

# Kyocera Environmental Report



## Living Together

**Living together with the Earth.**

To preserve only one Earth ...  
We wish to work cooperatively together on  
environmental preservation activities to  
help preserve our one and only earth.

*2001*

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While the technical progress and economic development of advanced nations have offered us a wealthy material community and remarkable improvement in the standard of living, these benefits have also been accompanied by problems including increasing environmental pollution and disruption of the ecosystem due to factors such as the mass consumption of natural resources and the mass discharge of chemicals. Explosive increases in population and increasing poverty in developing countries have also exacerbated environmental disruption in ways such as large-scale tree trimming. In this way, the socio-economic activities of advanced and developing countries that require more material consumption are intertwined with each other, have gone beyond the power of nature to restore herself, and are now well on the way to destroying the global material-recycling mechanism. This fact overturned the major premise of unlimited large-scale ecosystem assumed implicitly in the technical system up to now, and revealed that the earth has a closed ecosystem. The meaning of this change in recognition related to environmental conditions for the existence of humans is considered to urge us to review both the quality and quantity of materials used by humans and to have basic changes in our industrial technology system that produces the materials.

We are expected to have a new policy objective from now on to promote development and economic growth while respecting the balance between nature and society in the quest for the preservation of our global environment. We must also embrace the idea of coexisting in peace and prosperity as equal members living together on the earth, our mother planet, without rivalry between advanced nations and developing countries, economic circles and government, and individuals and communities. Based upon the company policy, “Respect the Divine and Love People”, we have advanced our management rationale to provide opportunities for the material and intellectual growth of all our employees and, through our joint effort, contribute to the advancement of society and mankind, and worked together cooperatively to help everything and everyone on this earth to continue to live since the foundation. This is exactly what is required for corporations that work on today’s global environmental problems and indicates that business activities must maintain the dignity of humans and allow the society to continue and develop. Our company and domestic and international affiliates have always followed earth-conscious management based upon this philosophy for many years. Then, in 1990, to promote even more extensive activities than before, our corporation established the “Kyocera Green Committee”, which handles general global environmental problems and subordinated group of experts. In 1991, we also established the Kyocera Environmental Charter which stated our comprehensive action plan against global environmental problems.

In 1992, based upon this plan, we launched the Kyocera Environmental Preservation Activities using three-year planning periods that include such commitments as establishment of the Kyocera eco-label authorization system for earth-friendly products and the Kyocera environmental management criteria, protection of the ozone layer, reduction of industrial waste, and conservation of energy and resources. Today, we are going ahead with the tertiary activities that started in 1999 that include our conventional and newly-added commitments such as prevention of global warming, general controls for chemicals, and other important objectives.

The industrial pace of mankind so far was composed of three rapid progressive stages of the agricultural, industrial, and information revolutions. The efforts against today’s environmental problems will go down in history as the environmental revolution and will be the fourth historic stage. Therefore, under the recognition that we have a great role and expectation as one of the businesses that have technology and directly engage in industrial activities, we will keep making further efforts, putting together the power of the Kyocera Group throughout the world.

We have prepared this report to introduce our position and activities. We hope that this report will help you to understand our commitments, positions, and activities for safeguarding our global environment.



Yasuo Nishiguchi  
President and Representative Director

A handwritten signature in black ink, appearing to read 'Y. Nishiguchi', written in a cursive style.



Company policy

敬天愛人

< Respect the Divine and Love People >
Preserve the spirit to work fairly and honorably,
respecting people, our work, our company and our global community.

Management rationale

To provide opportunities for the material and intellectual growth of all our employees, and through our joint effort, contribute to the advancement of society and mankind.

Management philosophy

To coexist harmoniously with nature and society. Harmonious Coexistence is the underlying foundation of all our business activities as we work to create a world of abundance and peace.

Corporate summary

Corporate name : Kyocera Corporation
Established : April 1, 1959
President : Yasuo Nishiguchi
Capital : 115,703,320,000 yen
Sales : March 2001
Simple substance : 652510 million yen
Combination : 1,285,053 million yen
Employees : 14,651 (As of March 2001)
Major business : Fine ceramic components
Semiconductors and electronic components
Fine ceramic consumer products
Optical, telecommunication, and information equipment

Global network



Network in Japan





Activity Development

Environmental-related movement (domestic and global)

Kyocera Environmental Commitments

Montreal Protocol

Ozone-Layer Conservation Law

Establishment of the eco mark

The Global Environmental Charter of the Japan Federation of Economic Organizations

The law for promoting usage of recycled resources

Basic Environment Law

Agenda 21 action plan

Basic Environmental Plan

Container and Packaging Recycling Law

Setting ISO14000 series standards

COP3 Third Conference of the Parties to the United Nations Framework Convention on Climate Change (Kyoto)

The law for promoting the prevention of global warming

Specific Household Appliance Recycling Law

PRTR Law

The special measures law on countermeasures against dioxins

Fundamental law of cycloid type society formation and promotion

1985

Establishing an Environment Department at the headquarters

1987

1988

1989

Starting to regulate fluorine

1990

Establishing the Kyocera Green Committee (KCGC)

1991

Establishing the Kyocera Environmental Charter

Assigning an environmental director in charge

Starting activities to recycle used paper

Establishing the Kyocera Group Green Committee (KGGC)

1992

Starting the primary environmental preservation plan

Complete elimination of specific fluorines

Establishing the Kyocera eco label

Releasing the FS-1500 (Ecosys), the world first non-cartridge type LBP

1993

The Ecosys printer was authorized as the first eco-marked product in office automation equipment

1994

Complete elimination of trichloroethylene methylbromide

1996

Launching the secondary environmental preservation plan

Acquisition of ISO14001 authorization at the Mie Plant

Complete elimination of tetrachlorethylene HCFC-141b

1997

Acquisition of ISO14001 authorization at nine production locations

1998

Starting green procurement

Completing the Ecology Headquarter building

1999

Acquisition of ISO14001 authorization at six major operation centers

Launching the tertiary environmental preservation plan

Completing company-wide acquisition of ISO14001 authorization

Global Environmental Grand Prix (received the Fuji Sankei group prize)

Complete elimination of CFC substitutes except for HCFC-141b

2000

Acquisition of the ISO14001 KYOCERA group integration certification (Extension of the certification acquisition range)

Open on the internet of the environmental report book 2000 edition



## Activity Development

Kyocera established the Kyocera Environmental Charter on October 1, 1991 and declared to implement comprehensive, active and continual activities for promoting global environmental preservation.

Kyocera and the domestic and overseas group companies have committed themselves to environmental preservation, taking the Kyocera Environmental Charter as an action guide.

(An Excerpt from the Kyocera Environmental Charter)

### Basic Philosophy

Based upon the company policy, "Respect the Divine and Love People," Kyocera has advanced the management rationale to provide opportunities for the material and intellectual growth of all our employees and, through our joint effort, contribute to the advancement of society and mankind and worked for harmonious coexistence to help everyone and everything on earth to live. This is exactly what is required for a corporation that works on today's global environmental problems and indicates that businesses must maintain human dignity while allowing the society to continue to develop. Kyocera has adopted this idea. Based upon this philosophy, Kyocera and the domestic and global group companies should take more and stronger actions to preserve the global environment including overall commitment to environmental preservation, saving resources and energy, and developing earth-friendly products.

### Basic environmental policy

Kyocera should place a high value on preserving the global environment based upon the basic philosophy in corporate activities and the major focuses should be placed on the following items:

1. Observing in-company environmental criteria that gives top priority to preserving the global environment
2. Making the best possible use of resources and process technology innovations
3. Developing products that are environment-friendly and have low environmental impact
4. Cooperation in environmental political measures and participation and support for social activities

### Basic environmental purposes

1. Formulating and observing voluntary in-company standards that are stricter than the international treaties, national laws and regulations, local government ordinances where operation centers are located, and other items in order to reduce the deterioration of the natural environment and the influence on the ecosystem.
2. Scientifically evaluating and studying the influence on the environment of all stages of corporate activities, and then taking any necessary remedies.
3. Developing outstanding process technology and production facilities based on the best use of resources and luminous energy efficiency for production activities while working on reducing the raw material costs for each process.
4. Expanding energy conservation by means such as improving consumption efficiency of electricity and fossil fuels; introducing efficient equipment; and using waste heat recovery.
5. Making efforts to purchase product related materials that conserve resources and can be renewed, and so on. Also establishing recycling systems for waste water and materials and other items for the effective utilization of resources, and to promote reduction in weight and detoxification.
6. Researching and developing environmentally friendly products to contribute to global environmental improvement.
7. Researching and developing environmental-impact reducing products that minimize the environmental impact for each stage of manufacturing, sales, distribution, use, and waste.
8. Promoting afforestation of the operation centers and implementing environmental considerations that aim at creating comfortable environments with plentiful greenery and enjoyment.



