

Environmental Performance

Furukawa Electric and its group have had a long lasting involvement in the proactive recycling of copper and aluminum, and the recovery and reuse of plastics, while focusing on developing environmentally friendly products. We are working hard to preserve the global environment and conserve its resources.



Targets and Performance of Environmental Management

Furukawa Electric has set target standards to be reached by fiscal 2005 for each activity in the Medium-Term Plan for Environmental Preservation Activities 2005, and has promoted these activities since fiscal 2003. In addition, Furukawa Electric and its group have set common activity targets for consolidated environmental management to promote these activities. These targets are broken down into targets for each fiscal year, and linked to concrete action items. We plan to formulate the next medium-term targets for fiscal 2009 at the end of fiscal 2005.

Performance in Fiscal 2004

Furukawa Electric set the annual target of "Priority Environmental Preservation Activity Targets for Fiscal 2004", and these targets were deployed in the objective, targets and programs under the environmental management system for the individual business bases, to promote these activities. Our affiliated companies also set their unique targets with respect to the common activity targets of the consolidated environmental management and promoted their activities.

■ Priority Environmental Preservation Activity Performance in Fiscal 2004

Item	Target	Performance	Evaluation
Reduction of industrial waste	40% reduction compared to fiscal 2000	58% reduction	◎
Zero-emission activities	50% reduction compared to fiscal 2000	83% reduction	◎
Reduction of greenhouse gases	Achieving the same emissions as the previous fiscal year (227,000 tons)	222,000 tons or a reduction of 2%	○
Energy-conservation activities	Energy intensity per unit product: 1% reduction compared to the previous fiscal year	9% reduction compared to fiscal 1999 A 3 percentage point increase compared to the previous fiscal year	△
Reduction of chemical effluents	52% reduction over fiscal 2000	46% reduction	△
Promotion of procuring green products and supplies	Promotion of procurement of 23 general commodity items	Grasping the procurement ratio for applicable supplies	○
	Investigating 100% of the products purchased from major vendors	Investigated 79% of the vendors	△
Reinforcement of consolidated environmental management	Policy formulation and invigoration of group activities	Information exchange including meetings and visits Holding of environmental seminars	○
Eco-design activities	Modeling toward introduction of LCA	Collection of basic data	△

◎: Comfortably achieved, ○: Achieved, △: Slightly underachieved, ×: Underachieved

Targets in Fiscal 2005

Fiscal 2005 is the final year of the Medium-Term Plan for Environmental Preservation Activities 2005 and the common targets of Consolidated Environmental Management, and therefore the items and targets have been made consistent

with those of the medium-term targets. Individual business bases and individual companies will adopt these targets in their respective environmental management activities and plan to promote their own activities.

Targets of Furukawa Electric

■ Reduction of industrial waste	50% reduction compared to fiscal 2000
■ Zero-emission activities	60% reduction compared to fiscal 2000
■ Reduction of greenhouse gases	Reduction of greenhouse gas emissions: Achieving the performance of the previous fiscal year
■ Energy-conservation activities	Energy intensity per unit product: 1% reduction compared to the previous fiscal year
■ Reduction of chemical effluents	54% reduction compared to fiscal 2000 (targeted substances: Toluene, Xylene, Ethyl benzene)
■ Promotion of procuring green products	Procurement ratio for 23 general supplies including office supplies / 100%
■ Eco-design activities	Modeling toward introduction of LCA
■ Promotion of consolidated environmental management	Policy formulation and invigoration of group activities

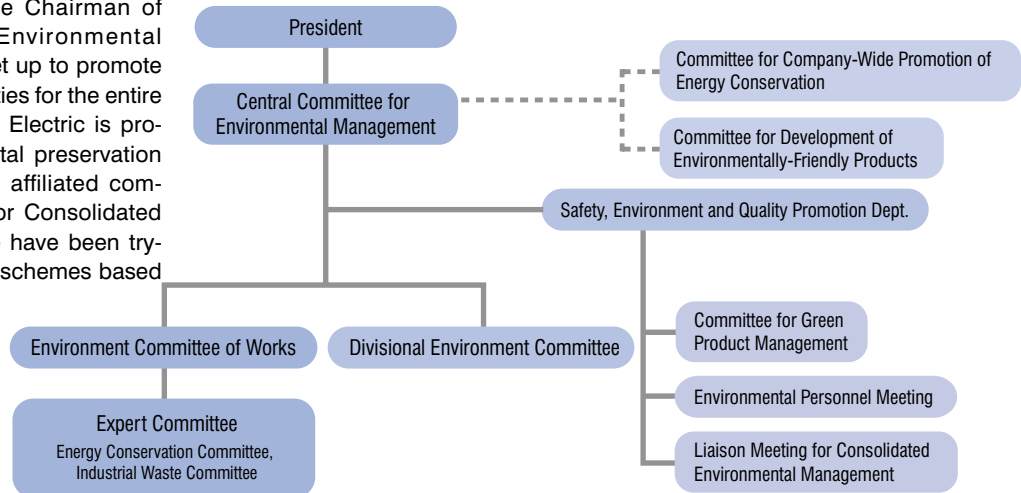
Targets of Consolidated Environmental Management

■ ISO14001 certification acquisition	Certification acquisition by all the companies
■ Reduction of industrial waste	Reduction of industrial waste 30% reduction compared to fiscal 2000
■ Zero-emission activities	50% reduction compared to fiscal 2000 (direct landfill quantity)
■ Reduction of greenhouse gases	CO ₂ emission 5% reduction compared to fiscal 2000
	Use of HFC and PFC Complete elimination
	Emission of SF ₆ into the atmosphere 50% reduction compared to fiscal 2000
■ Reduction of chemical effluents	50% reduction compared to fiscal 2000 (targeted substances: hazardous organic chlorine compounds)

Environmental Management Activities

At Furukawa Electric, the Director in charge of the environment acts as the Chairman of the Central Committee for Environmental Management, which has been set up to promote environmental preservation activities for the entire company. In addition, Furukawa Electric is promoting the Group's environmental preservation activities in conjunction with its affiliated companies at the Liaison Meeting for Consolidated Environmental Management. We have been trying to acquire certification, since schemes based on ISO14001 would be very effective for carrying out environmental preservation activities at the individual business bases of Furukawa Electric and its affiliated companies.

