



# Report on the Environment 2001

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**Hitachi Kokusai Electric Inc.**



# Pass on the precious earth to the next generation Let's protect our beautiful environment.

## 1 Message from the President

I would like to explain the environmental protection activities that Hitachi Kokusai Electric conducted in fiscal 2000.

In October 2000, three companies, Kokusai Electric Co., Ltd., Hitachi Electronics, Ltd., and Yagi Antenna Co., Ltd. were merged into Hitachi Kokusai Electric Inc.

Before the merger was completed, all works of the three companies had already been certified with ISO14001, the international standard of environment management systems, and had promoted environment-oriented production. At the time of the merger, we drew up the Hitachi Kokusai Electric Global Environmental Chapter in keeping with our recognition that the environment issue is one of the highest priorities of our corporate management. Also, we are making continuous improvements in all environmental area, for example, energy, waste, and the quality of the air, water, and soil.

Environmental activities are being promoted throughout the company in cooperation with customers, local communities, and concerned organizations with emphasis placed on the following:

To help protect the environment we are developing energy-saving products suitable for a resource recycling society. We are also setting up model devices at each work to enable exchange of technologies between works through case presentation meetings.

Energy conservation, waste reduction, and chemical substance management in production are being promoted. Energy conservation is being promoted at works so that the primary unit of carbon dioxide emission will be 25% below the 1990 levels by fiscal 2010.

We are promoting efforts to reduce the amount of disposed waste to 10% or less of the 1991 levels by fiscal 2010. Through these activities, we will achieve zero

emissions in the near future, Regarding chemical substances, we are striving to more strictly enforce our own high standards for environmental management, as well as obeying the pertinent rules, regulations, and self-imposed, intra-industry regulations. In environmental issues, fusion and communication with local areas and communities are especially essential. On the premise that each work and employee are members of society, we push forward to coexist and co-prosper within the communities to which we belong.

It is our sincere wish that this report will lead to a deeper understanding of Hitachi Kokusai Electric group's policies and activities concerning environmental preservation, and any suggestions you have would be highly appreciated.

October 2001



*M. Endo*  
Dr. Makoto Endo  
Chairman Of The Board  
President & CEO

## 2 Guideline for Environmental Protection Action

We established the Hitachi Kokusai Electric Global Environmental Charter based on the basic philosophy of the Hitachi Kokusai Electric Corporate Action Standard in March 2001 and have worked on environmental preservation.

### Hitachi Kokusai Electric Global Environmental Charter

#### Basic Philosophy

**Hitachi Kokusai Electric will enhance "Respect for humans" and the "Pioneer spirit" to deeply recognize that we are members of society, devote ourselves to fair and transparent corporate activities, and strive to preserve the global environment and improve the local living environment.**

#### Guidelines for Action

##### 1. Fulfillment of Our Social Obligation

Harmony with the environment is one of our highest priorities. We are committed to solving global environmental problems because we realize they are important problems common to all of humanity.

##### 2. Reduction of Environmental Load

The environmental load caused by research, development, production, distribution, use, and disposal will be reduced to help build a resource recycling society.

##### 3. Complying with Laws and Regulations

International, national, and local environment regulations will be obeyed, and a voluntary control standard will be set up to help prevent environmental pollution and improve the environment management level.

##### 4. Linkage with Local Communities

Efforts will be made to preserve the global environment, improve the local environment, and have all employees receive a comprehensive environmental education to enhance awareness of the environment.

##### 5. Preparation of Intracompany System

An executive in charge will be appointed to prepare an environment management organization system and help promote continuous activities for the environment, both internationally and nationally.

Drawn up in March 2001

## 3.1 History of Activities for Environmental Preservation

World Trends		Company Events
Establishment of British Environmental Standard (BS 7750)	1992	
Establishment of International Environmental Standard (ISO14001)	1996	April: Kokusai Denki Toyama work awarded ISO14001.
Kyoto COP3 Conference	1997	June: Hitachi Denshi Koganei, Sendai, and Kobuchizawa works awarded ISO14001 (Japan's first simultaneous awards to multiple works).
Revision and enforcement of Law for Disposal of Waste Matter	1998	February: Kokusai Denki Hamura work awarded ISO14001. March: Kokusai Denki Fuji-Yoshida work awarded ISO14001. December: Yagi Antenna Omiya work awarded ISO14001.
Promulgation of PRTR	1999	April: Kokusai Denki Chitose work awarded ISO14001. November: First case-study announcement conference for environment-friendly products
First year of recycling-oriented society	2000	October: Establishment of Hitachi Kokusai Electric Inc through merger of Kokusai Denki, Hitachi Denshi, and Yagi Antenna Establishment of the Environment Promotion Center December: Second case-study announcement conference for environment-friendly products
Establishment of the Ministry of the Environment	2001	

Note : COP3: The third conference held by the signatory countries of the United Nations Framework Convention on Climate Change  
PRTR: Pollutant Release and Transfer Register



## 3.2 Measures and Results in fiscal 2000

### Environment management system

All of our works have been certified with ISO14001 and have continuously improved their environment management systems. Two affiliated companies including Kokusai Denki Engineering, Co., Ltd. were newly certified with ISO14001.



