



**Environment Report
2000**

FURUKAWA ELECTRIC

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Opening Remarks

The human race is entering upon a new millennium.

In the course of the 20th century mankind has made scientific and technological progress to a degree never before seen in his history. The economically advanced nations have created a civilization of material abundance and the developing world is on the way to escaping from poverty.

But these same trends have, in advanced countries, given rise to a culture of mass production, consumption and waste, and in the developing nations have led to the problem of an exploding population. The result is a progressive destruction of our environment, with depletion of the earth's resources of fossil fuels, water, and minerals, damage to the ozone layer, global warming, and the dispersion of harmful chemicals.

Man's activities are on the verge of exceeding the earth's own capacity to regenerate the environment.

If we are to bequeath to coming generations the earth's irreplaceable resources and environment, we must create, in the coming century, a model for sustainable growth-an environmentally sound society. We must not forget that mankind is an inextricable part of the global environment.

Furukawa Electric has long recognized that protection of the environment is one of the most important issues facing society, and we have made environmental awareness the cornerstone of all phases of our corporate activities.

In 1974 we established the Environmental Control Department and in 1999 upgraded it to the Safety, Environment and Health Promotion Department. In 1993 we enunciated a voluntary plan for environmental protection entitled "Basic Thinking on the Protection of the Global Environment" and in 1998 we announced our "Basic Environment Policy." To make our manufacturing processes more environment-friendly we are working to eliminate the use of materials damaging to the ozone layer, to save energy and prevent global warming, to reduce industrial waste, to promote recycling, and to promote the development of environmentally sound technologies and environment-friendly products.

We are on our way to acquiring ISO 14001 certification for all of our facilities, and are moving aggressively with such initiatives as eliminating the use of organic halide compounds and expanding the range of environment-friendly products.

This report summarizes Furukawa Electric's activities in the field of environmental protection for fiscal 1999, ended March 31, 2000.

We welcome your opinions and suggestions.



Junnosuke Furukawa
President

Basic Concept:

Furukawa Electric recognizes that preservation of the global environment is a critical issue for society, and shall incorporate consideration of environmental preservation issues into every phase of corporate activity, to contribute forwards the sustainable development of prosperous and bright society.

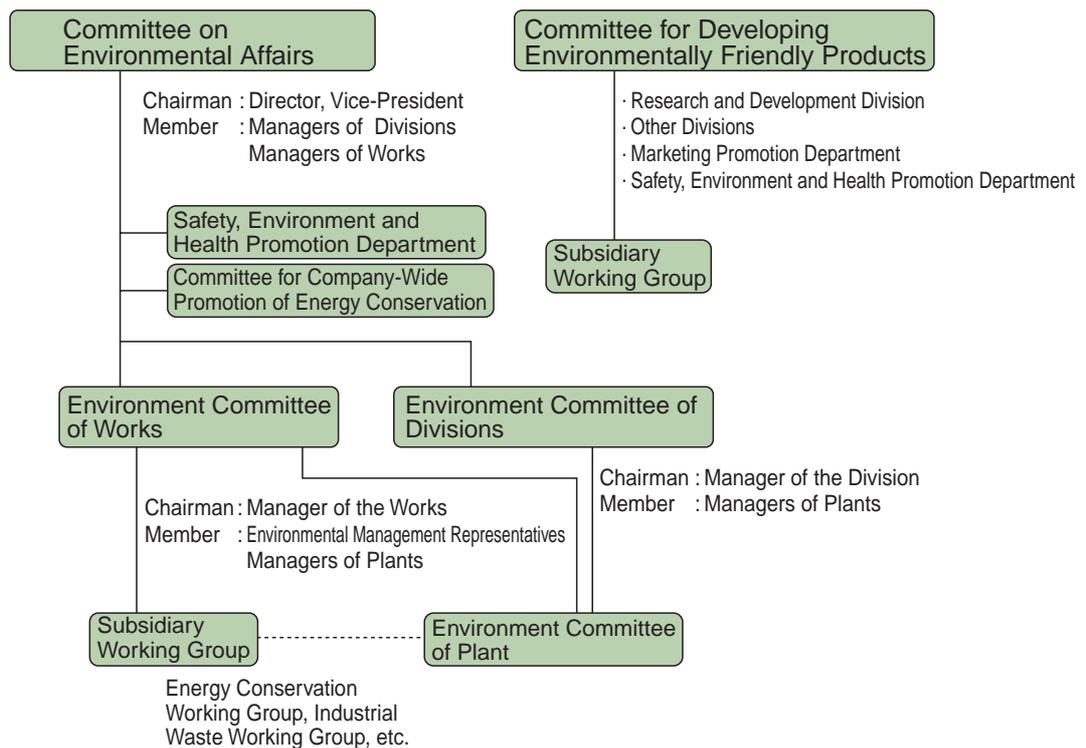
Activity Guidelines:

1. All activity shall be based on an awareness of its effect on the global environment, and environmental preservation activity shall be continued.
2. We shall observe national and local environmental laws and regulations, and when necessary define our own standards and environmental objectives and targets.
3. Environmental issues shall be taken into consideration in every phase of our work from the R&D and design stages, and we shall strive to supply environmentally friendly products.
4. In every phase of manufacturing, distribution and installation we shall work to reduce consumption of resources and energy, promote recycling, and reduce waste materials and environmental loading.
5. We shall create and maintain organizations as needed to promote environmental preservation activities, such as environmental management system.
6. We shall educate all employees regarding environmental preservation issues. Moreover we shall work to maintain and improve understanding of this policy and a better awareness of environmental preservation issues.

2. Progress of Corporate Initiatives

- 1972: "Company-Wide Regulations for Environmental Pollution Prevention" formulated
- 1974: Environmental Control Department established
Energy Conservation Team started
- 1989: Team for Use Reduction of Specified CFCs started
- 1993: "Basic Thinking on the Protection of the Global Environment" formulated
(Furukawa Electric's voluntary plan for environment preservation)
- 1996: Specified CFCs and trichloroethane completely eliminated from the company
- 1997: Promotion Team for the Reduction of Industrial Waste started
- 1998: "Furukawa Electric Basic Environmental Policy" formulated
Committee on Environmental Affairs established
Committee for Developing Environmentally Friendly Products established
The Chiba Works acquired ISO 14001 Certificate
The Mie Works acquired ISO 14001 Certificate
"Company-Wide Regulations for Environment Control" formulated revising
"Company-Wide Regulations for Environmental Pollution Prevention"
- 1999: Safety, Environment and Health Promotion Department started incorporating
Environment Control Department and Safety Control Sections
- 2000: Environment and Energy Laboratory established

3. Organization and Structure



4. Environment Preservation Initiatives



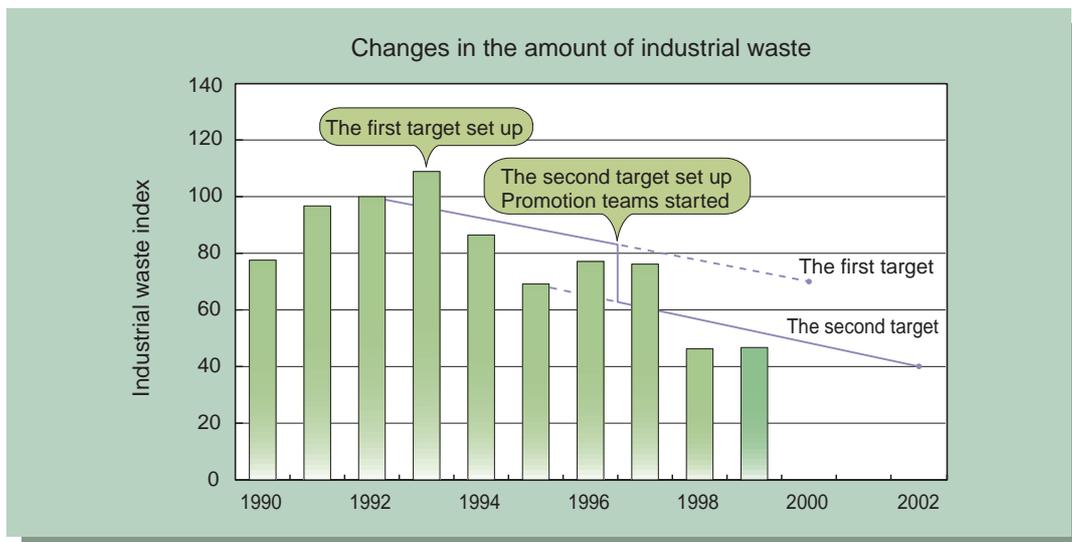
1) Industrial Waste and Recycling

◆ Industrial Waste

In 1993, a target was set up "to reduce the industrial waste as of FY 1992 by 30% by FY 2000". The target was achieved in FY 1995 through energetic activities of every Works focusing on the recycling of plastic waste, so that it was upgraded "to reduce the industrial waste as of FY 1995 by 40%, which corresponds to a 60% as of FY 1992, by FY 2002".