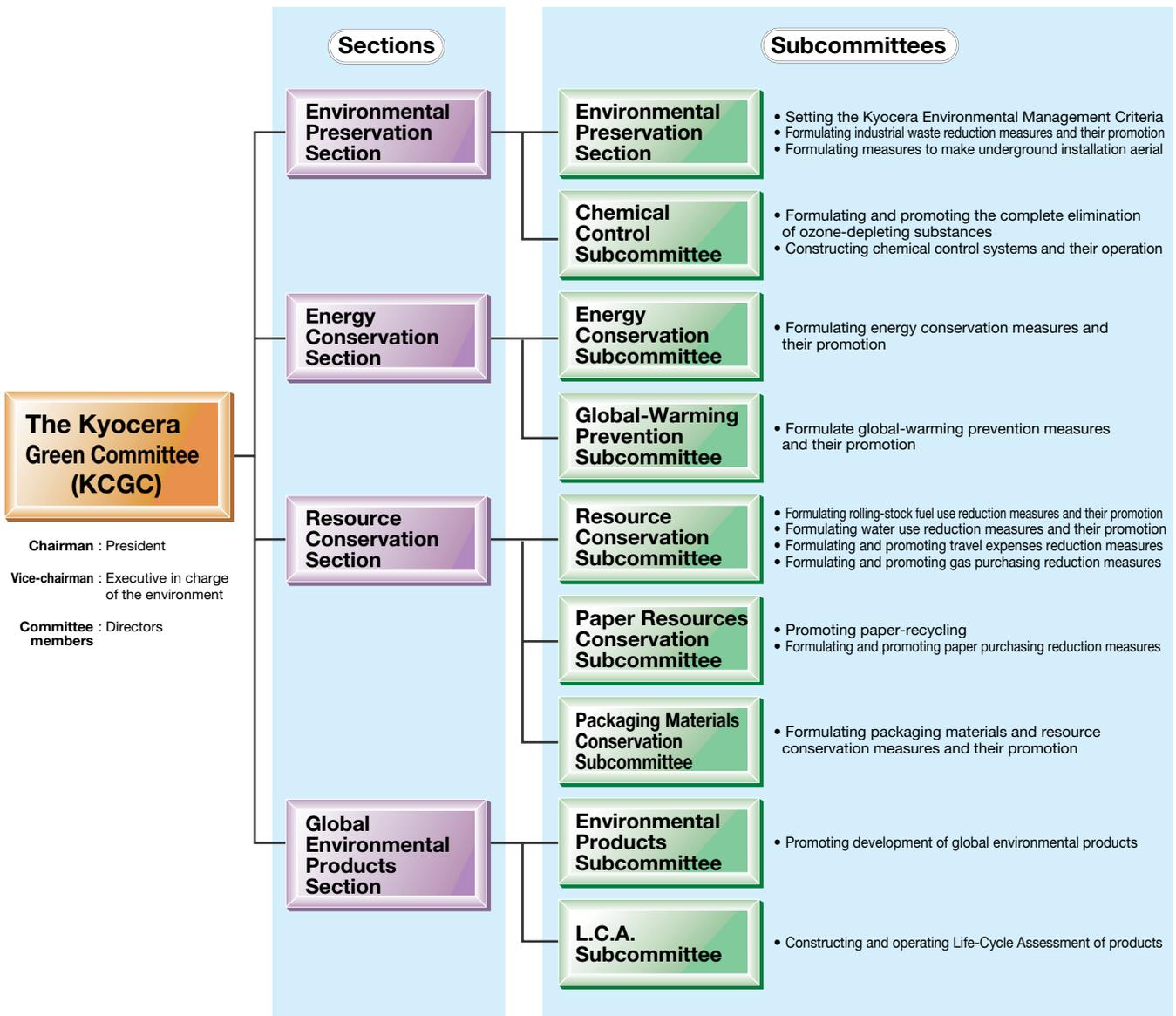
### The Environmental Management Organization

#### \*The Kyocera Green Committee (Kyocera Green Committee: KCGC)

The Kyocera Green Committee that the president chairs and the underlying sections and subcommittees were established in December 1990 as shown below for studying the in-company environmental preservation measures by concretely stating the basic philosophy of the Kyocera Environmental Charter.

Each subcommittee prepares detailed purposes and measures, and then each section makes further integrative studies. Then, the Green Committee deliberates on them.

The operational headquarters and centers implement fixed commitments based on the results of the deliberations.



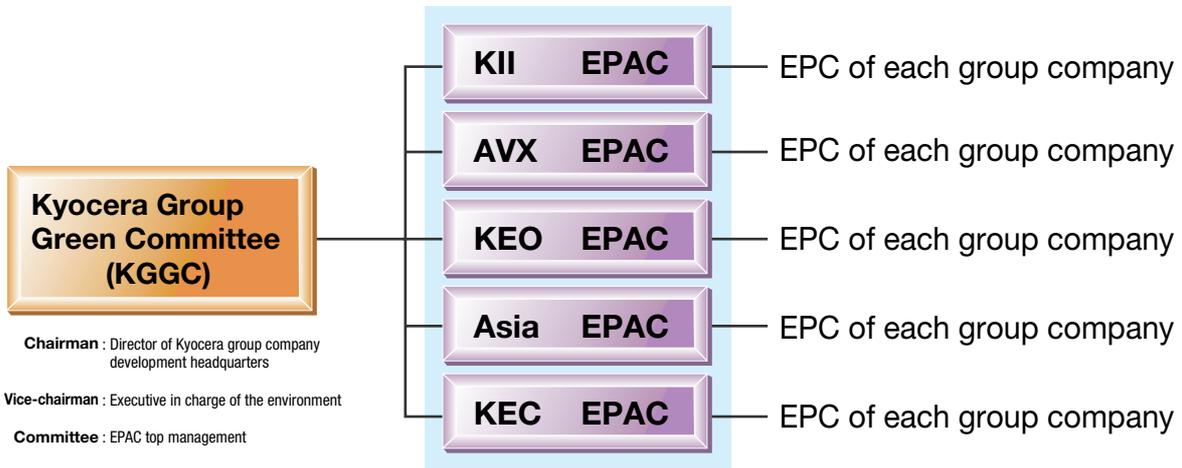


### Environment management organization

#### \*The Kyocera Group Green Committee (KGGC)

The Kyocera group companies established the Kyocera Group Green Committee in December 1991. This committee has the top members of group Environmental Protection Assurance Committee as committee members to promote environmental preservation activities based on the Kyocera Environmental Charter.

The Kyocera Group Green Committee is held periodically, and implements reporting on the status of Kyocera and Environmental Protection Assurance Committee (EPAC); studying problems; exchanging opinions; and so on. Each group aims at being a corporate citizen that gains respect from the society by developing voluntary activities in accordance with each region.



#### \*The Environmental Preservation Organization of EPAC

##### • EPAC (Environmental Protection Assurance Committee)

EPAC leads and supports the EPC of concerned group companies to promote environmental preservation activities based on the Kyocera Environmental Charter as the need arises.

Their major activities are presenting an EPAC meetings; leading, promoting, and supporting each group company; and implementing audits in concert with EPC. The environmental preservation measures of the global group companies are promoted through these activities.

##### • EPC (Environmental Protection Committee)

EPC promotes voluntary environmental preservation activities based upon the Kyocera Environmental Charter by enlisting the lead and support of EPAC.

Their major activities are planning, implementing, evaluating, and reporting their own periodical activity plans; presenting EPC meetings; and implementing audits in concert with EPAC. EPC promotes their own environmental preservation measures through these activities.



The Kyocera Group Green Committee also implements environmental checks overseas. The Kyocera Group Green Committee expands the global environment management activities appropriate for a global corporation.



## Environmental Audits

Kyocera implements environmental inspections to understand the environmental management conditions of the operation centers.

Besides constructing an environmental management system, we implement corporatwide environmental audits, internal environmental audits and supplier environmental audits for operation centers.

### \*Environmental Inspections

Environmental inspections have been implemented through Environmental Month every June since 1992 for the purpose of understanding environmental management conditions and improving the management level for operation centers.

The inspectors consist of specialized staff at headquarters and the other operation centers, and certified internal environmental auditors. They inspect the implementation of the environmental management activities, the promotion of energy and resource conservation, and other items.



Environmental Inspections

### \*Corporatwide Environmental Audit

The team members are organized by neutral auditors who do not have any direct relations with the operation centers being audited. The auditors are chosen from the corporation based upon the directions of the total environmental managers, and they implement reciprocal audits of the operation centers.

Verifying the efficacy of the internal environmental audits and auditing the work performance of the general managers of operation centers are also included in the corporatwide environmental audits.



Internal Environmental Audits

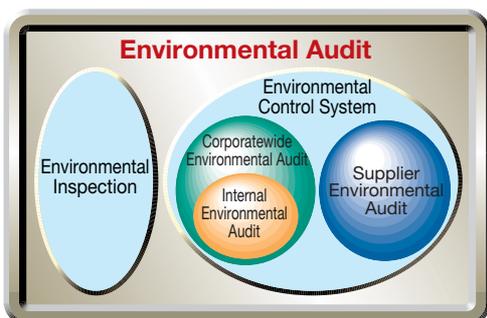
### \*Internal Environmental Audits

The internal environmental audits are carried out by making an effort to enhance the internal environmental audit system of operation centers based on the environmental management system. While this audit is implemented periodically in accordance with the annual plan, and it is also implemented occasionally depending on the operation of the environmental management system. The audit results are reported to the general manager of the operation center to reflect on the review of the environmental management system.

### \*Supplier Environmental Audits

The environmental impact that accompanies the procurement of the materials used in the corporation including parts built in the products needs to be lowered in order to reduce the product-related environmental impact. Green procurement was formulated for the sake of selecting environmentally friendly supplies.

As part of this, while understanding our suppliers' environmental management, we implement Supplier Environmental Audits to transmit our ideas about the environment to them and to promote environmental preservation activities together.



Supplier Environmental Audit



## Environmental Management System

### \*Individual Management to System Management

Our corporation has implemented activities considering the environment since the beginning of our operations, and we have had regard for the local environments as symbolized by our idea that industrial wastewater must be purer than a river in nature when it is discharged. The management methods, however, first depended on the criteria and technique of each operation center, and there was not any integration.