Organization Chart for Company-Wide Environmental Management



ISO14001 Certification at Furukawa Electric

Works	Date of Acquisition	Certifying Organization	Certification Number
Chiba	June 18, 1998	DNV	1208-1998-AE-KOB-RvA
Mie	November 24, 1998	JACO	EC98J1097
Hiratsuka	September 1, 2000	DNV	1699-2000-AE-KOB-RvA
Osaka	December 19, 2000	DNV	1114-2000-AE-KOB-RvA
Nikko	March 14, 2002	DNV	1851-2002-AE-KOB-RvA/JAB
Yokohama	June 14, 2002	DNV	1849-2002-AE-KOB-RvA

Furukawa Electric has acquired ISO14001 certification at all its works.

In the affiliated companies, NTEC and Miharu Communications newly acquired the certification in fiscal 2004, meaning that 95% of the affiliated companies have acquired the certification. The remaining two companies of Sunsunny Industry and Furukawa Precision Engineering plan to acquire the certification during fiscal 2005.

List of Companies Participating in the Liaison Meeting for Consolidated Environmental Management

Company Name	ISO14001	Environmental Accounting
Access Cable Company	○	
Asahi Electric Works Co., Ltd.	○	
Inoue Manufacturing Co., Ltd.	○	
NTEC Ltd.	○	
F-CO Co., Ltd.	○	○
FCM Co., Ltd.	○	
Okano Electric Wire Co., Ltd.	○	
Okumura Metals Co., Ltd.	○	
The Kyushu Furukawa Electric Co., Ltd.	○	
Kyowa Electric Wire Co., Ltd.	○	
Sunsunny Industry Co., Ltd.	*	
Shodensha Co., Ltd.	○	
Seiwa Giken Inc.	○	
Totoku Electric Co., Ltd.	○	○
T. H. Furukawa Electric Co., Ltd.	○	
Nikkei Kakoh Co., Ltd.	○	
Nippon Foil Mfg. Co., Ltd.	○	○
Higashi Nihon Tanzou Co., Ltd.	○	
Furukawa Electric Industrial Cable Co., Ltd.	○	

Company Name	ISO14001	Environmental Accounting
Furukawa Infonet Products Co., Ltd.	○	
FITEC Corporation	○	
The Furukawa Electric Engineering Service Co., Ltd.	○	
Furukawa Automotive Parts Inc.	○	
Furukawa Circuit Foil Co., Ltd.	○	
Furukawa Sangyo Kaisha, Ltd.	○	○
Broad Wireless Corporation	○	○
Furukawa Industrial Plastics Co., Ltd.	○	○
Furukawa Precision Engineering Co., Ltd.	*	
Furukawa Engineering & Construction Inc.	○	○
The Furukawa Battery Co., Ltd.	○	○
Furukawa Logistics Corporation	○	
Furukawa Techno Material Co., Ltd.	○	○
Furukawa Life Service Inc.	○	
Miharu Communications Inc.	○	
Yamada Keikinzoku Co., Ltd.	○	
Riken Electric Wire Co., Ltd.	○	○
Furukawa-Sky Aluminum Corporation	○	○
Zaikoo Co., Ltd.	○	

ISO14001.....○: Already acquired certification, *:Planning to acquire certification during fiscal 2005
Environmental accounting.....○: Implements environmental accounting described in this paper

Impact on the Environment by Furukawa Electric

Furukawa Electric provides products by producing a variety of parts and raw materials, and by using energy, including water and electric power, and chemical substances. We are working on reducing the adverse impact on the environment produced by these activities.

Impact on the environment by the six production base works

INPUT

Raw materials		
Copper	.....>	188,000 t
Energy (*1)		
	.....>	140,000 kℓ
Water		
	.....>	16.7 million t
Chemical substances (*2)		
	.....>	5,976 t

(*1) Amount of electric power, fuel oil and fuel gas used
 (*2) PRTR targeted substances
 (*3) Outsourced industrial waste disposal, excluding recycled materials

OUTPUT

Emissions into the atmosphere		
CO ₂	.....>	222,000 t—CO ₂
NO _x	.....>	159 t
SO _x	.....>	12 t
Soot	.....>	10 t
Wastewater		
	.....>	16.4 million t
Waste		
Industrial waste (*3)	.....>	3,816 t
Recycled materials	.....>	16,894 t
Chemical substances (*2)		
Emitted volume	.....>	202 t
Transferred volume	.....>	328 t

Impact on the environment by non-production bases

Furukawa Electric has grasped the impact on the environment caused by the non-production bases of its Head Office and three Branch Offices.

Amount of electric power		
	.....>	1,150,602 kWh
Amount of water used		
	.....>	382 m ³
Amount of paper used		
Photocopier paper	.....>	20,947 kg
Newspaper	.....>	3,740 kg

The non-production bases of our Head Office and Branch Offices are promoting power savings and resources savings.

As power saving measures, lights in rooms such as unused conference rooms are turned off and air conditioning units are set at an appropriate temperature.

As resources saving measures, we promote the sorting of waste and the reuse of photocopier paper and files.

Zero-Emission Activities

The Furukawa Electric Group began activities to reduce outsourced industrial waste disposal in 1993, and has promoted zero-emission activities of waste since fiscal 2001. At the Furukawa Electric Group zero-emission activities are defined as “activities to reduce the industrial waste commissioned to outsourced disposal that is transported from plants directly to landfill spots for final disposal.”

Performance in Fiscal 2004

Furukawa Electric

We reduced outsourced industrial waste disposal by 58% compared to fiscal 2000, attaining the fiscal target of a 40% reduction. In addition, we reduced the volume of direct land disposal by 83% compared to fiscal 2000, substantially exceeding the fiscal target of a 50% reduction.

Affiliated companies

Our affiliated companies reduced their outsourced industrial waste disposal by 37% compared to fiscal 2000, and the volume of direct landfill disposal by 11% compared to fiscal 2000. They are further promoting reduction activities toward achieving the target for fiscal 2005.

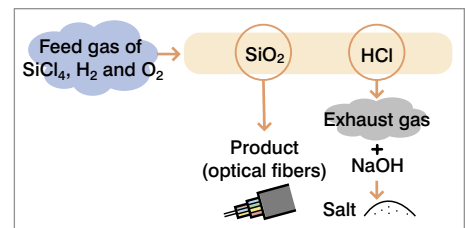
Companies that have attained zero emissions

One more company has attained zero emission in the Group, bringing the total to 10.