In addition, during the two years starting from 1997, the reduction program has been promoted by company-wide promotion teams to achieve further reduction. Hereafter, the program will be promoted through a systematic activity within the framework of the EMS (environmental management system) of each Works as well as through penetration of reduction technologies across the company to realize the 3Rs (reduce, re-use, recycle). The benchmarks for the realization are elimination of landfill waste in the first stage, upgrading gradually to zero emission of industrial waste in the last stage.

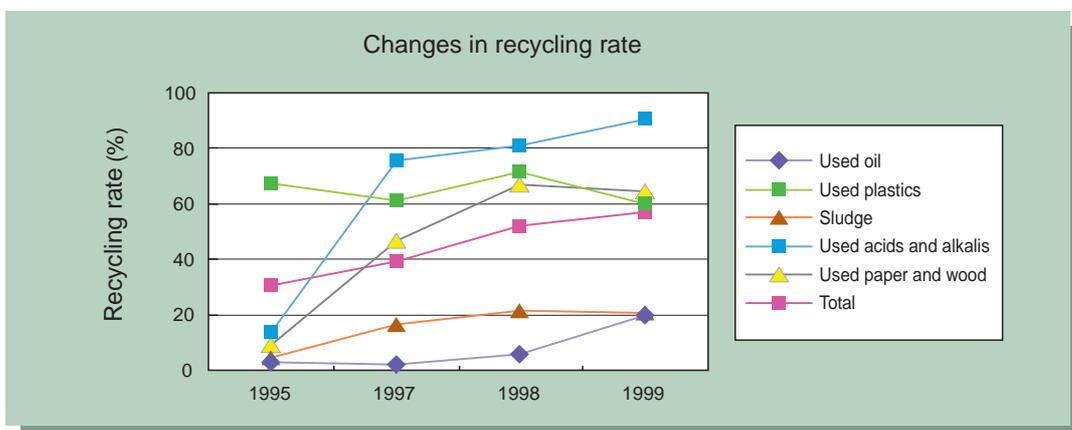
Countermeasures that are identified as major contributors to industrial waste reduction include the recycling of plastic waste, concentration and volume reduction of used oil, and the recycling of used acids and alkalis, sludge, used wood, and waste paper.



◆ Recycling

Although the recycling rate of Furukawa Electric has been improving year by year, it stagnated below 60% in FY 1999, thereby leaving ample room for further improvement. By category, used oil and sludge that account for a greater portion show a very low level of recycling. Furukawa intends, therefore, to focus on the emission reduction of these items together with the upgrading of their recycling rates hereafter.

When it comes to wire and cable, i.e., the company's mainstay products, Furukawa has long been successful in establishing a recycling system, in which Zaiko Inc., a 100% subsidiary of Furukawa Electric, has been engaged in disassembling used cables to recycle metals from cable conductors and plastics from cable insulators.



Note

The rate of recycling takes into account valuables and in-house reuse (limited to the goods processed outside the company).

2) Energy Conservation and Global Warming Prevention

◆ Progress, Structure, and Target of Energy Conservation

Furukawa Electric has been making every effort to save energy, since the company basically belongs, with its energy cost accounting for a large portion of the total cost, to energy intensive industries.

In 1974, the year of an oil crisis, promotion teams were organized across the company, achieving an energy conservation of 20% within five years. The achievements were evaluated, on a manufacturing-section basis, using an energy conservation index which was derived by comparing the result of a standard formula with actual results.

The second term of energy conservation started in 1980 with new promotion teams of entirely replaced members, thus achieving an energy conservation of 17% during the seven years until 1987.

In 1997, Furukawa's proprietary management system using energy conservation index was modified into the energy intensity per unit product system based on the Energy Conservation Law, whereby the target was set to be a 1% reduction over the previous year in terms of energy intensity per unit product.

◆ Achievements of Energy Conservation for FY 1999

Last year, energy conservation attained to more than 2% in terms of energy intensity per unit product thanks to the progress in energy conservation measures together with a high operation volume. Concerning energy conservation investment, a high-performance industrial furnace was introduced in FY 1999 succeeding FY 1998 under the subsidy from the New Energy and Industrial Technology Development Organization(NEDO). Moreover, waste-heat boilers were introduced to the existing diesel generators, and inverters were extensively installed on pumps and blowers.