Then, the Kyocera Environmental Charter, which shows our stance to global environmental problems and is our general action guide, was established in October 1991 to integrate our corporatwide environmental preservation activities. We implemented activities such as our primary plan starting in 1992 that established in-company environmental management criteria, reduced waste materials, established targets such as energy and resource conservation, and established standards for recognizing global environmental products.

Our corporation also created an environmental management system based on ISO14001 and worked on obtaining certification according to the international standards of an environmental management system which was established in September 1996. The management level was improved by constructing the environmental management system, and the environmental management system using full employee participation was established for controls both at the headwaters and the end of the pipe.

### \*ISO14001 Certification

We have constructed our environmental control system since before the international standard enactment. In October 1996, certification acquisition of ISO was carried out in the "Mie Factory" for the first time in our company, and in the next year; September 1997, we finished certification acquisition in all 10 offices of production base in Japan.

Afterwards, in order to perform the certification acquisition by whole Kyocera company as we had hoped since the first, we acquired the certification as "the whole company environmental control system" to operate 6 offices including headquarters and general affairs/sales/research and development departments by one system, and we established the base of the whole company integration. Besides, in August 1999, we accomplished certification acquisition by "whole company integrated environment management system" in the 42 bases including 16 bases that have already finished certification acquisition plus newly added 26 bases of service offices and tied stores.

Besides, in November 2000, this system was developed to our affiliated companies, and the certification range was expanded as "Kyocera group integrated environment management system" in all 48 bases.



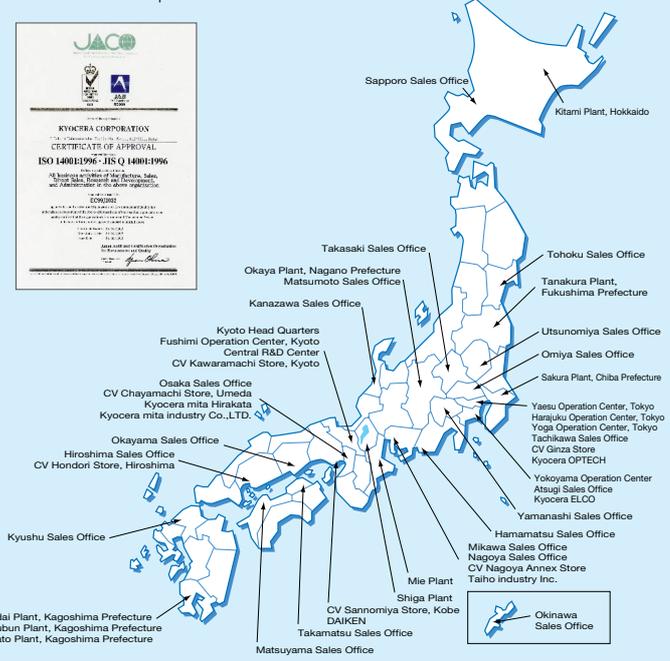
ISO Certification Examination

### Environment ISO14001 Kyocera group

Certification acquisition by the integrated environment management system  
November 2000

10 plant locations, headquarters, operation centers,  
6 research centers, 26 sales offices and stores  
6 bases of affiliated companies







### Environmental Management System

#### \*ISO14001-certified Global Kyocera Group Companies

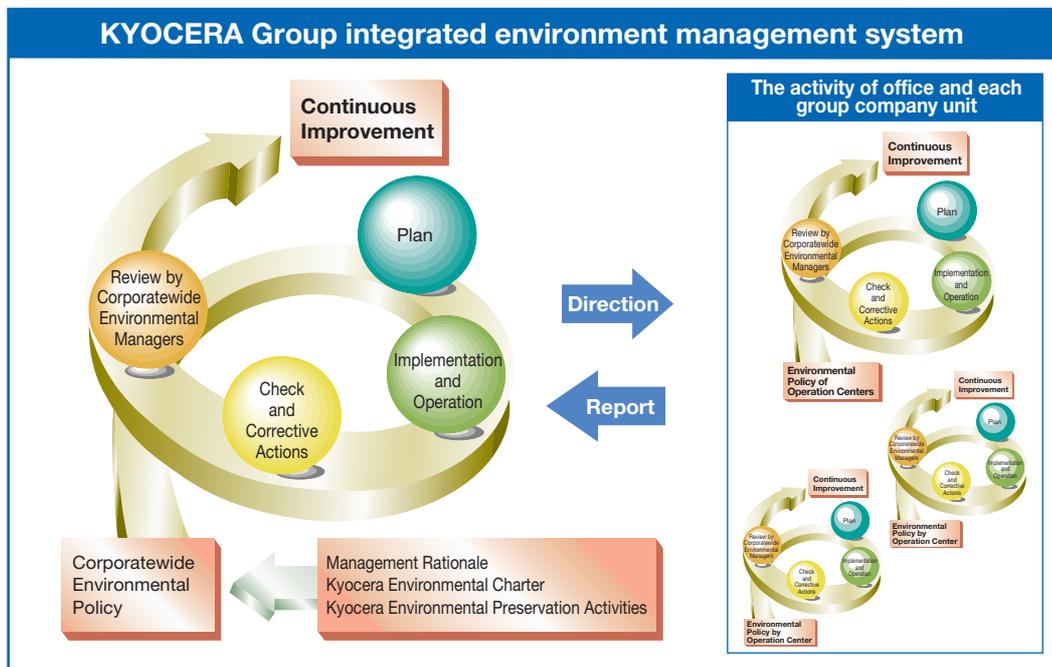
As to ISO14001 certification in the overseas affiliated companies, KYOCERA AMERICA, INC. (Saint Diego, U.S.A), KYOCERA INDUSTRIAL CERAMICS CORPORATION (Vancouver, U.S.A.) and other 3 offices, and 11 companies such as P.T.KYOCERA INDONESIA (Indonesia), SHANGHAI KYOCERA ELECTRONICS CO., LTD (China), DONGGUAN SHILONG KYOCERA OPTICS CO., LTD (China), KYOCERA YASHICA DO BRASIL INDUSTRIA E COMERCIO LTDA (Brazil), KYOCERA ELCO KOREA GORP (South Korea), KYOCERA MITA industry Co., Ltd. (Hong Kong) acquired the certification. Other affiliated companies also have been advanced to aim at the certification acquisition.



P.T.KYOCERA INDONESIA

#### \*Operating the Environment Management System

The environmental control system of our company is operated as KYOCERA group integrated system. By organically combining office or PDCA cycle of each group company unit, PDCA cycle as a whole group functions more effectively.



### Features of KYOCERA group integrated environment management system

#### 1. Sharing information

Sharing environmental information laterally allows integrative operation of all the operation centers.

#### 2. Sharing technology

Organizes corporatewide projects with specialized staff in each operation center. By laterally spreading the outcome obtained through this project, the same effect can be obtained at all operation centers.

#### 3. Improving the reliability of the internal environmental audits

The reliability of the internal environmental audits can be improved by implementing internal environmental audits from a corporatewide position in addition to the internal environmental audits at each operation center.

#### 4. Document streamlining

Level elevation and equalization can be provided by corporatewide sharing of system documents.

The preparation can also be simplified in operation centers by only preparing the specific documents that are necessary.

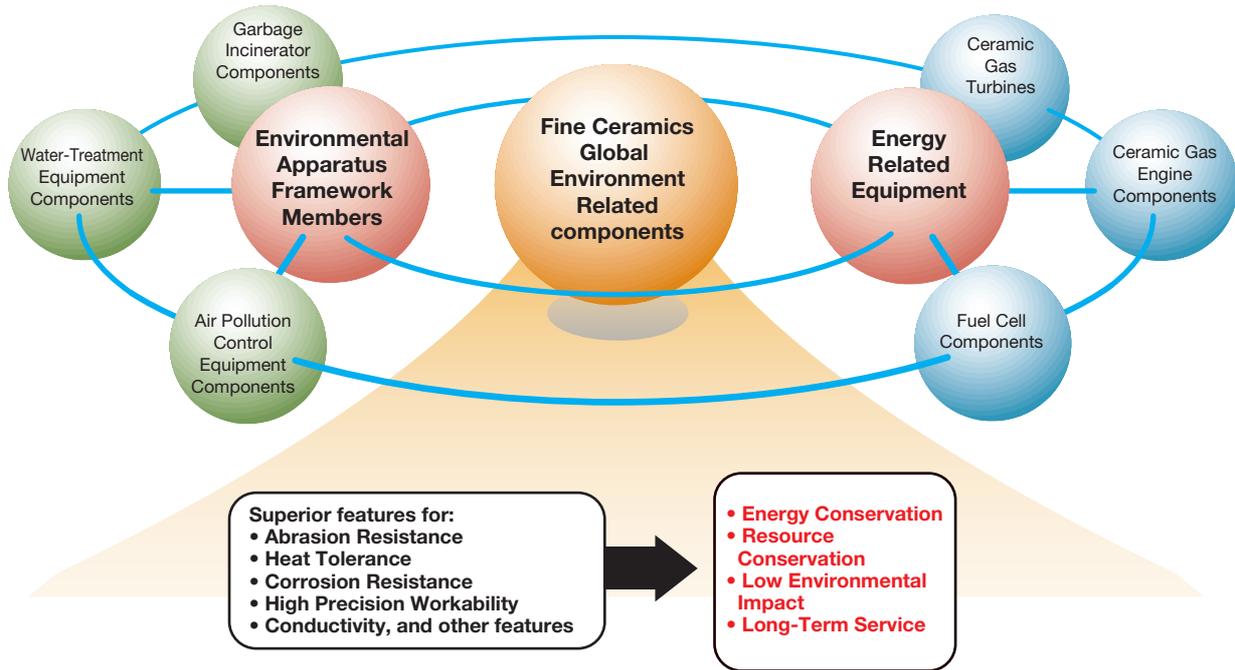


### Fine-ceramics-based product development

Fine-ceramics products are ecological materials and offer superior abrasion resistance, heat tolerance, and other features.