Recycling of Waste Salt Byproduct Produced in the Optical Fiber Manufacturing Process

Chlorine contained in the feed gas is emitted as exhaust gas in the manufacturing process of optical fibers. When this chlorine is removed by reacting it with caustic soda water, and the resultant wastewater is treated, a salt is formed as a byproduct. Conventionally, this salt was disposed of in landfill spots, but we have

managed to recycle it, by selling it to companies that use industrial-use salt as a raw material. Prior to this, we provided samples to these companies, confirmed its non-toxicity by testing it on animals and checked that the aqueous solution conforms to the effluent standard.



Recycling of Plastic Waste

Until now, various kinds of plastics were mixed in with the miscellaneous goods that were discarded, and they were not recycled.

We made rules for the sorting of these goods and we held study meetings and patrolled garbage dumps to promote thorough sorting activities. For example, we made it a rule to put items ranging from safety shoes and hard hats to safety goggles in transparent bags, so that the constituent material of the contents can be easily identified. As a result, it was possible to protect this practice of sorting, which has enabled the recycling of waste.

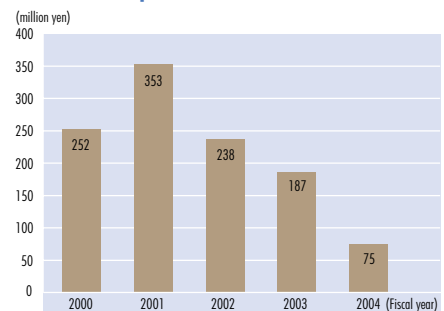


Patrol to monitor sorting

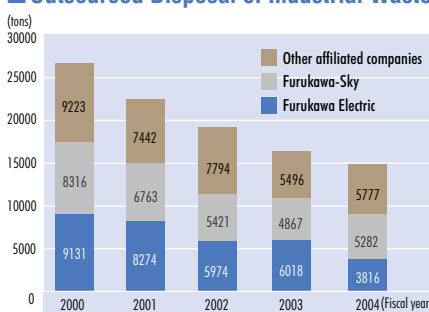
Reduction of Waste Disposal Costs

Considering that environmental preservation activities directly contribute to management, as a part of the Furukawa Survival Plan, we adopted reduction of waste disposal costs as our activity target. As a result of the conversion of waste, which conventionally incurred disposal costs for landfills, etc., into valuables for recycling, we reduced disposal costs by about 100 million yen, substantially exceeding our target of 50 million yen.

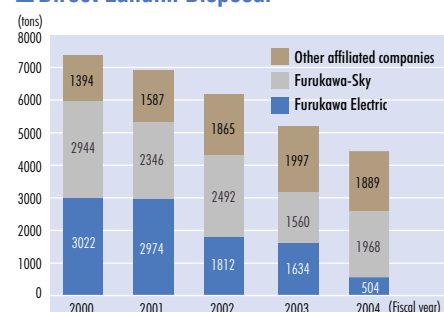
Waste Disposal Costs



Outsourced Disposal of Industrial Waste



Direct Landfill Disposal



Prevention of Global Warming

The Kyoto Protocol took effect on February 16, 2005, and the reduction of targeted gases has become mandatory for the prevention of global warming. The Furukawa Electric Group has worked on energy conservation activities since before the ratification by the Japanese Government, aiming at the prevention of global warming.

Performance in Fiscal 2004

Furukawa Electric

Emissions of greenhouse gases (on a CO₂ basis) were 222,000 tons, attaining the target of fiscal 2004 which was the same as the result of the previous fiscal year (227,000 tons). Emissions in fiscal 2004 were reduced by 21% compared to fiscal 2000.

Affiliated companies

Emissions of greenhouse gases increased by 1% compared to fiscal 2000. Our affiliated companies are further promoting activities to reduce these emissions, aiming for the fiscal 2005 target of a 5% reduction.

Energy intensity per unit product (EIPUP) at Furukawa Electric

The energy consumption at the five works* designated as "Class 1 Energy Management Factories" was 127,000 kℓ, a reduction of 3,115 kℓ. EIPUP was reduced by 9% compared to fiscal 1999, attaining the long-term target of a 5% reduction, but it represented an increase of 3 percentage points from the previous fiscal year.

* The five works are Chiba, Nikko, Hiratsuka, Mie and Osaka

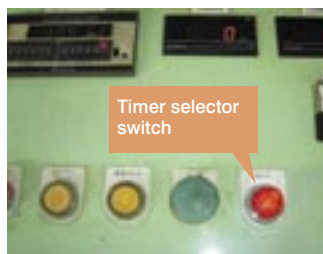
Energy Conservation Activities

Major factors for energy conservation included: controlling of the number of compressors and their integration, controlling cooling water pumps by inverters, using air conditioners sparingly, using energy saving lighting, automatically recovering the waste heat of scrubbers, suspending or sealing the use of our facilities and improving the yield.

Access Cable Company has improved its facilities and lighting.

① Improvement in facilities

During the operation of composite stranding machines, operators do two



Improvement in facilities

Improvement in lighting



or more jobs at the same time, and fan motors were kept running while the facilities were shut down to change tools. Timers were installed on these composite stranding machines so that the fan motors stopped during the shutdown of these

facilities.

② Improvement in lighting

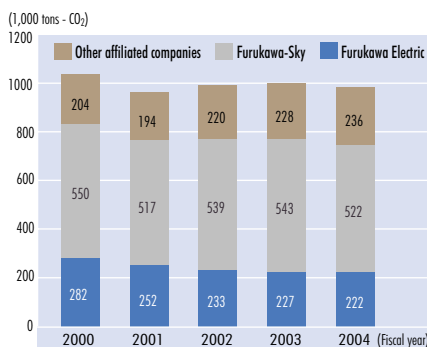
As for light sources, two low power lamp-type lighting fixtures were replaced by a single lamp type lighting fixture (32W x one lamp) and reflectors were installed.

Provision of LCA Data to Customers

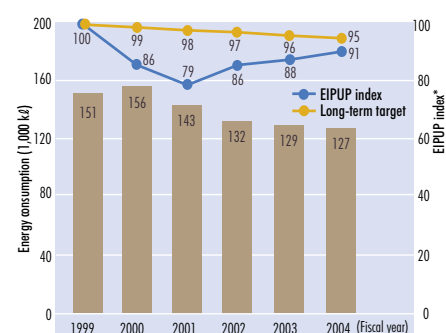
The automotive manufacturers, which are customers of Furukawa Electric, grasp the impact on the environment of things like CO₂ emitted from vehicles, and utilize LCA (Life Cycle Assessment). At the request of these automotive manufacturers, we calculate and provide the data on the impact on the environment that occurs during our manufacture of the parts which are supplied to them. The automotive manufacturers make an environmental impact assessment of the entire life cycle

of vehicles from this data, including our data, on the impact on the environment at each stage of the manufacturing process, in order to develop vehicles that have a reduced impact on the environment. In fiscal 2004, we calculated and provided data on seven items, including wire harnesses and aluminum bus bars. In future, we will continue to contribute to the prevention of global warming and the preservation of the global environment, in cooperation with our customers.