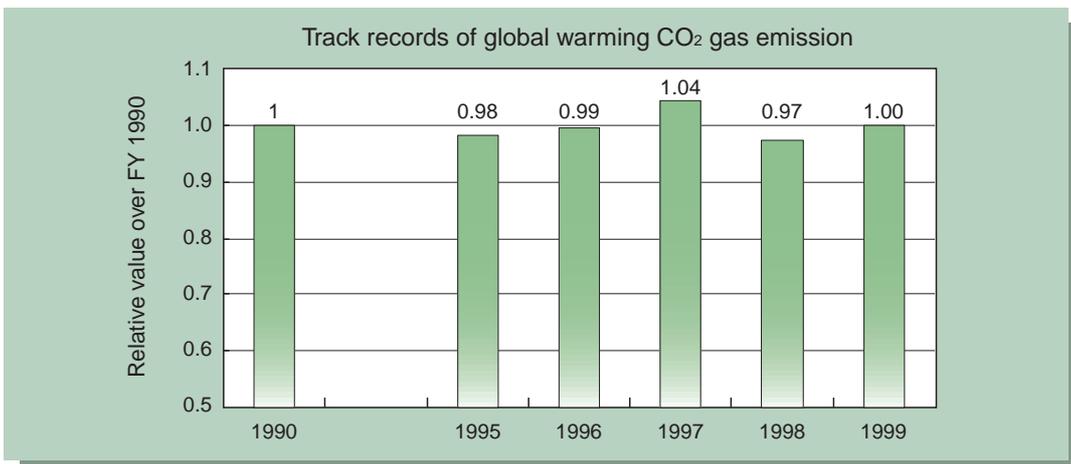
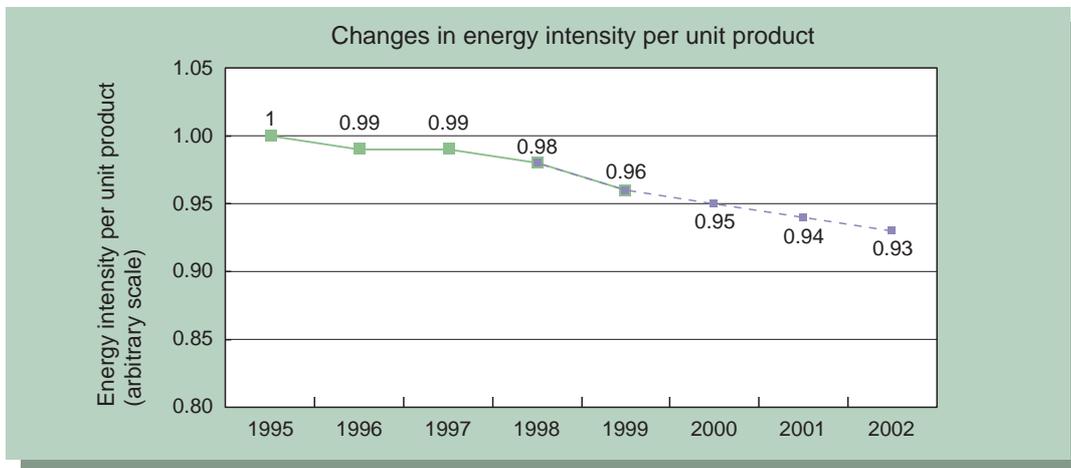
Regarding global warming gas reduction, on the other hand, the CO₂ impact increased by 3% over the previous year, rendering the emission volume comparable to that of FY 1990.

Thus, although the energy conservation program has made good progress, the reduction of emission per se has not been accomplished due to the increase of energy intensive products and operation volume.

◆ Energy-Conservation Activities in Future

Furukawa intends to formulate a control criterion that conforms to the Energy Conservation Law, thereby making efforts to achieve a reduction of 5% or more in energy intensity per unit product in five years.

Regarding the reduction of global warming gas impact, introduction of co-generation energy systems is being studied, since it is estimated that reduction efforts in terms of energy intensity per unit product only are insufficient to achieve the reduction target.