We have utilized these features, and have developed the product considering environment by high-integrated technology, etc.,

#### Environment-Conscious Features of Fine Ceramics



### Fine Ceramics Features

**1. Solid and hard to wear down (Abrasion resistance)**

Solider than metal, and hard to wear away.

**2. Tough against heat (Heat tolerance)**

Silicon nitride is far superior for heat tolerance, and Kyocera engines that use turbo rotors and glow plugs developed by improving this feature provide high efficiency and high output.

**3. Resist chemicals attacks (Corrosion resistance)**

Ceramics have high resistance to attacks from acidic and alkaline chemicals and offer superior corrosion resistance.

**4. Capable of ultra-precision machining (High precision workability)**

The accuracy of the ceramic surface flatness is that an error of about a person’s height against 1500 km, the distance between Sapporo and Fukuoka, will not be a problem for ultra-precision machining.

**5. Stores electricity (Conductivity)**

Containing barium titanate and other materials, ceramics have the ability to store electricity as capacitors.

**6. Generates power voltage by transformation due to power voltage and external pressure (piezoelectricity)**

A buzzer takes advantage of this feature to vibrate by applying power voltage and so on.

**7. Bending (elasticity)**

Zirconia ceramic provides elasticity with the technology for sheet processing and so on.

**8. Electric resistance cut (superconductivity)**

Superconductivity is a phenomenon where electric resistance vanishes in some kind of simple metal or a metal/intermetallic compound at the ultra-cold temperature close to absolute zero, and complete diamagnetism appears in a super conductive state.

Many high-temperature superconductors showing superconductivity at the temperature of liquid nitrogen have been found in ceramics. Super conductive ceramic holds significant promise for practical application.



**Research/Development/Design**

**\*Research/Development/Design of Environment Related Products**

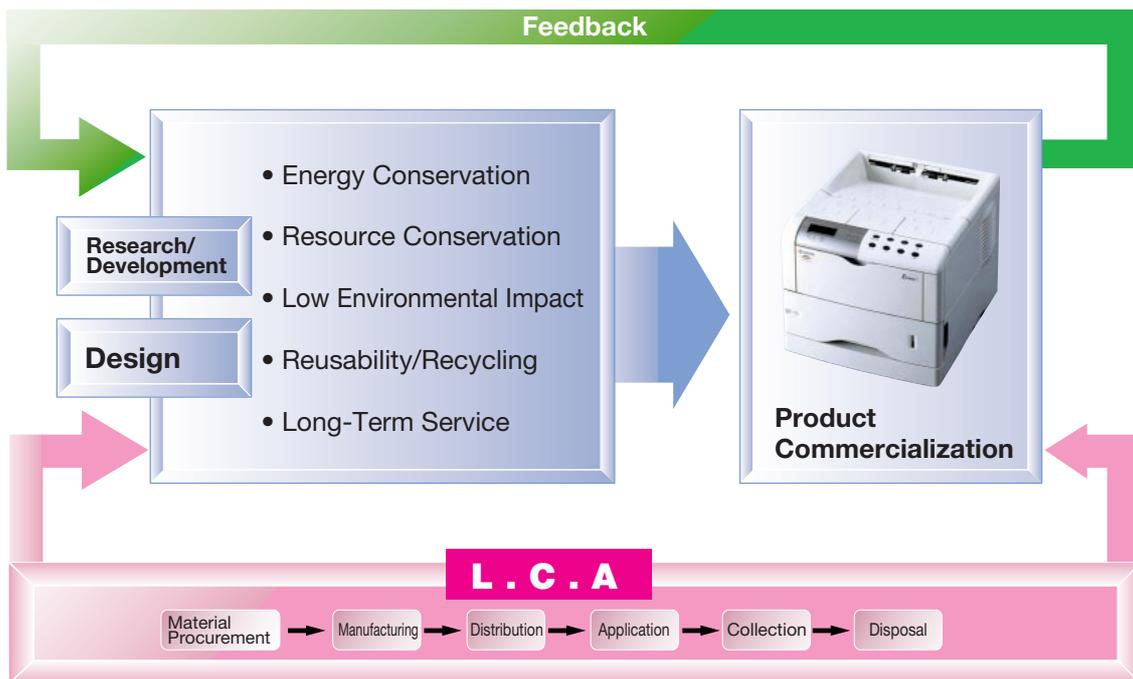
As requests for environmental preservation and conservation have increased more and more, the reduction of the environmental impact accompanied with conventional pollution prevention or corporate activities, as well as the importance of reducing the environmental impact from product manufacturing, use and disposal, has become recognized in general.

Kyocera hopes that all products manufactured and sold will be global environmental products. We attach importance to manufacturing with attention to the environment from the research and development stages and are engaged in the research and development of global environmental products.



Research and Development of Environment Related Product

**The Concept of the Research, Development, and Design of a Product**



**\*Addressing Life Cycle Assessment**

Considering the product life cycle from Material Procurement -> Manufacturing -> Distribution -> Application -> Collection -> Disposal, Kyocera has promoted research/development with attention to the environment, the optimal design of the product, material procurement, and other factors through quantitative analysis/evaluation of environmental impact.



## In-company Authorization System

### \*Kyocera Global Environmental Product Authorization System

Establishing the Global Environmental Product Promotion Program, Kyocera has promoted research/development of environmental preserving products that contribute to improving the global environment and environmental-impact-reduced products which minimize environmental impact in each stage of the manufacturing, sales, distribution, application, and disposal of the products.

The Global Environmental Product Authorization Criteria has specifically been established as a guideline for individual components and finished products. The products designed and developed with these criteria are evaluated. Only the standard-satisfying products are authorized as global environmental products.

#### Authorization criteria of the component group

- a. Safety
- b. Energy conservation
- c. Resource conservation
- d. Others  
(Consists of items not included above, but that have striking features on the whole)

#### Authorization criteria of the finished product group

- a. Reusability/Re-resource nature
- b. Environmental preservation/safety
- c. Resource conservation
- d. Energy conservation
- e. Long-term usability
- f. Packaging material

### \*Authorization of Global Environmental Products Applicable to the Kyocera Eco Label

Kyocera gives corporatwide acknowledgement to products that contribute to improving global environmental issues based on ideas for global environmental products. The authorization criteria for Kyocera eco labeling has been established for the purpose of facilitating the development of global environmental products. Only products authorized based on this system can carry the Kyocera Eco label.



Kyocera Eco Label



## Environment Related Products

The development of environmentally contributing technology such as new energy, energy conservation, and resource conservation technology has been expected from improving various advanced features of fine ceramics. By making good use of the technologies that we have nurtured as a ceramic manufacturer, we have sent many environment-compatible products to the market to contribute to the global environment.

### Gas turbine components

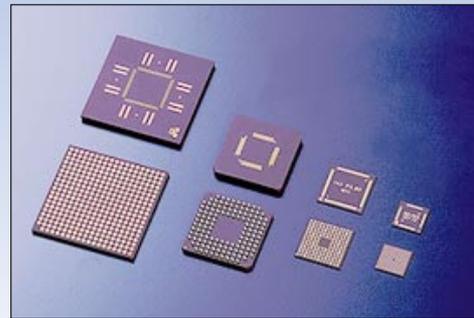
Gas turbine engines that adopt ceramics with excellent heat tolerance have high heat efficiency and allow CO2 reduction. Also, the combustion has been improved to reduce NOX output.



### Semiconductor Package

Although most conventional packages have adopted metal pins to install on circuit boards, the form for directly installing on circuit boards without using metal pins has recently become mainstream due to resource conservation and package downsizing.

Considering the environment, Kyocera's package allows using a lead-free solder when installing this circuit board.



### Warm water heater for toilet seats with washing function

Warm water heaters for toilet seats with washing function take advantage of the feature of fine ceramics that allows rapid temperature rises and provides the necessary amount of hot water when the need arises. This avoids the necessity for setting up conventional hot-water storage tanks and saves electric power for heat insulation which thereby contributes to energy conservation.



### Cell Phones

Cell phones have a role in today's information society and are remarkably popular. Kyocera uses its ecology concept in the design stage of the cell phone to focus on resource conservation, downsizing, and power conservation abilities; and improvement of recycling at disposal.



### Honeycomb filter

Using a catalyst is one method to eliminate detrimental constituents in gas exhaust from plants and motor vehicles.

The ceramic honeycomb filter that combines heat tolerance with high permeability is used in concert with a catalyst for exhaust gas purification, general antipollution device and odor removal. It is also used for filtering when casting metal.



### Gas demarcation membrane modules

Gas demarcation membrane modules are used for organic vapor segregation such as solvent collection and evaporated gas-component collection for environmental preservation. The demarcation membrane exploits looseness characteristics of ceramics and shows excellent resistance to high heat, chemicals, and so on. It also sports high separation efficiency around the membrane dimensions.





Environmental Related Products

ECOSYS Printer

"The exposure drum" of usual page printer needs the drum cartridge to be exchanged because it ends its life after about 10000 sheets is printed.

On the contrary, the ecology cis printer does not need to exchange the drum cartridge and established "non-cartridge type" in which the print is possible only in the supply of the toner by applying amorphous silicon drum which is excellent in the durability and long-life +OPC drum.