ISO14001 periodic inspection (Hamura Works)

### Environment-oriented product

The specifications of model devices were determined at works to develop environment-oriented components for all products, for example, semiconductor manufacturing equipment, digital transmitters, radio systems, television cameras, and BS antenna. Presentation meetings, lectures, and training meetings about environment-oriented design were held to encourage designers and developers, including those in affiliated companies, to make a profound study



President Endo gives his impressions at the environment-oriented design case-presentation meeting

### Reduction of environment load resulting from production

The power-saving target in works for the primary unit of carbon dioxide emission per sales amount is a 25% reduction from the 1990 levels by fiscal 2010. In fiscal 2000, the achieved reduction was very small compared to the fiscal 1999 emission levels, but from now on, various activities for drastic reductions are being promoted to reach the target.

The final amount of disposed waste was reduced to 23% of the 1991 levels because the target for fiscal 2010 is 10% or less of the fiscal 1991 levels.

Effluent from the works has been managed based on the voluntary control standard value, which is significantly smaller than the value set by law. All the values regarding works effluent are below the voluntary control standard value.

With the merger of the companies, all the important details about the chemicals we use were identified so the chemical management list could be updated. It was confirmed that none of the chemicals we use are covered by the Pollutant Release and Transfer Register (PRTR)

### Green procurement

Since before the merger, a Green Procurement Guideline has been issued to continue to purchasing and using environment-friendly materials, equipment, utensils, and consumables in cooperation with vendors.

### Environmental accounting

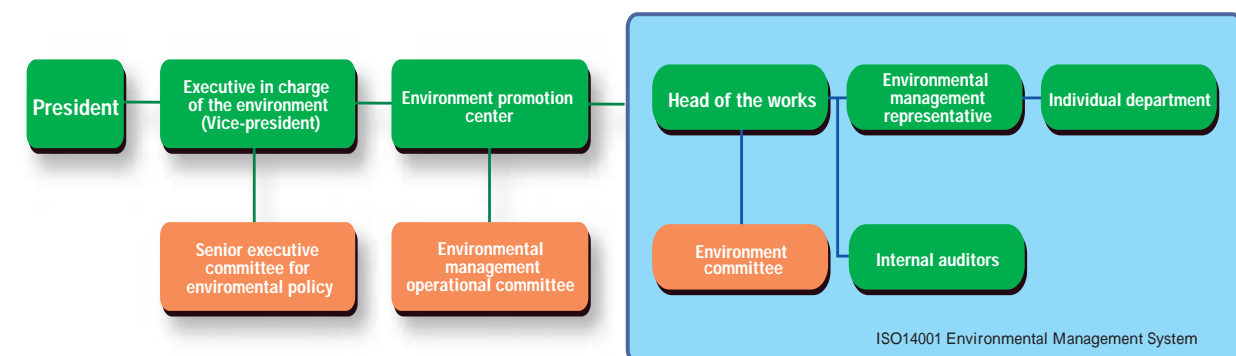
Environmental accounting has been applied since 2000. In response to the cost of 378 million yen/year and an investment of 82 million/year for environmental preservation, the effect was 18 million yen/year

### Cooperation with local communities

Efforts have been made to provide local communities with a better environment through public activities, organize voluntary activities at local events, and plant trees around the Toyama and Chitose Works.

## 3.3 Environment Management System

The figure shows the Environment Management System.





# 4 Contents of Activities

## 4.1

### Examples Of Environment-Friendly Products

When a new product is developed, it is compared with similar existing products to evaluate the environmental aspects and clarify the improvements that must be made.

The following environment-friendly products were developed in 2000

### 1

#### Base station equipment for public digital trunk radio

This is the base station equipment for a narrow-band digital trunk radio system for public sector. This new product conforms to the new digitization standard to use bandwidth efficiently and improve the service functions. The efficiency of the power supply unit has been improved, and the size of the product has been reduced by reviewing the mounting to achieve a lower resource and power consumption.