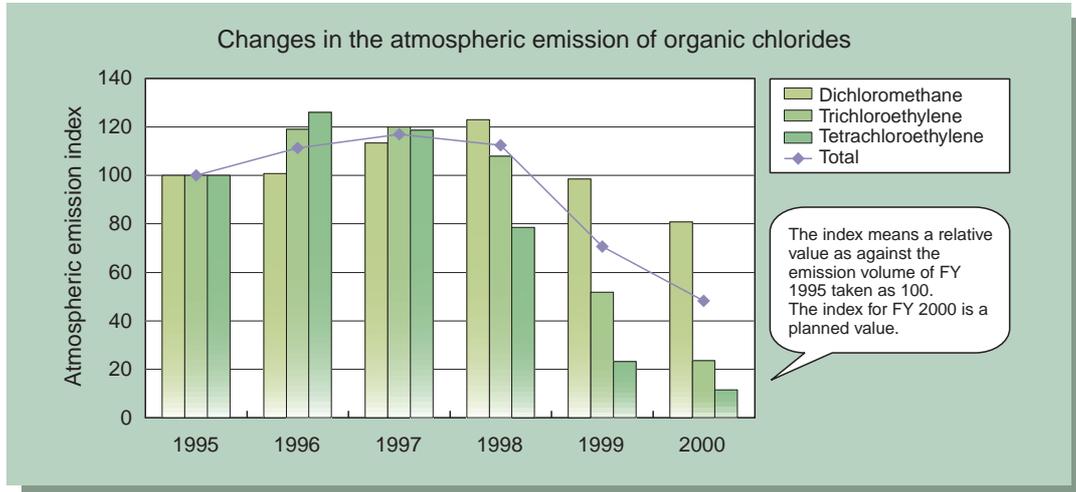


3) Organic Chlorides

A voluntary plan for reduction activity has been set up to reduce the atmospheric emission of three organic chlorides-dichloromethane, trichloroethylene, and tetrachloroethylene-by 50% by FY 1999 over FY 1995, taking into account the impact of the use on the labor and social environments as well as the growing importance of the impact. As a result, however, the activity ended unsuccessfully achieving a 30% reduction.

For FY 2000, the target was revised anew as shown below to make further reduction.

- 1) To reduce the atmospheric emission by 50% by FY 2000 over FY 1995
- 2) To eliminate the three substances by FY 2002



4) Ozone Layer Protection

Furukawa Electric has been engaged in the reduction of ozone layer depletion substances based on the strenuous efforts of project teams that started in 1989. As a result, specified CFCs and trichloroethane used in manufacturing processes were completely eliminated by the end of FY 1995.

5) Control of Chemical Substances

In April 2000, the PRTR (pollutant release and transfer register) law came into force thus tightening the control of chemical substances. Prior to this enforcement, Furukawa Electric was already promoting reduction programs against chemical substances, focusing on organic chlorides, through an active participation to the PRTR research program sponsored by the Federation of Economic Organizations, thereby announcing to the public the emission and transfer volumes of chemical substances at every Works.

As of FY 1998, the chemical substances that Furukawa is using amount to 23 in species, 2490 tons/year in handling volume, and 641 tons/year in the emission and transfer volume, including major substances as shown in the table below.

Furukawa intends to actively promote the reduction program of not only the emission and transfer volume, but also the handling volume of these substances without limiting to organic chlorides.

Chemical substance	Emission & transfer volume(tons/year)	Handling volume (tons/year)
Toluene	374	609
Dichloromethane	101	122
Trichloroethylene	80	80
Xylenes	22	603
Chlorine	12	167
Others	52	909
Total	641	2490

6) Acquisition of ISO 14001 Certificate

Recognizing early the importance of an environmental management system, Furukawa Electric has been constructing such a system of its proprietary design, so that when an international standard for environmental management system was established, the company began to tackle the certificate acquisition for ISO 14001.

In 1998, the Chiba and Mie Works acquired the certificate. These Works are the composite production basis comprised of a variety of plants for such products as electric wire and cable needless to say, optical components, automobile components, aluminum products, and copper products. Thus, based on this acquisition experience, Furukawa plans to extend the acquisition program across the company, in which three Works are due for acquisition in FY 2000, followed by the rest of all the 11 Works including laboratories by FY 2002.

Acquisition year	Works / Laboratories	Certification Agency	Certificate No.
1998	Chiba Works	DNV	EMCS-1208
1998	Mie Works	JACO	EC98J1097
2000	Hiratsuka, Kambara, Osaka		
2001	Shinagawa, Nikko, Fukui		
2002	Shiga, Oyama, Yokohama		

7) Education and Training

Commitment of individual employees is essential for environment preservation activities to be successful, in addition to organized corporate activities. To this end, Furukawa is carrying out employee education by preparing a lot of educational materials including those on the Intranet so as to enhance the awareness of individual employees.