Also, various considerations to environment has been made in ecology cis printer such as the adoption of utilization of the PET bottle recycling material to the fixing unit, and waste paper 100% use pulp mold to the packing material.

Such environmental consideration designs was admitted and for the first time in the world as a page printer, the ecology cis printer acquired the certification of the ecology label; "Blue Angel" of Germany that is called environmentally developed country, therefore, is highly evaluated as an ecology goods in all over the world.



The Econoroof Solar-Powered Roof Cover (for hipped roofs)

Solar Energy Related Products

Solar energy has received the most attention of any clean and inexhaustible energy source. Kyocera began research and development of solar energy system in 1975, and Kyocera is now the world's leading solar-cell manufacturer.

This system with self-supporting power for areas without electricity has been used in all of the countries around the world. Solar energy street lamps, traffic signs, and other items have also been commercialized.

A home solar power system is in widespread use today.

Various solar water-heating systems have been developed and manufactured, and they are being used in many homes.



Schematic Diagram of a Solar Water-Heating System

Digital Camera

Digital cameras eliminate conventional firms by electrically memorizing picture images on memory card instead. This allows reducing the use of resources such as silver in the photosensitizer that is required for silver-using cameras and synthetic resins.

Footage can also be seen directly through computer and TV screens so paper resources used for photographic paper can be also saved.

Adopting rechargeable high-capacity miniature lithium-ion batteries have lengthened their life span and also contributed to preserving the global environment too.



Finecam S3



**Environmental Preservation**

**\* Kyocera's Common Standards for Environmental Management**

Water contamination, air pollution, and soil contamination are considered to be highly accumulative and cause great impact on the natural environment and ecosystem. Kyocera has established severer standard than the existing laws and legal regulations in order to drastically management these contaminants and reduce environmental impact.

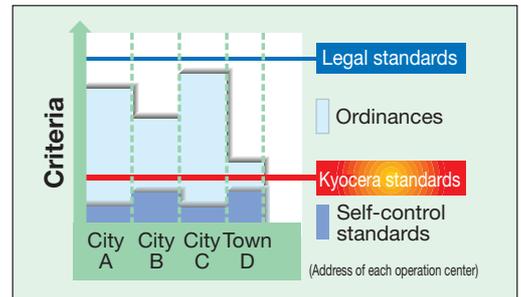
Each operation center has enthusiastically installed various kinds of environmentally friendly equipment to realize higher level processing. This has resulted in dramatic improvement in processing capabilities and environmental management conditions which have satisfied Kyocera's Environmental Management Standards.



Discharged plating water processing facility (Kagoshima Kokubu Plant)

**\* Self Management Standard for Each Operation Center**

Each operation center has their own strict Self Management Standards in order to seek even severer environmentally oriented management and to satisfy Kyocera's common standards.



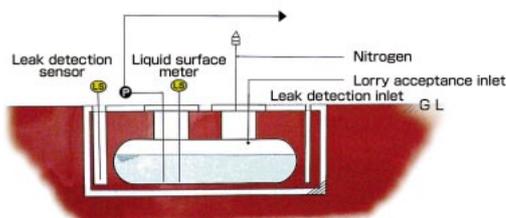
**Kyocera's standards for environmental management regarding water contamination**

NO	Items	Unit	Water Contamination Prevention Law	Kyocera's standards for Environmental Management
1	Concentration of hydrogen ions	pH	5.8~8.6	6.2~8.2
2	Biochemical oxygen demand (BOD)	mg /l	160 or below	10 or below
3	Chemical oxygen demand (COD)	mg /l	160 or below	10 or below
4	Suspended Solids (SS)	mg /l	200 or below	5 or below
}	}	}	}	
43	Selenium and chemical components	mg /l	0.1 or below	0.01 or below

**\* Making underground installation aerial**

Periodic inspections have been conducted for underground installation such as underground pipes and tanks for process waste water, because soil and underground water would be contaminated in case of leakage. A standard for handling underground installation was established, however, to enable easy visual inspection for the early discovery of leakage and to prevent contamination from spreading. We have taken such measures as making the underground installation aerial or double-layered.

**Underground tank storage space**



Making underground tanks double-layered (Kagoshima Sendai Plant)  
Underground tanks are placed in concrete rooms and this structure helps the early discovery of leakage and prevents further leakage.



Making underground pipes aerial (Kagoshima Kokubu Plant)  
Aerial pipes allow for easy visual inspection.



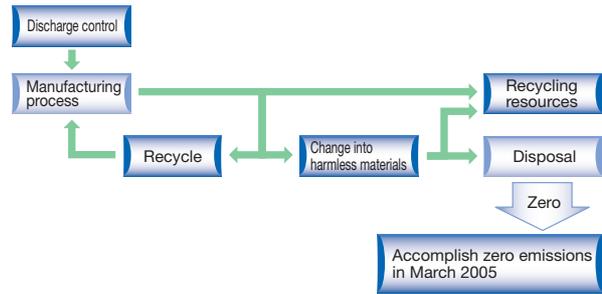
Environmental Preservation

\*Reduction of Industrial Waste

The capacity of reclaimed lands for industrial waste is decreasing and it's getting more and more difficult to find land for industrial waste in Japan. Therefore, it is projected to become more difficult to release industrial waste in dumps and landfills in the near future. Kyocera has anticipated this and set up a basic policy to promptly work on reducing industrial waste. A reduction goal has been established every three years since 1992 for specific action.

Basic Policy

1. Reduce industrial waste discharged during manufacturing processes
2. Recycle industrial waste
3. Change nonrenewable waste into harmless materials

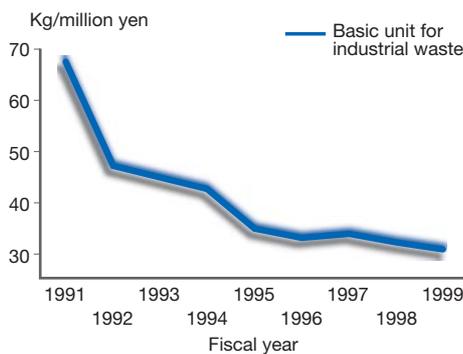


Firstly, along with the basic policy, Kyocera has been making efforts to minimize industrial waste. Secondly it has been working to recycle the released waste, and thirdly to process the nonrenewable waste into harmless materials. The focal points for reducing industrial waste were decided in accordance with the current condition in order to more smoothly proceed with in-house activities. Based on these focal points, the whole company organized one big project in order to actively work on reducing industrial waste and recycling industrial waste by analyzing the industrial waste, improving the manufacturing process, and introducing intermediate processing equipment.

[Reduction goal for industrial waste]

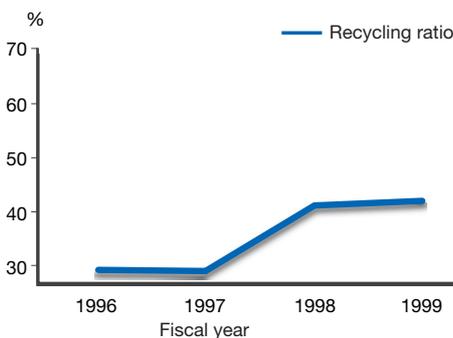
1. Reduce industrial waste by 70 percent from 1998 levels by March 2002.
2. Recycle 70 percent of total industrial waste in March 2002.
3. Accomplish zero emissions by March 2005.

Transitions in reducing industrial waste



Intermediate processing complex (Kagoshima Sendai Plant)

Transitions in recycling industrial waste



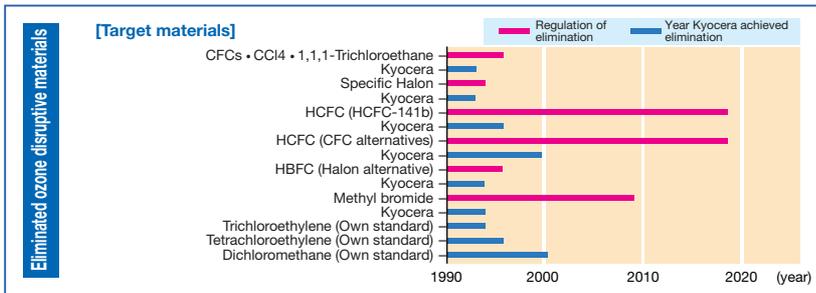
Denitrification processing facility (Shiga Yohkaichi Plants)



Environmental Preservation

\*Protecting the Ozone Layer

The materials regulated by the Montreal Protocol as well as other chlorine solvents, which have smaller coefficients that disrupt the ozone layer, were defined as targets to be fully eliminated in order to protect the ozone layer. Based on this policy, CFCs and CFC alternatives, CCl4, 1,1,1-trichloroethane, and halon were completely eliminated at the end of 1992, which was three years ahead of the ordinance. CFC alternatives were eliminated at the end of 1999, twenty years ahead of the ordinance. The rest of the chlorine solvents made from trichloroethylene, tetrachloroethylene and dichloromethane” were also eliminated at the end of September 2000.