Conventional equipment (TR970)



Developed equipment (TR971/TR972)

Item No.	Environment item	Conventional equipment	Newly developed equipment	Reduction	
1	Function improvement	FDMA/SCPC system	TDMA system added to the FDCA/SCPC system		
2	Low power consumption	1,900 W	1,500 W	21% reduction	
3	Resource saving	Weight	197 kg	145 kg	26% reduction
		Capacity	595 (W) x 600 (D) x 1,800 (H)	550 (W) x 600 (D) x 1,350 (H)	30% reduction

FDMA : Frequency Division Multiple Access,  
SCPC : Single Channel Per Carrier,  
TDMA : Time Division Multiple Access

### 2

#### Cellular phone

A large, color liquid crystal display (LCD) screen is used to support i-mode services. Although the actual weight and volume of the developed phone are increased, the relative weight and volume against LCD screen size are decreased. Having more functions but the extensive use of energy saving technology has ensured low power consumption.



Conventional phone (KO208)



Developed phone (KO209i)

Item No.	Environment item	Conventional equipment	Newly developed equipment	Effects	
1	Function improvement	LCD screen	Monochrome 1.4-inch	256-color 1.64-inch	
		Communication function	Hyperlink Packet communication	i-mode, 4-chord melody added to the items on the left	
2	Low power consumption	Current consumption during continuous speech	253 mA (110 minutes)	243 mA (120 minutes)	10 minutes extended
		Standby current	1.56 mA (250 hours)	1.22 mA (350 hours)	100 hours extended
3	Resource saving	Weight	59 g	69 g	15% reduction of LCD area ratio
		Capacity	59 cc	70 cc	14% reduction of LCD area ratio
4	Environment preservation	Polyvinyl chloride accessory	Total waste disposal of polyvinyl chloride and polyethylene bags has been reduced.	Measures against dioxins.	

### 3

#### BS antenna



To increase the recyclable rate, the conventional composite of aluminum foil attached to the surface of a molded resin component has been replaced with a pressed aluminum plate.

All polystyrene foam packing materials have been abolished. We were awarded the Good Packaging Prize (electric equipment packaging section) at the Japan Packaging Contest for this action.

Item No.	Environment item	Conventional equipment	Newly developed equipment	Effects	
1	Reusable resources (recycling availability ratio)	Aluminum foil (37%) on the surface of ASA moldings	Pressed aluminum plate (63%)	70% improved	
2	Low power consumption	—	—		
3	Resource saving	Weight	4.1 kg	3.1 kg	24% reduction
		Polystyrene foam	260 g (packing material)	0 g	Total disposal



Conventional antenna BS-A45C



Developed antenna BS-A45D

### 4

#### Broadcast TV cameras

By reducing the number of substrates and parts and employing parts that consume low amounts of power, the power consumption was drastically reduced in each section the camera as well as the camera control units. These reductions greatly contribute to energy saving in use environments, for example, studio systems and broadcasting OB vans.



Newly developed SK-3300P

Item No.	Environment item	Conventional equipment	Newly developed equipment	Reduction	
1	Resource saving	Weight	5.9 kg	4.7 kg	20% reduction
		Volume	13.2 Little	7.8 Little	40% reduction
2	Low power consumption	Main Unit	55W	40W	27% reduction
		System	300W	150W	50% reduction

### 5

#### Vertical furnaces for manufacturing semiconductors

Vertical furnaces are used to produce semiconductor. The furnaces tend to consume more energy as the silicon wafer is increased.

To help conserve energy in clean rooms, we are working on ways to improve their heater efficiencies, reduce device sizes, and minimize the amount of floor space the furnaces occupy.

Item No.	Environment item	Conventional equipment [V-III (J2)]	Newly developed equipment [V-III (J3)]	Reduction
1	Function (wafer transport time)	100 (index)	66	34% reduction
2	Low power consumption (heater)	100 (index)	63	37% reduction
3	Energy saving (floor area)	4.05 m <sup>2</sup>	2.61 m <sup>2</sup>	35% reduction