Subject of education	Lecturer	Frequency
New employee	In-house lecturer	At entrance to the company
General employee	In-house lecturer	Whenever necessary
Managerial class	In-house lecturer	Whenever necessary
In-house inspector	In-house lecturer/Outside lecturer	Whenever necessary
Personnel in charge of safety and health	In-house lecturer	Twice a year

5. Environment-Friendly Products and Recycling Technology

1) Environment-Friendly Products

To protect the environment and contribute to the realization of a sustainable society, Furukawa Electric recognizes that “the 21st century is the century of the environment,” and in response to the needs of society and our customers, is actively working to develop environment-friendly products and technologies. Our aim is to develop a range of commercially viable “environment-friendly” products—products that at every stage, from materials selection, manufacture and use to distribution and disposal, will be non-toxic and of low environmental impact.

◆ Development Concept and Representative Environment-Friendly Products

The development of environment-friendly products aimed at the reduction of environmental impact and the realization of an environment-conscious society will be carried out in accordance with the following basic concepts:

(1) Development of Products with Reduced Environmental Impact

It is essential that products not create environmental problems when they are used, but further, they should not be the source of toxic by-products when they are eventually disposed of by incineration or in landfills.

Furukawa Electric has developed an electric wire with low environmental impact which uses no PVC, other halogenous substances or lead compounds.

In the field of electronics there is strong demand for lead-free solder, and we are developing such materials.

(2) Development of Products that Contribute to Prevent Ozone Layer Depletion

We are developing devices and processes that do not use CFCs, together with products adapted to CFC substitutes. We are also developing a reflow oven that eliminates washing and use of CFCs, and refrigerant-resistant windings capable of being used in cooling systems using CFC substitutes.

(3) Development of Products that Contribute to Reducing Waste and Achieving a Recycling-Oriented Society

Waste not only causes environmental pollution, it depletes the limited stock of natural resources. We are moving to develop products that reuse waste materials, products that feature unification of materials to facilitate recycling, and products that are biodegradable and thus do not leave residual waste products. These include underground ducts made from cable waste, can stock made from recycled aluminum, biodegradable resin sheet, etc.

(4) Development of Products that Contribute to Global Warming Prevention

Through the development of products that realize energy conservations, clean energy systems and the like, we are developing products that contribute to the prevention of global warming. These include high-performance heat-exchanger materials, solar photovoltaic systems, and more. In cooperation with the Research Institute of Innovative Technology for the Earth, Furukawa Electric is conducting research on a system that can transport and store liquefied CO₂ in the sea at depths in excess of 3000 m using flexible pipes suspended from floating base-stations.

In the following paragraphs we will present examples of products based on these concepts that are providing solutions in a wide range of fields.

Typical Environment-Friendly Products

Name of product	Field of application	Stage of development*	Features
(1) Products with reduced environmental impact <ul style="list-style-type: none"> ■ ECO-ACE environment-friendly electric wires ■ Lead-free electric wires ■ Lead-free plated parts for electronic equipment 	Home appliances, power distribution, communications Automobiles Electronic parts	NP/UD NP NP	Non-halogen, lead-free Lead-free Lead-free
(2) Products that contribute to preventing ozone layer depletion <ul style="list-style-type: none"> ■ HPWR II heat- and refrigerant-resistant magnet wires ■ SALAMANDER nitrogen-atmosphere reflow ovens ■ FULL-COAT functional resin-coated aluminum sheets 	Home appliances, automotive Electronic equipment Electronic equipment	NP NP NP	For CFC substitutes Eliminates CFCs Eliminates lubricants and cleansers
(3) Products designed for reduced waste disposal and improved recyclability <ul style="list-style-type: none"> ■ Recycled aluminum can stock ■ Recycled aluminum power distribution wires ■ All-aluminum air-conditioners ■ CCBOX and Information Box underground ducts ■ BIO-ACE biodegradable resin sheets 	Cans Wire and cable Home appliances Electric wire installation Packaging materials	NP NP UD NP NP	Recycling Recycling Unification of materials Reuse of materials Biodegradability
(4) Products that contribute to preventing global warming <ul style="list-style-type: none"> ■ MCPET high-reflectivity foamed sheets ■ High-performance heat-exchanging material ■ Products containing micro heat-pipes ■ Solar photovoltaic systems ■ Deep-sea CO₂-fixing systems 	Lighting Automobiles Electronic equipment Electric power Power generation	NP NP NP NP NP	Energy conservation Lightweight, saves energy Saves energy Clean energy Reduces CO ₂

*NP = new product; UD = under development

(1) Products with Reduced Environmental Impact

■ Non-Halogenous Wire and Cable

By developing polymers and flame-retarding agents, we have achieved products free of halogens, lead and phosphorous, which permit easy disposal by incineration. Wires for electrical appliances, power supply cords, highly flame-retardant low-voltage cables, and "ECO-ACE" general cables for indoor use are already in use.