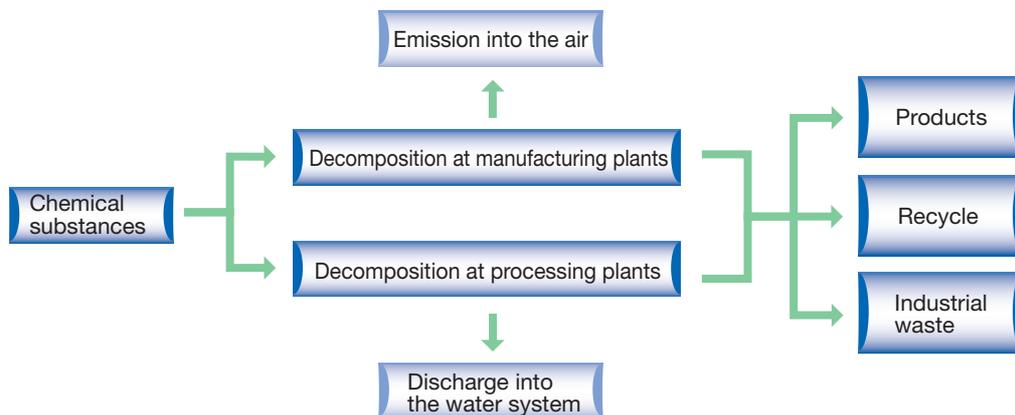
CFC free washing equipment (Nagano Okaya Plant)

\*Introducing PRTR [Pollutant Release and Transfer Registers]

Pollutant Release and Transfer Registers

Chemical substances are useful if used properly, but they are likely to have a big impact on the environment or ecosystem if they are used improperly. Our chemical substance management system was established in order to know the accurate amount of chemical substances that might cause environmental pollution.

Concept of balance management of chemical substances



The total amount of target chemical substances released into the air, water and soil or transported in industrial waste is published.



## Saving energy

### \*The energy saving promotion

Increasing energy consumption has been greatly influencing the various global environment. Therefore human beings all over the world have to try to utilize limited energy efficiently, especially for industrial activities. Kyocera has also been promoting highly effective utilization of energy including recycling exhaust energy, which is based on a specific goal for energy reduction. Goals are set for both electricity and fuel for saving energy.

#### [Goal for saving energy]

Reduce energy (electricity/fuel) consumption by 15 percent from 1988 level by March 2002.

#### [Main activities]

- Developing energy saving projects
- Studying the concentration and expansion of facilities for saving energy
- Introducing ice thermal storage systems by utilizing late-night energy
- Promoting the effective usage of non-utilized energy

### \*Preventing global warming

Global warming is accelerating and is becoming a severe problem due to increasing emissions of green house gases and decreasing carbon dioxide absorbing resources. Carbon dioxide has been causing the concentration of heat trapping green house gases, which has been critically disrupting the global climate system. Considering the seriousness of the anticipated impact, global warming is one of the most significant environmental issues today. Kyocera has set up specific goals to reduce greenhouse gases in order to prevent global warming and is also promoting reducing global warming.

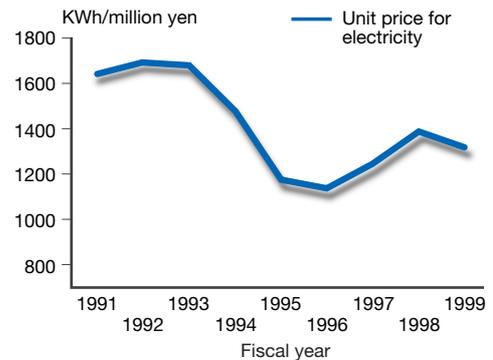
#### [Goals for preventing global warming]

Carbon dioxide emissions are to be cut by 20 percent from 1998 levels by March 2002. Combined PFC emissions are to be cut by 30 percent from 1998 levels by March 2002.

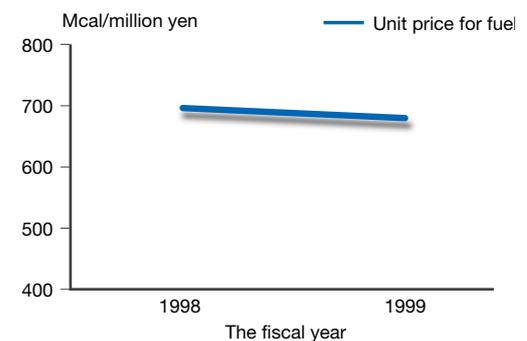
#### [Main activities]

- Reduction of PFC and other emissions (Methane, nitrous oxide, HFC, PFC, SF6)
- Reducing heat-trapping greenhouse gases by utilizing alternative energy
- Promoting introducing cogeneration systems
- Promoting introducing solar cell power generation systems
- Improving facilities and introducing new facilities for saving energy
- Introducing energy saving equipment when replacing the existing equipment

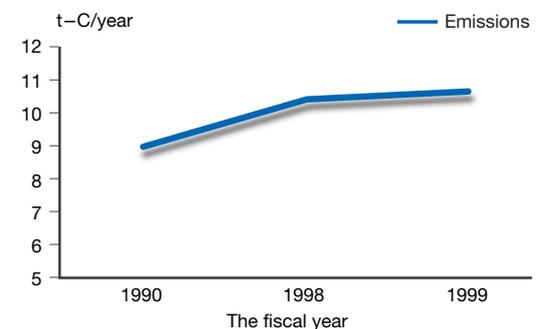
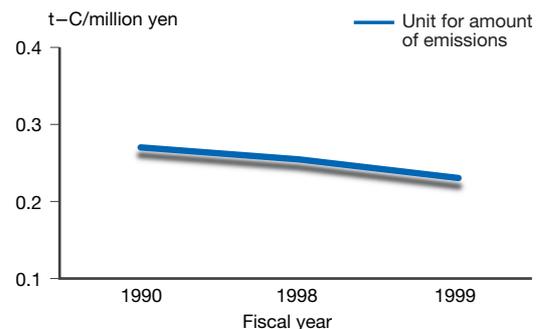
Transitions in reducing electric energy



Transitions in reducing fuel energy



Transitions in global warming prevention policy





## Saving resources

### \*Saving resources

Recently resources have been rapidly consumed and we are concerned that these resources may be exhausted. Kyocera has set up specific goals and is promoting using fewer resources by utilizing our limited resources effectively in order to contribute to environmental protection.

#### 1. Reducing fuel consumption for automobiles

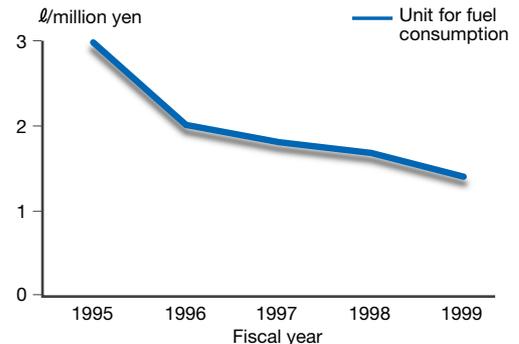
##### [Goal for reducing fuel consumption for automobiles]

Consumption of fuel for automobiles is to be cut by 30 percent from 1998 levels by March 2002.

##### [Main activities]

- Switching to more fuel-efficient cars for company use
- Stopping idling
- Encouraging utilizing public transportation

Transitions in reducing energy consumption for automobiles



#### 2. Reducing water consumption

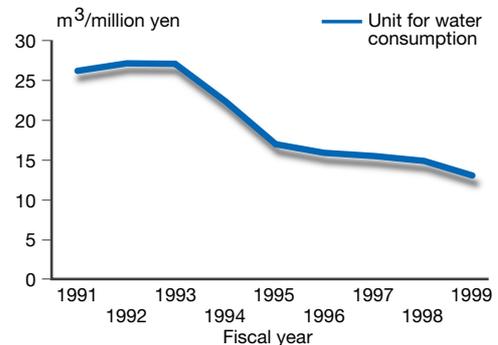
##### [Reduction goal for water consumption]

Consumption of water is to be cut by 30 percent from 1998 levels by March 2002.

##### [Main actions]

- Recycling water discharged during the manufacturing process
- Recycling washing water used in the manufacturing process
- Circulation of cooling water
- Adjusting the amount of water used for toilets and hand washing
- Reexamining the pressure on the water supply pump
- Utilizing rainwater for water sprinklers

Transitions in reducing water consumption



#### 3. Reducing costs for purchasing gas

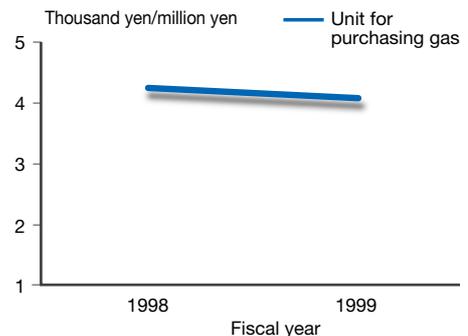
##### [Goal to reduce cost for gas]

Cost for gas is to be cut by 15 percent from the 1998 levels by March 2002.

##### [Main actions]

- Utilize gas more effectively
- Introduce low energy consumption equipment

Transitions in reducing costs for purchasing gas



#### 4. Reducing transportation costs

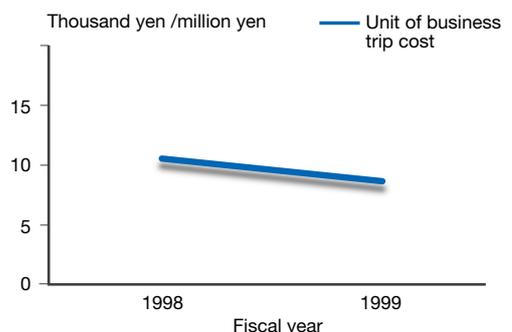
##### [Goal for transportation cost cuts]

Transportation cost is to be cut by 10 percent by March 2002.