# 4 Contents of Activities

## 4.2 Environment-Oriented Production

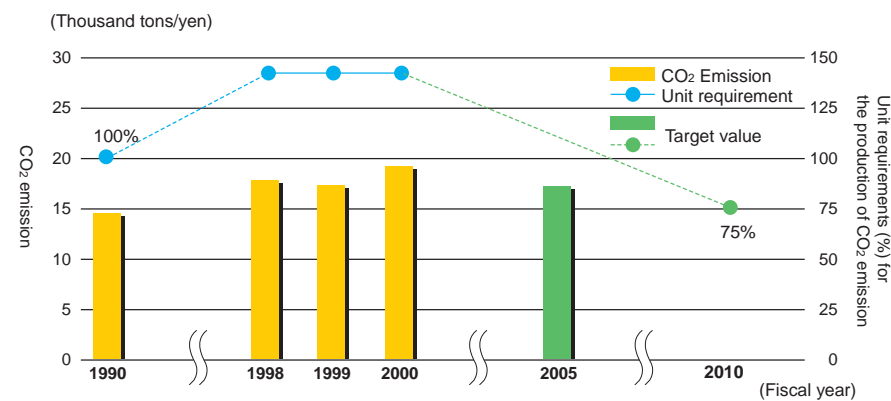
### 1 Global warming prevention (energy conservation)

To combat global warming, we have set a goal of reducing the primary unit of carbon dioxide emission by 25% from the 1990 levels by fiscal 2010. However, the index of the primary unit has worsened. The major factors leading to this included the expansion of clean rooms for manufacturing and evaluating semiconductor production devices in 1995 and subsequent years and the establishment and expansion of works in 1997 to meet the increasing demand for semiconductors.

In the future, we will be striving forward to achieve our goals through the following activities and obtain the maximum benefit from the merger:

- 1 Make a company-wide review of conventional production systems and construct a more efficient one.
- 2 Drastically improve individual production processes.
- 3 Improve the efficiency of high energy consumption facilities through energy saving diagnosis by external experts and know-how exchange between works.
- 4 Continuously strengthen company-wide energy-saving activities through the participation of all employees.

Trends in CO<sub>2</sub> Production-Related Emissions



Concrete energy conservation measures implemented by the end of 2000

Concrete measures	Site						
	Yagi Memorial Laboratory*	Hamura	Chitose	Toyama	Fujiyoshida	Koganei	Ohmiya
(1) Underwent energy conservation diagnosis by The Energy Conservation Center, Japan.		○	○			○	
(2) Underwent preliminary investigation by ESCO service provider	○			○			○
(3) Cases of energy conservation		○				○	○
(a) Air conditioners were demand controlled.			○	○	○		
(b) An inverter was mounted on the cooling water and ventilation pipes.			○			○	
(c) The lights were replaced by high-efficiency lights.		○	○			○	
(d) Personal computer energy consumption was reduced by the use of FETs.			○				
(e) A light-reducing film was attached to windows.		○				○	
(f) Production process improvement		○	○				

Note and legend. \*: Yagi Memorial Information Communications System Laboratory, O: Implemented.

### 2 Waste reduction

We have strived to reduce waste. Our current major activities include recycling and thermal recycling through separate recovery.

The waste containers were replaced with separate recovery containers for different types of waste. Also, a goal has been set to reduce the final landfill amount (\*1) to 10% or less of the 1991 levels by 2010. This will be achieved by recycling the resources that were conserved by sorting (which reduce the amount to 23% of the 1991 levels in 2000).

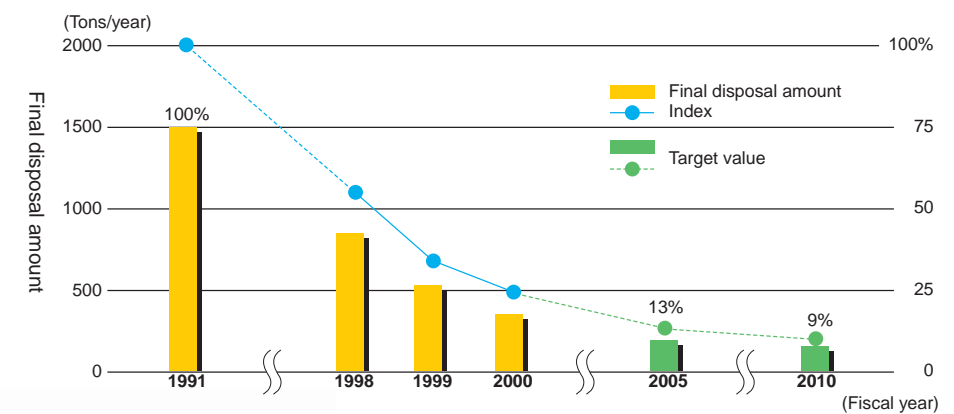
We will also strive to achieve zero emissions (\*2) as a challenging goal.

The major measures we have taken so far are as follows:

- 1 Recycling of waste acid and waste alkali
- 2 Thermal recycling (RDF) of waste plastics
- 3 Recycling of sludge

(\*1) Final landfill amount = direct final landfill amount + final landfill amount after intermediate processing  
 (\*2) We define zero emission to be a final disposal rate of 1% in the relevant year.

