental conservation and to maintain the required number of qualified personnel at each site.

Number of environment related qualified persons at each site

	Akishima plant	JAE Hirosaki	JAE Yamagata	JAE Fuji	JAE Shinshu
Pollution control	33	10	0	2	0
Waste Disposal and Public Cleansing Law	6	3	3	4	2
Fire fighting	189	65	9	15	16
Industrial safety and hygiene	446	159	11	12	22
High pressure gas	22	26	0	0	1
Others (energy management)	10	6	1	0	0

### Special training

Training for various types of work, and special practices for responding to emergencies is provided to persons engaged in work that has an immense impact on the environment.



Practice responding to an emergency situation where a hose for supplying oil to an underground tank slipped off and spilled oil.



# Environmental Audit

In the Akishima Plant and four manufacturing affiliates, the status of environmental management activities is evaluated by using the environmental audit presented below.

- 1) ISO14001 assessment by a certifying organization (regular assessment and renewal assessment)
- 2) Internal audit that inspects the environmental management activities of each management organization.

## Internal Environmental Audit

The results of the internal environmental audit in FY2001 are outlined below. This audit was implemented on the basis of the criteria set out in the in-house regulations. Instructions given in this audit included nonconforming, monitoring items and requests. Corrections must be made for any nonconforming items. The monitoring items are verified in the assessment of the following year. For the internal audit at the four manufacturing affiliates in the year 2001, internal auditors were mutually dispatched from JAE and other manufacturing affiliates, to improve the audit quality.

Results of the internal environmental audit for FY2001 (No. of cases)

Site	Strong point*	Instructions		
		Nonconforming	Monitoring	Request
Akishima Plant	1	2	29	49
JAE Hirosaki	0	0	3	15
JAE Yamagata	0	3	6	8
JAE Fuji	0	2	7	4
JAE Shinshu	3	0	5	6

## ISO14001 Assessment

In the regular assessment by the certifying organization, the effectiveness of the environment management system (EMS) of the JAE group was verified. Actions for the monitoring items have been entirely completed.

Results of the assessment for FY2001

Site	Strong point*	Instructions		
		Category A*	Category B*	To be improved*
Akishima Plant	3	0	2	14
JAE Hirosaki	2	0	0	9
JAE Yamagata	1	0	0	11
JAE Fuji	0	0	0	9
JAE Shinshu	1	0	0	3

\*Strong point: Excellent in constitution, implementation, improvement effect, etc. in the EMS.

\*Category A: Nonconforming due to an important defect or lack in the EMS

\*Category B: Slightly nonconforming due to some lack in some part of the EMS, partially insufficient in the implementation of the EMS

\*To be improved: item in the corporate activities to be improved, as determined by the judge referring to his or her experience



## Communication with the Local Community and Contributions to Society

### Nine-Company Conference on the Environment

A conference with other companies in the area is held regularly at the Akishima Plant to exchange information.

### Contributions to Local Communities/Volunteer Activities

All companies in the JAE Group individually participate as members of their local communities. We will now introduce some of those activities.

Previously roads near the Akishima Plant would flood in heavy rains, affecting not only plant employees but also local residents. A storm water infiltration basin was built underneath the employee parking lot that eliminated flooding of the roads. In addition, used stamps and telephone cards are collected and contributed to a nature preservation organization.



Underground storm water infiltration basin (under construction)



Underground storm water infiltration basin (completed)

JAE Shinshu participates in the Tenryu River Water Condition Diagnosis (24-hour examination of water quality) held in September of each year to cooperate in preserving the local environment.



Tenryu River Water Condition Diagnosis (24-hour examination of water quality)  
Sponsor: Ina Techno-valley Regional Center Recycle System Research Committee

JAE Yamagata participates in the local community by holding bazaars, cleaning local parks, etc.



Park cleanup



Bazaar

At JAE Hirosaki, employees and their families conduct cleanup service projects, and collect used stamps and telephone cards to contribute to a nature preservation organization.



Cleaning the Hirosaki Park



# Progress of Environmental Activities



1960's	
1961	A factory completed in the beautiful natural surroundings of Akishima in April The wastewater treatment system for plating installed
1970's	
1970	Establishment of headquarters for pollution countermeasures Renovation of plating wastewater treatment equipment
1973	Installation of comprehensive processing device for wastewater
1976	Inauguration of Safety and Environmental Control Center Establishment of the Safety and Environment Evaluation Committee Implementation of reasonable countermeasures for clean water use through groundwater pumping regulations (water conservation)
1980's	
1983	Completed listing of chemicals handled in the Akishima district
1984	With completion of Akishima city sewers, discharge of plating wastewater and household wastewater was begun
1989	Chlorofluorocarbon countermeasure committee rules established
1990's	
1990	Establishment of the Environmental Management Division Environmental Management Committee rules established Atmospheric pollution prevention control rules established Pollution prevention related rules established
1991	Operation started at the new plating wastewater treatment plant Started paper conservation and wastepaper collection campaigns Inauguration of Environmental Management Liaison Meeting for JAE related companies. Started the use of recycled paper company-wide
1992	Inauguration of the GKL (Green Keep Ladies)
1993	Established the "The Environmental Charter of JAE." Established the "Plan of Action relating to Environmental Management at JAE". Start of environmental audit
1995	Established product assessment guidelines Started control of poisonous and deleterious substances, and specified chemicals, as well as control of placing purchase orders for such materials Inauguration of Energy Conservation Subcommittee.
1996	Inauguration of Committee for preparing to acquire ISO14001 certification
1998	Acquisition of ISO14001 certification
1999	Started lead-free campaign
2000's	
2000	Four domestic manufacturing affiliates acquired ISO14001 certification Started reduction campaign of high global warming potential gases Environmental Management Div. integrated into the Production Support and Environmental Planning Div. Commenced zero-emission campaign
2001	Started green purchase, and green purchase campaign Akishima Plant assessed for renewal of ISO14001 certification Achieved the zero-emission target Inaugurated mutual dispatch of internal environment auditors between domestic manufacturing affiliates Started installation of power consumption monitors on main equipment at the Akishima Plant



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