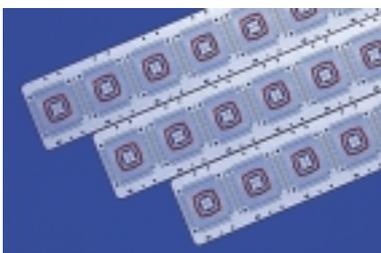
■ Lead-Free Electric Wires

By developing non-lead stabilizers for insulating resins, we have eliminated lead thereby solving the problem of lead leaching from landfills. These are already being used in automotive applications.



■ Lead-Free Plated Parts for Electronic Components

Lead-free plating for the leads of ICs, capacitors, connectors, printed circuit boards, etc. has been achieved by using a tin-bismuth alloy instead of the tin-lead material used previously, so that elimination of lead from customers' mounting process can be much improved.



(2) Products that Contribute to Preventing Ozone Layer Depletion

■ HPWR II for Use with CFC Substitutes



These heat- and refrigerant-resistant magnet wires are now in use in the compressor motors of air-conditioning and refrigerating systems using CFC-substitute refrigerants (HFC-R407C, R410A, R134a).

■ Copper Tube for Use with CFC Substitutes (Furukawa Super Clean Tube)

These are heat exchanger copper tubes with improved cleanliness in the tube's inner surface. They are for use with R134a, a new CFC-substitute refrigerant used in car air conditioners, as well as in refrigerators and the like in the future to reduce the ozone layer depletion.

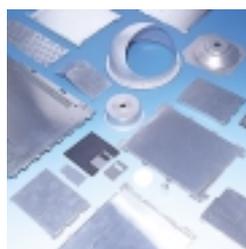


■ SALAMANDER-XN Nitrogen-Atmosphere Reflow Oven

This reflow oven carries out the reflow soldering process during the mounting of electronic components in a nitrogen atmosphere. This eliminates the need to cleanse completed circuit boards, obviating the use of CFCs.



■ FULL-COAT Functional Resin-Coated Aluminum Sheets



These functional resin coated aluminum sheets provide enhanced formability, corrosion resistance, scuff- and fingerprint-resistance, resistance to chemicals, electrical conductivity, ease of printing, and anti-bacterial and anti-mold properties. They are also self-lubricating, so that disposal of the lubricants and cleansers formerly used in the stamping process is eliminated.

(3) Products that Contribute to Reducing Waste and Achieving a Recycling-Oriented Society

■ Recycled Aluminum Can Stock

The use of can stock made from used beverage cans contributes to promoting aluminum recycling.



■ Recycled Aluminum Power Distribution Wires

We have succeeded in processing the old power distribution wire removed and retrieved by power utilities by developing techniques for sorting the aluminum wire, re-refining it and managing impurities, and remanufacturing it as wire rods and distribution wire.



■ BIO-ACE Biodegradable Resin Sheets

When these foamed sheets used in packaging and wrapping are disposed of in landfills, they are completely broken down by the action of microorganisms in approximately one year. We have developed an environment-friendly foaming process based on our proprietary technology.



■ KOHTA KUN Underground Cable Duct Made from Cable Waste

This underground cable duct with multiple bores makes effective use of plastic waste. "KOICHI KUN" duct for information box use is also highly reputed.



(4) Products and Systems that Contribute to Preventing Global Warming

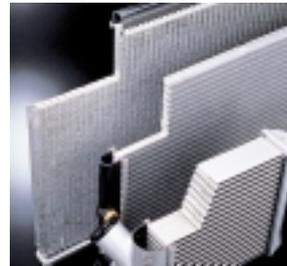
■ MCPET High-Reflectivity Foamed Sheets

Furukawa Electric is the first in the world to succeed in the commercial-scale production and marketing of white sheets made of extra-fine foamed polyethylene terephthalate (PET). Bubble diameter is so small that optical performance is outstanding, with a total reflectivity of 99% or more.



■ High-Performance Heat-Exchangers Material

High-performance internally multigrooved pipes deliver energy conservations in home and industrial air-conditioners. We have also developed aluminum radiator and air-conditioner materials for automotive applications that are lighter in weight, promoting better fuel economy and reducing CO₂ emissions.



■ Solar Photovoltaic Systems

These clean distributed power generating systems use solar batteries to convert the sun's rays directly into electricity.