Trends in final disposal waste reduction



Implementation examples of concrete waste-reduction measures implemented by the end of 2000

Concrete measures	Site						
	Yagi Memorial Laboratory*	Hamura	Chitose	Toyama	Fujiyoshida	Koganei	Ohmiya
(1) Separate recovery	○	○	○	○	○	○	○
(2) Recycling of waste paper	○	○	○	○	○	○	○
(3) RDF of waste plastics		○	○	○	○	○	
(4) Recycling of waste acid	-		-	○	-	○	-
(5) Recycling of waste alkali	-	○	-	○	-	○	-
(6) Recycling of waste wood			-	○	○	○	
(7) Recycling of sludge	-	○	-		-	○	-

Note and legend. \*: Yagi Memorial Information Communications System Laboratory, O: Implemented.



# 4 Contents of Activities

## 4.3 Environmental Pollution Control

### 1 Overview

Works have set up voluntary control standard values that are stricter than the values imposed by the relevant laws and ordinances. They also periodically measured and monitored water and air quality and maintained, managed, and operated environmental conservation facilities to control environmental pollution.

The environmental facilities, managerial operation system, and training system are operated through a strict three-step environmental audit: audit by an ISO audit organization, work audit by the headquarters' environment promotion center, and internal audit by individual works' in-house auditors.

### 2

#### Chemical substance management

Our company uses only relatively small amounts of just a few types of chemicals, but written procedures for handling chemicals have been prepared in individual departments to educate and train for emergencies as well as normal situations. These chemicals are targets of environmental audits. The status regarding hazardous substances whose use is restricted is as follows:

##### 1 Polychlorinated biphenyl (PCB)

The high-voltage capacitors and most of the stabilizers for fluorescent lamps have been replaced by PCB-free ones. PCB-containing lights remain in some buildings, but their use will be abolished by March 2002. A manager has been appointed to properly store the removed capacitors and stabilizers.

##### 2 Chlorine solvent

The use of chlorine solvents has almost been abolished. One office is using dichloromethane for degreasing, but its abolishment in 2001 through the use of an alternative solvent or a solvent-free process is being promoted.

### 3

#### Environmental measurement status

Most water items were in concentrations at or below the limit of measurement. The levels of items that were measured were less than the voluntary control standard levels, which are much stricter than the legally accepted maximums

The levels of dust, NOx, and SOx were sufficiently below the voluntary control standard levels for air quality. We have abolished all incinerators.

Soil samples have shown no detectable levels of the solvents trichloroethylene, 1-1-1 trichloroethane, and tetrachloroethylene. The measurement frequency is every one to three years, as regulated by each office.

## 4.4 Compliance with Laws

Compliance with laws is also an important part of environmental pollution control. Therefore, our plants have a system to theoretically determine whether all laws and ordinances concerning the environment, including revisions, are being followed. This system enables us to quickly and easily adjust our activities so we are always in full compliance with these laws and ordinances.

Compliance will be strictly checked in the environmental audit described in the previous section. Regarding the legally qualified personnel required by offices, a sufficient number of qualified personnel are always being trained on schedule and the sufficient and necessary number of qualified personnel is always retained. The status of qualified personnel is outlined below.

Required number of certified personnel and number available (Unit: persons)

Certificate classification	Required personnel	Personnel available	Certificate classification	Required personnel	Personnel available
Pollution prevention administrator (air)	0	5	Sanitation administrator	10	22
Pollution prevention administrator (water)	4	9	Dry equipment work administrator	1	10
Pollution prevention administrator (noise)	0	4	organic solvent work administrator	16	105
Pollution prevention administrator (vibration)	0	3	Oxygen shortage danger work administrator	1	9
Energy manager (electricity)	1	2	Special chemical substance work administrator	13	42
Electricity chief engineer (Type I and III)	6	24	Toxic matter handling administrator	1	3
Boiler engineer (Type I and III)	6	21	Dangerous matter handling administrator	9	126
Cooling and freezing safety administrator (Type I and III)	0	7	High-pressure gas manufacturing and safety administrator	0	3
Special controlled industrial waste administrator 4	4	15	<b>Total</b>	<b>72</b>	<b>410</b>

## 4.5 Linkage with Local Communities

Plants and offices have tried to adapt themselves to their local communities and exist harmoniously with them. The following pictures show some of our community activities in 2001.

Planting trees on unused land to promote greening



Supporting local traditional events