Emission of Greenhouse Gases



Energy Consumption and EIPUP (at five works)



* EIPUP index: Representation of EIPUP for each fiscal year with the EIPUP in fiscal 1999 set as 100

Chemical Substance Management

The Furukawa Electric Group has been working on the reduction of tetrachloroethylene, trichloroethylene, and dichloromethane among organic chlorine compounds. In addition, because Furukawa Electric has achieved excellent results in reducing the use and emission of ozone-layer depleting substances and organic chlorine compounds, the Company has worked on the reduction of toluene, xylene, and ethylbenzene, which are volatile organic compounds since fiscal 2003.

Organic Chlorine Compounds

30 companies including Furukawa Electric have eliminated the use of tetrachloroethylene, while 26 companies including Furukawa Electric have eliminated the use of trichloroethylene. Dichloromethane was used at one of Furukawa Electric's works during the manufacturing process of a specific product. The affiliated companies reduced the emission by 54% compared to fiscal 2000, and 28 companies did not use this compound. The companies using the targeted substances are promoting reduction activities aiming at their complete elimination in fiscal 2008, while

reviewing the manufacturing process and materials. For example, Asahi Electric Works used a surface treatment agent containing trichloroethylene to prevent oxidation on connection sleeves for distribution lines. In fiscal 2004, however, they stopped using this agent and replaced it with a substitute. Furukawa Electric Industrial Cable conventionally used dichloromethane for their cleansing processes, but they stopped using it and replaced it with a substitute.

Specific Chemical Substances

Furukawa Electric has promoted activities to reduce the three targeted substances (specific chemical substances) since fiscal 2003. Toluene accounts for about 96% of these three substances, and is used as a product cleanser and in floor paints. As reduction measures, we have implemented a review of the content of cleaning agents, improved our washing tanks, and switched to

using water-soluble paints. In addition, improvements in quality have reduced the number of times that repeated cleansing has been needed. Emission of the three targeted substances was reduced by 46% compared to fiscal 2000, slightly short of the target of a 52% reduction.

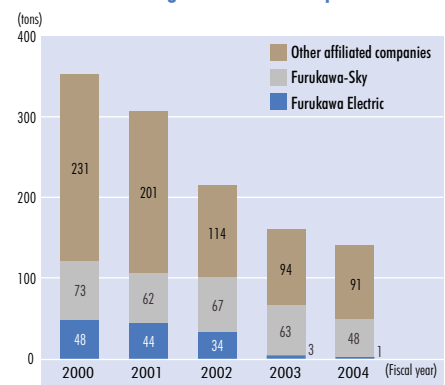
Release and Transfer Volume of PRTR Substances

(Unit: tons)

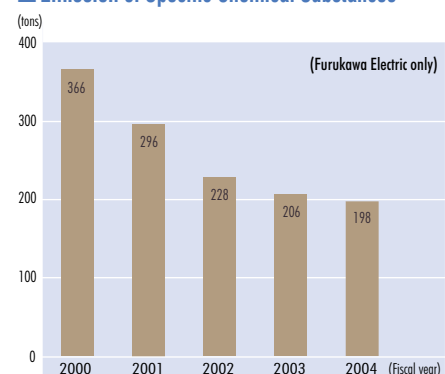
Substance No.	Name of substance	Handling volume	Emitted volume	Transferred volume	Neutralized volume
25	Antimony and its compounds	111.7	0.1	4.2	0.0
40	Ethylbenzene	8.7	0.0	0.0	8.7
63	Xylene	53.2	16.4	16.5	20.2
64	Silver and its water-soluble compounds	1.3	0.0	0.0	0.0
67	Cresol	339.5	0.1	0.1	338.8
108	Inorganic cyanide compounds	3.3	0.0	0.0	3.3
145	Dichloromethane	2.9	1.1	1.7	0.0
172	N, N-dimethylformamide	85.8	0.7	0.2	84.8
197	Decabromo-diphenylether	170.9	0.0	12.2	0.0
207	Copper salts (water-soluble)	14.3	0.0	0.0	0.0
227	Toluene	550.7	183.1	290.0	73.8
230	Lead and its compounds	4,381.7	0.0	0.2	0.2
231	Nickel	2.1	0.0	0.0	0.0
232	Nickel compounds	6.5	0.0	0.0	0.0
253	Hydrazine	5.9	0.0	0.0	5.9
266	Phenol	217.7	0.0	0.2	217.1
272	Bis (2-ethylhexyl) phthalate	13.5	0.0	1.0	0.0
312	Phthalic anhydride	2.1	0.0	0.1	0.0

* Targeting substances of handling volume of 1 ton or more at works (0.5 tons or more for specific substances)

Emission of Organochlorine Compounds



Emission of Specific Chemical Substances



Green Activities

Furukawa Electric has promoted green procurement. While we were requested by our customers to cooperate on green procurement and we responded to their demands on product investigation and audit, the customers' demands on thorough source control from the viewpoint of the entire green supply chain increased recently, and we responded to these demands.

Performance in Fiscal 2004			
Green procurement ratio for general commodities		Investigation ratio of products purchased from major vendors	
No. of commodities	50.0%	Investigation ratio for vendors	79.0%
Amount	44.2%	Investigation ratio for purchased products	63.0%

Green Product Management Activities

The worldwide major trend of green activities is changing, from controlling at business bases the emission of substances that impact the environment, to controlling generally the environmental impact that the products may generate. Customers are requesting that we guarantee we will not use products designated as harmful to the environment, or use other products that contain such harmful substances. Furukawa Electric conventionally established the Green Procurement Executive Committee under the Central Committee for Environmental Management to respond to our customers, and in fiscal 2004 we worked on the establishing a green product management system under the slogan of "Products bearing the Furukawa Electric brand will be made all green."

The Green Procurement Executive Commit-

tee, which has been operating for two years, dissolved at the 19th meeting, and instead a "Green Product Management Committee" was formed. At the same time, there was a review of the members of the committee, and representatives from the plants and the facility sections were added, in addition to those from the marketing and engineering sections. This committee aims to promote the introduction of a product certification system and practice global law observance management.