■ Micro Heat-Pipes

Furukawa Electric's micro heat-pipes provide a solution to the problems of heat-dissipation and cooling of electronic equipment, making possible greater availability of computing power along with energy conservation.



◆ Product Development in Future

In future, new product development must take account of the environmental impact over the whole life of the product, and life cycle assessment (LCA) is a technique that is gaining wide acceptance. Furukawa Electric has already begun conducting life cycle assessments in relation to the development of insulated cables and aluminum heat exchangers.

2) Recycling Technology

(1) Recycling System of Electric Wire and Cable

Recycling systems of used power cables and communication cables from customers have been established, thus enabling reuse of conductors mainly.

Recycled cables are disassembled and separated material to material, and subsequently reused. Copper and aluminum from conductors are 100% reused, while covering materials are reused as recycled plastic and fuel achieving a considerable reusability.

(2) National Project for the Development of Recycling Technology

During the 5-year period 1991-96, the Japan Electric Cable Technology Center (JECTEC) has been involved with cable manufacturers under the aegis of the Ministry of International Trade and Industry (MITI) in research on thermal recycling through the development of liquefaction and pulverization technologies. Since FY 1998, research has been going forward on the use of PVC as solid fuel.

With respect to aluminum, funding from the New Energy and Industrial Technology Development Organization (NEDO) made it possible for the Japan Research and Development Center for Metals (JRCM) and seven manufacturers of aluminum rolled products to embark in 1993 on a 10-year project to develop technology to promote aluminum recycling



Furukawa Electric manufactures a broad range of products, from electric wire and cable to fiber-optic components, electronic parts, and plastic and metallic materials, and we will mobilize all of our expertise to advance solutions to problems of the environment.

6. Information Publicity

Furukawa Electric publicizes general information on the company's environment preservation initiatives as described below.

◆ Furukawa Electric's Web-Site

The company's environment preservation initiatives appear on the web-site below under the title of "Environmental Actions".

<http://www.furukawa.co.jp/enviro/english/index.html>

◆ Furukawa Review No.19, April 2000

Selected Papers on the Development Technology for Environment-Friendly Products

Appearing also on the web-site at:

<http://www.furukawa.co.jp/review/review.htm>

◆ Annual Report 1999

Furukawa's environment preservation initiatives are introduced in the annual report published for the sake of foreign investors.

FURUKAWA ELECTRIC ANNUAL REPORT 1999, April 1998 - March 1999

"Furukawa Electric's Environmental Preservation Activities"

◆ Exhibition (Domestic)

- ECO-PRODUCTS 1999: MCPET high-reflectivity foamed sheets; others
- Electric Installation Industry Exhibition 1999: ECO-ACE; KOHTA KUN
- Technologies for Humans and Automobiles 1999: Automobile wire harness made of Pb-free electric wire
- Sign and Display Show: MCPET for sign board
- SEMICON JAPAN99: UV-TAPE cleansing-free back-grinding tape; SALAMANDER reflow furnace for semiconductor industry

7. Outline of the Company

Name	The Furukawa Electric Co., Ltd.
Founded	1884, reorganized 1920
Capital	56.7 billion yen
Net Sales	504.8 billion yen, FY 1999
Employees	8,685
Head Office	6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8322 Japan

Manufacturing Facilities and Major Products

Chiba Works	Power cable, optical fiber cable, telecommunications cable, optical / communications equipment, various cables
Nikko Works	Copper products, contact materials, aluminum alloy plate / strip / forged products, memory disks, superconductive products
Hiratsuka Works	Magnet wire, insulated wire, power cable equipment, communications equipment, optical equipment, optical network systems, plastic products
Oyama Works	Aluminum extruded shapes, aluminum pipe / rod / wire, aluminum casting / forging
Mie Works	Copper and copper alloy strip, copper wire rod, copper wire, magnet wire, optical fiber cable, automotive components, plastic products
Osaka Works	Copper and copper alloy pipe / strip, sheathed copper tube, finned tube, heat-pipes
Fukui Works	Aluminum sheet / can stock / thick plate
Kyusyu Works	Power cable, cable processed products, special rubber insulated wire, plastic cable conduit
Shiga Works	Aluminum extruded shapes
Kambara Works	Overhead transmission wire
Shinagawa Works	Power cable design / engineering, ocean engineering
Yokohama Laboratories	Support for generic technologies, development of leading-edge technologies and new products

We can.

 **THE FURUKAWA ELECTRIC CO., LTD.**

Safety, Environment and Health Promotion Department
6-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8322 Japan
<http://www.furukawa.co.jp/>