##### [Main actions]

- Increasing utilization of television conference systems
- Increasing utilization of conference calls
- Reexamining routes for business trips

Transitions in reducing costs for business trips





## Saving resources

### \*Efficient utilization of paper resources

Utilizing paper materials more effectively is one of the most simple and familiar activities for environmental protection. Kyocera has established specific goals and promoted them to reduce paper consumption in order to protect our forest resources.

#### 1. Recycling papers

By recycling paper, 1,630 tons of paper was collected in fiscal 2000. This means that approximately 32,600 trees 14 centimeters in diameter and eight meters high were saved from being cut down.



Separate disposal boxes for paper trash

#### [Goal of collecting paper to recycle]

1. 100 percent of office-use papers are to be collected by March 2002.
2. Other papers have been completely collected since 1999.

#### 2. Reduction of paper to be purchased

In order to reduce purchasing paper, goals were set for office-use paper and factory-use paper respectively and we are acting based on these goals.

#### [Goal for reducing paper to be purchased (office-use paper)]

Reduce the paper purchasing amount by 30 percent from 1998 levels by March 2002.

#### [Main actions]

- Efficient utilization of E-mail
- Introducing electronic filing systems

#### [Goals for reducing paper to be purchased (paper used in the manufacturing process)]

Reduce the amount of paper to be purchased by 15 percent from 1998 levels by March 2002.

#### [Main actions]

- Reexamining materials and the quality
- Study for recycling

### \*Improving packing materials

Dealing with used packaging is an important issue since packing materials are usually only used once. Kyocera has set up specific goals to reduce environmental impact and is promoting its actions in order to save resources used for packing.

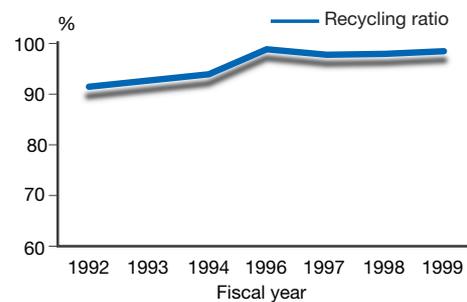
#### [Goal for reducing packing materials]

1. Reduce costs for purchasing packing materials by 15 percent from 1998 levels by March 2002.
2. Reduce designated items of packing materials such as vinyl chloride and styrene foam by more than 15 percent from 1998 levels by March 2002.

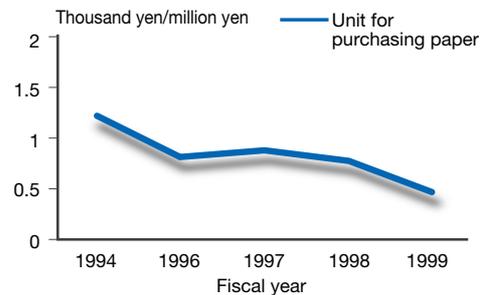
#### [Main actions]

- Investigating components in the packing materials
- Reexamining and improving packing methods
- Retrieving and recycling packing materials
- Switching from designated materials to alternatives
- Complying with Container and Packaging Recycling Law

Transitions in recycling papers



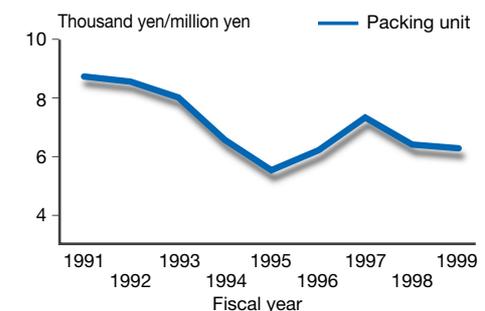
Transitions in cost reduction for office-use papers



#### Basic Policy

1. Do not use packing materials that include toxic substances.
2. Minimize the use of packing materials.
3. Recycle packing materials or adopt containers for repeated use.
4. Use more packing materials that can be easily recycled.
5. Establish appropriate systems for disposing of packing materials.

Transitions in reducing packing materials





Contributions to society and regions

Kyocera has been contributing to society and regions as a good business citizen based on the management rationale of contribution to the advancement of society and mankind while pursuing material and emotional well-being of all its employees.

1. Campaign to beautify the regions

Each operation center has been aiming at being a regionally oriented company by cleaning around the operation center and participating in the environmental beautification campaigns promoted by administrations and local governments.



Cleaning campaign around operation centers

2. Exhibiting SSM products at the environment related exhibitions

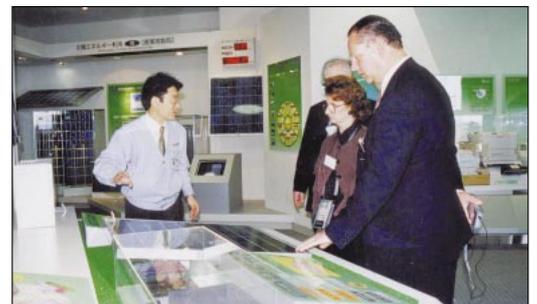
Kyocera has been exhibiting environmentally friendly products and environmental protection activities at environmental exhibitions held all over the country.



Environmental Exhibition

3. The Kyocera headquarters facility was introduced to the public. (Ecology Building: ecologically oriented headquarters building)

Headquarters annex facility: Kyocera Museum of Art and Kyocera Museum of Fine Ceramics History on the first and second floor are open to the public and many people have visited.



Headquarters environmentally oriented facility tour

4. Lecture on environmental issues

Kyocera has been presenting environmental protection activities at the environmental lectures held by administrations and various groups.



Lectures for environmental issues



### Construction and management of green procurement

Constructing a circulating economy and society is regarded as a significant challenge in order to achieve environmental preservation and sustainable economic development. Enterprises have big roles to play in this construction process.

Companies need to establish systems to reduce environmental impact in the processes from manufacturing, distribution, and usage to recycling. They are required to reduce resource and energy consumption through the product life cycle by utilizing recycled materials, reducing industrial waste that causes impact on the environment, and producing recycling-oriented products.

Kyocera's green procurement is designed to procure environmentally friendly purchases in order to restrain environmental impact. Therefore, the standards for each action should be set and achieved. Suppliers' environment management priority should also be investigated and evaluated before prioritizing the suppliers.

Specific standards are set based on the Green Procurement Regulation for the following items in order to reduce the environmental impact caused by products and to carry out environmental management activities. Cooperation with suppliers is sought.

1. Display the chemical substances and chemical components included in the supplies (Obtain MSDS)
2. Introduce machinery and consider the environmental impact of the purchased machinery
3. Specify regulated packing materials used for supplies and display packing material names
4. Display material names of resinous supplies



Kyocera Green Procurement Guideline



## Environmental contribution award

### \*Establishing the Kyocera Environmental Contribution Award

The Kyocera Environmental Contribution Award was established in 1996 in order to promote environmental protection activities. The award is to praise groups and individuals who have significantly contributed to environmental protection activities. The winner is decided after discussion and approval by the Green Committee every year.

#### [Target department for nomination]

- |   |   |
|---|---|
| a. Reducing industrial waste                | f. Measures for chemical substance management           |
| b. Saving energy                            | g. Development of environmentally friendly products     |
| c. Saving resources                         | h. Other outstanding activities, plans, or achievements |
| d. Efficient utilization of paper resources |   |
| e. Improvement of packing materials         |   |

#### [ The flow for nominating a prize winner ]



### \*Actual results of the Kyocera Environmental Contribution Award

#### First: Fiscal 1997 (Extracted)

##### ●Most Excellent Award (Environmentally friendly products segment)

**Item :** The amorphous silicon drum and the Ecosys printer FS-1700 which uses the amorphous silicon drum

**Contents :** This product helps to reduce waste and save energy by adopting the highly durable amorphous silicon drum.



Chairman of Green Committee (then the President) offered the award.



Amorphous Silicon Drum

##### ●Excellent Award (Environmentally friendly products segment)

**Item :** Home-use solar power generation system

**Contents :** Realized the world's highest cell efficiency and inverter efficiency as a mass produced product by adopting 15 centimeters square cells.

##### ●Excellent Award (Saving energy segment)

**Item :** Energy and power saving by automatic temperature controlling system in a spray dryer tower

**Contents :** Power and water consumption used for a spray dryer were reduced and unmanned operations were made possible.

##### ●Excellent Award (Improvement of packing material segment)

**Item :** Improvement of Slum Array type packing

**Contents :** Improved packing by changing the packing method based on the characteristics of the product. (Less materials and less volume for packing)

#### Second: Fiscal year 1998 (Extracted)

##### ●Excellent Award (Improvement of packing material segment)

**Item :** improvement of packing materials for printer

**Contents :** Improvement of the shape of shock absorber material and the methodology (Styrene foam was eliminated.)

##### ●Excellent Award (Reduction of industrial waste segment)

**Item :** Reducing industrial waste by utilizing exhaust heat

**Contents :** A complex intermediate processing facility was developed to utilize exhaust heat generated by incinerating waste to dry and vaporize other industrial waste. Industrial waste was widely reduced and recycled.

##### ●Excellent Award (Development of environmentally friendly product segment)

**Item :** KT-09D Ecosys minute dust returning toner

**Contents :** Improved manufacturing technology for printer toner (Reducing the environmental impact during the manufacturing process, efficient utilization of resources, and reducing industrial waste)

##### ●Excellent Award (Development of environmentally friendly product segment)

**Item :** 14-inch thermal printer head for medical use

**Contents :** Development of a large scale printer head using thermal technology

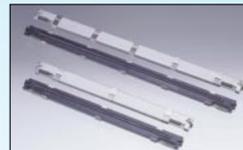
#### Third: Fiscal 1999 (Extracted)

##### ●Most Excellent Award

(Development of environmentally friendly product segment)

**Item :** 600 dpi LED Array

**Contents :** The environmental impact was widely reduced by using alternative circuit boards during the manufacturing process.