Targets of Green Product Management Activities

To establish a green product management system by December 2006 with the aim of making products of the Furukawa Electric brand all green
 ——Achieving products free of RoHS and RoHS-free plants——

Activities at Automotive Products Division

The Automotive Products Division of the Electronics & Automotive Systems Company worked on establishing an environmental impact substance management system in response to requests from automotive manufacturers.

In addition to the EMS System which includes reducing industrial waste, undertaking zero-emission and energy conservation activities, which plants have worked under in the past, we have made it our policy to establish a scheme in which prohibited environmental impact substances cannot be mixed with the products at each stage of our research, development, design, purchase, manufacture and distribution. The Automotive Products Divisional Environment Committee was set up in the Division and an environmental session was organized in each plant. This respective environmental session mainly clarified the supply chain of our products, the instruction not to use environmental impact substances with drawings

and specifications to vendors, and developed our receiving system to ensure the management of purchased products, the formulation of a scheme to prevent environmental impact substances from being used in our processes, and so forth.

We prepared a green procurement guideline for Automotive Products Division and held a briefing for our vendors. We also requested their cooperation in investigating purchased parts and materials using an environmental impact substance investigation sheet, disclosing constituent substance, presenting certificates confirming the non-use of specific environmental impact substances, etc., and our vendors fulfilled this request.

Analytical instruments were introduced in each plant, to verify that no prohibited substances were contained in our products, and we strengthened our management to ensure the carrying out investigation of purchased products and products to be shipped.

Green Procurement

For general commodities such as office supplies, we have designated products recommended by the Green Purchasing Network and products attached with eco-labels as products that meet our green procurement requirements. These products are displayed in green on the selection screen of our purchasing system so that purchasers can positively select products that conform to this network's recommendations.

For manufacturing parts and materials relating to our products and manufacturing processes (purchased products), we have proceeded with an investigation in the environmental management situation of our vendors and the content of hazardous substances in our products. The investigation results are organized using the green procurement support system to promote information sharing.



Screen of green procurement support system

Green Logistics

The Furukawa Electric Group has endeavored to reduce the environmental impact in the logistics area by reducing packaging materials, reusing and recycling cable drums and sharing transportation and delivery.

Measures to prevent global warming include:

- (1) the transportation and delivery of aluminum products from Furukawa-Sky's Fukui Works was changed from truck transportation to container transportation which uses a railroad; and
- (2) The NOx emission was previously known, but from fiscal 2004 the CO₂ emission began to be grasped.

We have promoted the reduction of CO₂ and NOx emitted from vehicles, and reduced the number of delivery vehicles, by increasing the practice of mixed loading and the use of large-sized vehicles, to contribute to the prevention of global warming.

(For details, please refer to the introduction of Furukawa Logistics, on page 29.)

Recycling Activities

The Furukawa Electric Group is positively working on material recycling and is promoting waste recycling by establishing a collection network and recycling system. We are also promoting the development of technologies to optimize the recycling of various materials, including copper, aluminum and plastics, with the aim of constructing a recycling-oriented society by reducing industrial waste and recycling other waste.

Recycling Technology

Furukawa Electric uses nine collection networks nationwide to collect wires and cables that have been removed, and almost 100% of the copper and aluminum, the raw materials for conductors, that are used in these cables is recycled. Insulation materials are also recycled for use in recycled plastics or as fuel. Cross-linked polyethylene, which was conventionally incinerated or disposed of in landfills, is recycled to make porous pipes for irrigation purposes, thus utilizing the property of this material.

At Zaikoo the automated processes of cable stripping, cutting, shredding and grinding are performed by using dismantling facilities to materially separate collected wires and cables (including optical cables). These materials are then sorted into polyethylene, polyvinyl chloride, iron, copper, etc. by the material sorter. Polyethylene and polyvinyl chloride are molded into recycled pellets, which are reused in various resin products of the Group. Metals such as copper, aluminum, iron and lead scrap are 100% recycled. Thus, Zaikoo has developed a recycling technology, aiming at a recycling society, and continues their challenge to totally eliminate waste by completely recycling disposed electric wires, from their collection to their dismantling to recycling. (Web site of Zaikoo <http://www.zaikoo.com>)



Automated dismantling facilities

Recycled products



Recycled electric wires (Communication cables)



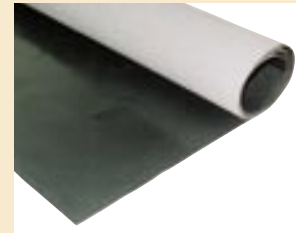
Recycled electric wires (Electric power cables)



Cable duct for underground laying (KOHTA KUN)



Synthetic resin trough (Green Trough)



Weed barrier sheet

Details of our recycling technology are accessible at the following Web site of Furukawa Electric.

<http://www.furukawa.co.jp/enviro/tech/index.htm>

Furukawa Electric has established a Recycle Center to perform various kinds of plastic recycling, such as reusing the discarded materials of various used plastic products and to recycle materials lost in the production process. Among others, we have a grinding line which shreds and grinds large-sized discarded plastic material, a volume reduction line that uses heat to shrink large-volume discarded foamed materials, a pellet extruding line that produces pellets from reduced-volume discarded materials by using an extruder.

The pellet extruding line is capable of cutting cross-linking of cross-linked polyethylene by using unique equipment and a unique process, and recycles pellets which have physical properties similar to those of virgin pellets. These recycled pellets are not only recycled into other

products, but they are also widely used as materials for injection molding and extrusion molding.



Pellet extruding line

Eco-Design Activities

Development of Environmentally Friendly Products

Eco-design has manifold aspects including designing products that consume small amount of energy in terms of LCA, material and structure selections that enable 3R, and designing products that do not contain toxic or hazardous substances. Therefore, Ecology & Energy Laboratory is promoting the development of environmentally friendly products from the following viewpoints.

- The laboratory performs research and development in products with a long life span, such as wires and cables and materials and structures that do not contain toxic or hazardous substances and can be recycled and reused.
- Conductors for electric power cables and communication cables are recycled, thanks to the establishment of a collection method for copper wires and aluminum wires. The laboratory performs product development of resins, which are collected simultaneously with conductors, putting priority on recycling them into electric wires and cables, and if this is not feasible, it aims to deploy resins for other plastic products.
- The laboratory applies processing technology honed over a long time, to new materials such as material derived from plants and vegetables, to develop distinctive products.

Voices of the development staff



Shigeru Tokuda
Eco-Products Department,
Ecology & Energy Laboratory,
R&D Division

Environmentally friendly products are not adopted without the application of laws and regulations. Even if we ask whether this situation is really acceptable, the reason for not adopting such products lies in high material costs, and half of our work is devoted to cost reduction activities.

When I am involved in developing recycling technology for plastic waste, I find that just by using a simple process, waste can be turned into an excellent product. One example of such a product is Green Trough. Considering that plastic waste is a resource, I wonder if it is all right to take plastic waste to China so quickly. Has Japan become a resource exporting country? This may be something that will not bring any joy.

Development of Non-halogen, PVC-substitute Equipment Wire for Pressure Welding (ECO-BEAMEX 105R)

Pressure welding wires are simultaneously pressure welded to connectors in a large number of wires.

Normal non-halogen wires are easily crushed and have small repulsion elasticity, and consequently they deform at the strain relief point, or sheathes peel off. In addition, it was not possible to use a normal non-halogen wire, because the sheath was cracked at the pressure welding blade.

We have developed pressure welding non-halogen wires that deform very little even at the strain relief point and whose

sheath is unlikely to crack under the pressure applied by a welding blade, by combining special base resin composition technology, fire retardant surface treatments and cross-linking technology.

The developed wires are sold as ECO-BEAMEX 105R and have been well received among our customers for use in office machinery.



ECO-BEAMEX 105R pressure welded to connector (has the same pressure welding workability as PVC wire)

Green Trough

This product is a recycled product made from plastic waste such as wire sheath waste, and replaces a conventional concrete trough. While utilizing the characteristics of a plastic that is lightweight and superior in durability, we have combined plastic with an inorganic filler to achieve the necessary rigidity and strength. Generally, the properties of waste plastic materials are inferior to those of virgin materials, and there are large variations in their performance. Therefore, we have optimized the type and quantity of the inorganic filler and used various additives to ensure a stable performance.

In terms of the shape, it has a connected structure that allows it to absorb the expansion and contraction caused by temperature changes, and at the same time a lid is used to secure it, so that it can be used safely under various settings and in strong winds.

There is a high demand for a concrete-colored one, and the commercial production of this is within sight.



Green trough

Examples of Environmentally Friendly Products

Furukawa Electric designates products that are safe and have a low environmental impact at each stage of their manufacture, use, distribution and disposal as "Environmentally Friendly Products", and these products have this environmental logo.



Porous pipe for irrigation, recycled from cross-linked polyethylene



Copper alloy substituting beryllium copper



Reflow oven for use with lead-free solder



Mechanical sleeve that can be easily removed from concrete and reused



Halogen-free electric wire for lighting equipment

Ratio of Environmentally Friendly Products

67%

The ratio of environmentally friendly product sales to new product sales is called the ratio of environmentally friendly products.

Details of environmentally friendly products are accessible at the following Web site of Furukawa Electric.

<http://www.furukawa.co.jp/enviro/pro/index.htm>

Environmental Risk Management

Countermeasures Regarding Pollution of Soil and Groundwater

We have been conducting soil and groundwater pollution investigations at facilities that have a history of using toxic substances. If the soil and groundwater is found to be polluted during these investigations, we promptly take action to secure the health and safety of the local community.

We also report to the government body about these environmental conditions and measures to be adopted to clean the environment, and disclose this information to the local residents, related institutions and media according to its content.

In fiscal 2003, we formulated "Soil Environmental Risk Management Guidelines", and in fiscal 2004 we deployed the above guidelines across the Furukawa Electric Group, which is carrying out activities according to these guidelines.

Especially, investigations into the history of use of specific toxic substances were conducted at each facility of Furukawa Electric and its affiliated companies. This work required a considerable amount of time and labor. It has been found, however, that toxic substances are or were used at various divisions, and that this investigation is effective in the risk assessment of soil and groundwater pollution. We will take measures according to the

assessed risk.

The standard that "Underground construction of storage facilities and piping for hazardous substances shall be prohibited when they are newly installed" was established by the division which

designs and installs manufacturing facilities of Furukawa Electric in December 2004. In the future, we will standardize and implement this design policy in the facility design sections of the entire Furukawa Electric Group.

Outline of "Soil Environment Risk Management Guidelines*" (*formulated in 2003)

- 1) We shall restrict the handling of specific toxic substances specified in the Soil Contamination Countermeasures Law.
In principle, the construction of new storage facilities and piping shall be positioned above ground when they are newly installed. Underground construction shall be prohibited.
- 2) We shall thoroughly manage the use, storage and disposal of hazardous substances and seek to switch to substitute substances.
 - ① For specific hazardous substances which are currently being used, areas where there is a possible risk of leakage of these hazardous substances into the soil and groundwater shall be checked and recorded.
 - ② We shall review processes where hazardous substances are used and seek to reduce the usage volume of such substances. We shall switch to substitute substances.
- 3) We shall implement an investigation into the usage record of specific hazardous substances at all plants and facilities.
 - ① We shall investigate the record of usage of specific hazardous substances, tracking back to around 30 years ago, and shall continue to monitor the usage of hazardous substances.
 - ② The record of usage of specific hazardous substances shall be investigated, according to the written materials and we shall record the periods and volume of purchases, use, storage, and disposal. The locations where each of these processes is carried out shall be recorded as a diagram, or in other ways, and these records shall be stored.

Situation and Countermeasures Regarding Pollution of Soil and Groundwater

① Situation and Countermeasures at Furukawa Electric

The countermeasures taken in fiscal 2004 are as follows.

① Nikko Works

Announcement April, September and November 2004

Contaminant Selenium, arsenic, lead, cadmium

Location Nikko City, Tochigi Prefecture Company-owned areas in Arasawa Uodome, Tanze and Kiyotaki 4-chome districts

Cleansing method Cleansing and recycling into cement materials, after the drilling and removal of contaminated soil

② NF Park Building (site where former Central Research Laboratory was located)

Announcement July 2004

Contaminant Lead, arsenic, mercury, trichloroethylene

Location 2-9-15 Futaba, Shinagawa-ku, Tokyo

Situation Soil pollution on the premises

Cleansing method Drilling and removal of contaminated soil, replacing with clean soil

* With regard to the Nikko District, cleansing work for two locations was completed in fiscal 2003. From fiscal 2005 onward, pollution investigations and cleansing work are scheduled to be implemented at six locations in the company-owned peripheral areas and scheduled to be completed by 2006.

② Situation and Countermeasures of Affiliated Companies

Furukawa Electric advises its affiliated companies to respond appropriately to local residents, government bodies and other parties involved.

Affiliated companies of Furukawa Electric that were found to have water and soil pollution in fiscal 2004 and their contamination situations are as follows.

● Tochigi Metal Co., Ltd.

Announcement May 2004

Contaminant Hexavalent chromium, lead, tetrachloroethylene

Location 1750, Kiyotaki Arasawa-cho, Nikko-shi, Tochigi

Situation Soil pollution on the premises of the company

Cleansing method Drilling and removal of contaminated soil, replacing with clean soil, vapor extraction, and cleaning of original site with a chemical treatment



Site of countermeasures taken for contaminated soil at Tochigi Metal

The following companies have continued to undertake countermeasures since 2003.

① **Totoku Electric**

Contaminant PCB, dioxin

Location Former Nagato Works (Nagato-cho, Chiisagata-gun, Nagano)

② **Kyowa Electric Wire**

Contaminant Lead, cyanogens, boron, fluorine, dichloromethane

Location Former Osaka Works (Neyagawa-shi, Osaka)

③ **Furukawa Color Aluminum**

Contaminant Hexavalent chromium fluoride

Location Main Works (Utsunomiya-shi, Tochigi)

④ **Furukawa-Sky**

Contaminant Tetrachloroethylene

Location Oyama Works (Oyama-shi, Tochigi)

PCB Management

Concerning PCB, which had been used as insulation oil for electrical equipment, transformers, electrical capacitors and stabilizers for fluorescent lights, the volume is controlled and properly managed at each of the works of Furukawa Electric. These stored PCBs will be processed by Japan Environmental Safety Corporation*, etc. one by one.

* Japan Environmental Safety Corporation is a "special company" established based on Japan Environmental Safety Corporation Law, wholly owned by the government, and mainly succeeding the PCB waste treatment programs of the former Japan Environment Corporation.



PCB storage status

Quantity of PCB stored

(unit: item)

No.	Name of works	Removed and stored	In use	Total
1	Chiba Works (Processed)	86	0	86
	Chiba Works (Unprocessed)	36	0	36
2	Nikko Works	182	140	322
3	Hiratsuka Works	40	3	43
4	Mie Works	53	73	126
5	Osaka Works	55	11	66
6	Kambara Works	0	3	3
7	Shinagawa Works	(Stabilizer only)	0	(Stabilizer only)
8	Yokohama R&D Laboratories	9	0	9
	Total	461	230	691

Compliance with Laws and Regulations

We are regularly confirming the laws and regulations to be observed, and making efforts for compliance by patrolling our sites to check the implementation status.

We keep track of revisions of laws and regulations, by closely following the latest information in government gazettes.

Conduct of Investigation Regarding Handling of Wastewater Data

In response to the problem of water quality data management at a certain company in Chiba Prefecture, Furukawa Electric rechecked the data of all of its works. As a result, two works were found to have made transcription errors, although they met the standards. These errors were corrected.

Oil Leakage inside Chiba Works

An oil leakage accident from an oil pipeline flange, caused by the swelling and deterioration of the relevant packing, occurred in August last year. Although no oil leaked outside the works and there was no fire, the leaked oil permeated the surrounding soil and contaminated a part of it. Upon reporting this accident to the

Content of Investigation

1) Management System concerning Pollution Prevention

- Are there standards?
- Is there a Management System Chart?

2) Analysis of Wastewater

- Is there a transparent and objective scheme for sampling and analysis?
- Is the analysis data known to the staff concerned? To what extent is it known?
- Is the handling of analysis data standardized?
- Is there any scheme that prevents description errors in automated data handling or data checks?
- Is there a scheme that checks the reports and the contents of the description concerning notification to municipalities?

3) Confirmation of Document Content Submitted to Municipalities Concerning Wastewater

- Was there any error in the submitted contents concerning analysis data?
- Was there any error in the transcription or compilation of analysis data?

4) Compliance Awareness of All Employees

- Is there education in law observance and ethics?
- Is there education and training in response to abnormal conditions?

fire, prefecture and city authorities, we completed the restoration of the area by taking measures such as replacing the contaminated soil, which included measures to prevent a recurrence.



Chiba Works / Work of replacing soil

Environmental Accounting

We compiled “environmental conservation cost”, “economic benefit associated with environmental conservation activities” and “environmental conservation benefit” to quantitatively grasp the results of environmental costs and benefits. This data is collected in conformity with the environmental accounting guidelines published by the Ministry of the Environment. For affiliated companies, the data is collected for 11 companies, an addition of three companies to the eight companies publicized for fiscal 2004. The companies covered are described on page 7.

Furukawa Electric

Environmental conservation costs were: 5.3 billion yen and capital expenditure of 400 million yen. Economic benefits were 260 million yen. Expenses increased by 360 million yen from fiscal 2003. This is due to an increase of 650 million yen in soil pollution treatment costs, despite a decrease of 300 million yen in resource circulation costs including waste disposal costs. Capital expenditure increased by 30 million yen.

Affiliated Companies

The companies included in the compilation this time are Furukawa Industrial Plastics, Furukawa Techno Material and Furukawa-Sky.

Environmental conservation costs were: 2.5 billion yen and capital expenditure of 800 million yen. Economic benefits increased by 300 million yen, due to the soaring prices of crude oil despite a decrease in the energy consumed.

(Unit: million yen)

Category	Key activity and the outcome	Furukawa Electric		Affiliated Companies
		Amount	Change over the previous year	Amount
(1) Business area cost	Pollution prevention such as air pollution, energy conservation, waste disposal, etc.	1,606	-277	1,559
(2) Upstream/downstream cost	Retrieval of containers, drums, etc.	408	49	117
(3) Administration cost	Audit of environmental management system, monitoring of environmental impact, etc.	470	-38	251
(4) Research and development cost	Development of environmentally friendly products, research in substitutes for toxic substances, etc.	1,134	-25	390
(5) Social activity cost	Tree planting, cleaning in local communities, donations, etc.	4	-2	3
(6) Environmental remediation cost	Assessment for environmental impact, cleanup of polluted soil, etc.	1,683	651	142
Total		5,304	357	2,462

For Furukawa Electric, the data in fiscal 2003 is recomputed under the same scope as for fiscal 2004. For affiliated companies, a change from those in the previous fiscal year.

Investment and Research Cost

(Unit: million yen)

	Furukawa Electric	Affiliated Companies
Investment and Research Cost	Amount	Amount
Environment-related investment	433	786
Total investment cost	8,402	9,418
Total research cost	9,667	4,131

Economic Benefit Associated with Environmental Conservation Activities

(Unit: million yen)

	Furukawa Electric	Affiliated Companies
Contents of Benefits	Amount	Amount
Revenues gained by recycling	179	75
Reduction in waste disposal costs	54	-27
Reduction in energy costs	30	-364
Reduction in water purchase costs	-3	0.3
Total	260	-316

* - (minus) represents an increase.

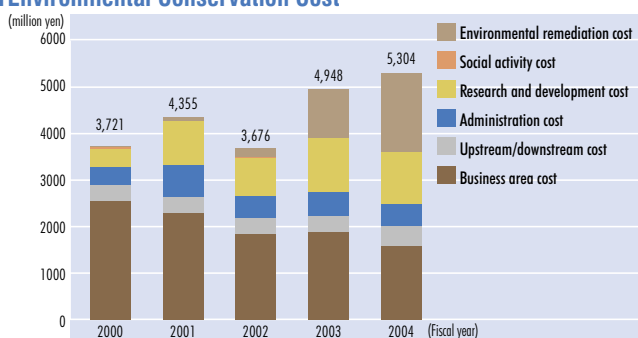
Environmental Conservation Benefit

	Furukawa Electric	Affiliated Companies	
Environmental Performance Indicators	Unit	Reduction	Reduction
Industrial waste disposal amount*	t	2,202	-632
Energy consumed (crude oil basis)	1,000 kℓ	3	6
Water consumed	1,000 t	1,100	-564
Emission of volatile organic chemical compounds	t	2	-2
CO ₂ emission	1,000 ton-CO ₂	5	15
SOx emission	t	-1	81
NOx emission	t	67	86
Soot emission	t	-2	-64

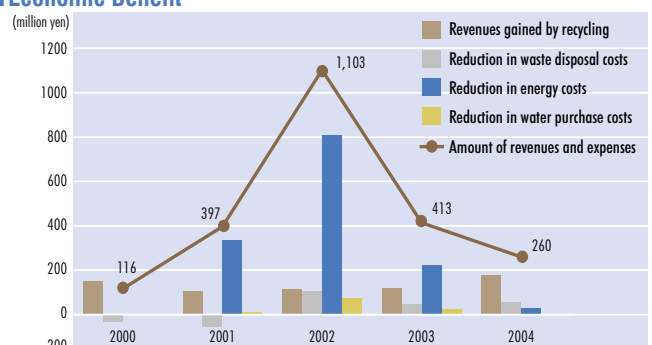
* Amount excluding recycled waste

* - (minus) represents an increase.

Environmental Conservation Cost



Economic Benefit



Environmental Preservation Performance Indicators

Of the works of Furukawa Electric, the data for atmospheric emissions and wastewater quality of four Works that are registered as specialized plants are described below.

■ Chiba Works

Atmospheric Indicators

Item	Unit	Equipment	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
NOx	(ppm)	Boiler	180	180	57	94
		Melting furnace	180	180	26	41
Soot	(g/Nm ³)	Boiler	0.2	0.2	0.009	0.017
		Melting furnace	0.1	0.1	0.032	0.042

Wastewater Quality Indicators

Measurement Item	Unit	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
pH		5.0~9.0	5.0~9.0	7.8	8.3
COD	(mg/l)	15	15	3.7	9.9
SS	(mg/l)	20	20	3.4	12.5
n-h (mineral oil)	(mg/l)	2	2	0.2	0.5

■ Nikko Works

Atmospheric Indicators

Item	Unit	Equipment	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
NOx	(ppm)	Boiler	180	180	111	130
		Melting furnace	200	200	32	41
		Dryer furnace	300	250	19	38
SOx	(K value)	Boiler	17.5	17.5	0.51	0.62
		Melting furnace	17.5	17.5	0.28	0.28
		Dryer furnace	17.5	17.5	0.20	0.20
Soot	(g/Nm ³)	Boiler	0.3	0.3	0.003	0.003
		Melting furnace	0.2	0.2	0.002	0.002
		Dryer furnace	0.5	0.2	0.006	0.007

Wastewater Quality Indicators

Measurement Item	Unit	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
pH		5.8~8.6	6.0~8.5	7.3	7.4
BOD	(mg/l)	25	16	3.7	5.1
SS	(mg/l)	50	20	1.0	1.6
n-h (mineral oil)	(mg/l)	5	0.5	0.2	0.2

■ Mie Works

Atmospheric Indicators

Item	Unit	Equipment	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
NOx	(ppm)	Boiler	180	140	65	68
		Melting furnace	180	140	12	15
SOx	(Nm ³ /Hr)	Boiler	0.6	0.5	0	0
		Melting furnace	41.6	33.3	0	0
Soot	(g/Nm ³)	Boiler	0.3	0.24	< 0.005	< 0.005
		Melting furnace	0.3	0.24	0.007	< 0.011

Wastewater Quality Indicators

Measurement Item	Unit	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
pH		5.8~8.6	6.5~8.5	7.4	7.7
BOD	(mg/l)	10	4	1.2	2.0
SS	(mg/l)	25	6	0.8	1.3
n-h (mineral oil)	(mg/l)	1	0.7	0.1	0.4

■ Osaka Works

Atmospheric Indicators

Item	Unit	Equipment	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
NOx	(ppm)	Boiler	150	120	2.0	2.0
		Melting furnace	200	160	2.0	2.0
		Heating furnace	170	144	2.0	2.0
SOx	(K value)	Boiler	1.17	1.17	0	0
		Melting furnace	1.17	1.17	0	0
		Heating furnace	1.17	1.17	0	0
Soot	(g/Nm ³)	Boiler	0.10	0.08	0.001	0.001
		Melting furnace	0.20	0.16	0.001	0.001
		Heating furnace	0.25	0.20	0.001	0.001

Wastewater Quality Indicators

Measurement Item	Unit	Legal Standards	Self-imposed Standards	Average Value	Maximum Value
pH		5.7~8.7	5.7~8.7	7.5	8.1
BOD	(mg/l)	300	10	4.0	9.0
SS	(mg/l)	300	50	12.2	26.0
n-h (mineral oil)	(mg/l)	5	2	1.2	2.0