LED printer head



##### ●Excellent Award

(Development of environmentally friendly product segment)

**Item :** Cellular phone HD-60K/HD-61K series

**Contents :** Development of the nation's lightest handset (Downsizing/light weight/lower power consumption/better recycling)

##### ●Excellent Award

(Development of environmentally friendly product segment)

**Item :** Ni electrode laminating ceramic chip condenser

**Contents :** Protect scarce materials by using nickel for internal electrodes

#### Fourth: Fiscal year 2000 (Extracted)

##### ●Most Excellent Award

(Global environment product development department)

**Item :** The G3 base station

**Contents :** Natural resource saving by miniaturization and lightening of the product, energy saving by the reduction in power consumption, and environmental loading reduction by the simple design of disassembly and separation.

##### ●Excellent Award

(Global environment product development department)

**Item :** The 200SQ tape specification SMD / the MEP manufacturing technology for PKG

**Contents :** Natural resource saving by the miniaturization of the product and energy saving by production process

##### ●Excellent Award

(Global environment product development department)

**Item :** Ecology cis printer FS-1750/3750

**Contents :** Basic performance of the ecology cis printer is inherited, and besides, the power saving is realized.

##### ●Excellent Award

(Energy saving department)

**Item :** Improvement on the production air supply system

**Contents :** The energy saving by the review of piping and automatic control of air supply system.



### Education

In terms of environmental protection, the relations between humans and the environment has to be understood by each individual employee through their work and daily life. Therefore, in-house activities regarding the environment have been valued in order to make environmental protection activities more effective. These activities include improving employees' awareness by providing environmental information in the company report and offering environmental education.

#### \*Seminars to train internal environmental inspectors

Since internal environmental inspectors have significant roles for continuously improving environmental management systems, in-house training seminars are held periodically to authorize successful applicants as internal environmental inspectors. This authorization system consists of two types of inspectors, general internal inspectors and chief inspectors who supervise the whole inspection.



Seminars to train internal environmental inspectors

#### \*Environmental education for employees

Higher awareness of environment, duty, and responsibility by individual employees is necessary for promoting environmental management. Therefore classified education (such as for newly hired employees, supervisors and other levels) has been provided as well as specialty education for employees who are in charge of environmental protection.



Environmental education

#### \*Training to handle emergencies

The construction of breakwaters and other preventive measure is proactively set on the assumption that accidents or emergencies affecting the environment may occur. Procedures to handle emergencies are also provided and emergency equipment is prepared as well as training about how to handle the situations and how to report on them.



Training to handle emergencies

### Kyocera Environment Month

#### \*Kyocera Environment Month

June is defined as Kyocera Environment Month every year. Various events are held to heighten employees' awareness and to fulfill the environmental management system.

During this month, a focal topic regarding the environment is defined so that individual employees can enthusiastically think of the environment and take action. This has been producing excellent results

Suggestions for environmental posters and slogans are invited from employees in order to heighten their awareness. Excellent ideas are awarded and introduced to the whole company as posters for promoting activities for environmental protection.



Posters for promoting activities for environmental protection



**Awards**

**\* Eighth Global Environmental Grand Prix  
Fuji Sankei Group Prize**

Kyocera was awarded the Fuji Sankei Group Prize at the eighth Global Environmental Grand Prix Awards sponsored by the Japan Industrial Newspaper publishing company, which is the industrial information paper of the Fuji Sankei Group.



Global Environmental Grand Prix Commendation Ceremony



Headquarters building

**[Contents of the award]**

Kyocera was evaluated and awarded for achieving environmentally oriented management as well as the following activities. These achievements were carried out based on the management rationale of contribution to the advancement of society and mankind under the company policy, "Respect the Divine and Love People".

- 1. Constructing the ecologically oriented headquarters building
- 2. Development and sales of environmentally friendly products
- 3. Achievement of environmental protection

**\* New Energy Grand Prix  
New Energy Foundation Chairman's Prize**

Kyocera was awarded the New Energy Foundation Chairman's Prize at the New Energy Grand Prix Awards (Award for new energy equipment for the twenty-first century) sponsored by the New Energy Foundation.

**[Contents of Award]**

The reduction of heat trapping carbon dioxide is one of the major challenges to deal with for environmental problems. Kyocera has constructed an environmentally friendly high-rise building that incorporates solar power generation and natural gas cogeneration systems. This building was highly evaluated because it became an advanced model for introducing high-rise buildings for the twenty-first century.



**\* Others  
Meritorious Award for a Person Preserving the Environment (Prevention of global warming segment)**



## \*Environmental Measures at Headquarters

When the headquarters was being built the slogan of being environmentally friendly and coexisting with the region was defined as a concept so that the headquarters building was designed in harmony with the surroundings. It creates a nice landscape and also offers the local citizens a place for recreation and relaxation. Approximately 3300 square meters of space is open to the public. The following environmental protection activities were also carried out.

### [Environmental protection movement]

#### 1. Solar power generation systems

Solar cells are placed as much as is possible on the roof and walls of the southern side higher than three stories. This is the world largest class of solar cells placed vertically on a wall for one high-rise building. The capacity is 14 kW, which is 12.5 percent of the projected maximum consumption of 1,700kW. It generates a yearly total of 182,860kWh, which allows 45,000r of oil to be saved in the case of thermal power generation. That means 97.2 tons of carbon dioxide and 133 kg of sulfur oxide can be reduced. This solar power generation can be used with an electric system operating a parallel current reversible system that allows the surplus electricity to be sold off.

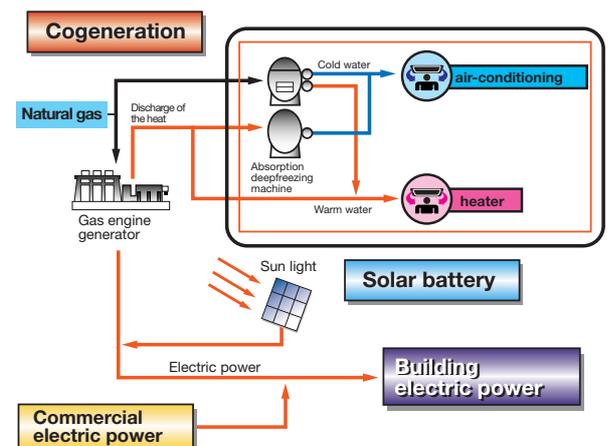


Headquarters building that was completed in August 1998

#### 2. Gas Cogeneration Facility

Natural gas is adopted as fuel because of the lower carbon dioxide and nitrogen oxide and because it is sulfur oxide free. Since the usage of heat is lower in office buildings, a gas engine was adopted as a motor, by attaching importance to power generation efficiency rather than the usage of exhaust heat. Generated power is utilized for lighting and power supply, and exhaust heat is effectively retrieved by a heat-absorbing freezer. There are two power generators of 520kW that generate 69 percent of the current power consumption of 1,500 kW.

A cogeneration system, solar power generation, and power for commercial use supply power for the building as a connecting system, which is a pioneering system for the nation.



#### 3. Adoption of heat accumulation for an ice type air conditioner

Ice thermal storage equipment operates utilizing surplus energy generated by electric power companies during night hours. It can be utilized for air conditioning during daytime peak hours and allows leveling the load as well as reducing the disparity of power between day and night in summer time, a serious social problem.

#### 4. Other environmentally relevant achievements

1. Adoption of the perimeter zone ventilation system
2. Adoption of a separated system for individual air conditioning
3. Adoption of inverters as air conditioning motors
4. Adoption of an air adjusting system in the air conditioning ducts
5. Adoption of air conditioning control from a central supervising panel
6. Reduction of unnecessary lighting due to a subdivided system
7. Adoption of lighting using a high efficiency inverter
8. Adoption of a measuring system for energy consumption on each floor
9. Adoption of high efficiency heat reflection glass
10. Automatic escalator operation
11. Utilizing ground water and rainwater



This report was created based on specific data and achievements to introduce Kyocera's environmental achievements and to heighten the transparency of our activities for your better understanding. Your frank opinions and thoughts about this report will be highly appreciated and will be taken into consideration for future Environmental Reports. We will be grateful if you could answer the questions and mail your answers to us.

October 2001  
Kyocera Co., Ltd.  
General Affairs Head Office,  
Environmental Safety Department,  
Environmental Section



Your opinion and thoughts will be appreciated.

To Kyocera Co., Ltd. Environmental Safety Department, Environmental Section

**Q1 : What is your impression about this report on the whole?**

- 1. Excellent 2. Good 3. Okay 4. Not very good 5. Poor

What is your reason for the answer above? Please specify about the contents, clarity, or other issues.

( )

**Q2 : What was most impressive part or worthwhile information for you?**

- 1. Principal policy 2. Organization 3. Environmentally friendly products
- 4. Environmental protection activities 5. Contribution to society 6. Green procurement
- 7. Systems and Awards 8. Ecology Building

Please specify what was especially impressive.

( )

**Q3 : If you want to know more about anything, please choose an item from Q2 and specify what you would like to know about it.**

More detailed information required	Specifically about

**Q4 : If you find something insufficient or requiring improvement, please mention it.**

- 1. ( ) 2. Nothing specifically

**Q5 : What did you think about Kyocera’s environmental protection activities?**

- 1. Highly evaluated 2. Well evaluated 3. Not evaluated well 4. Very poor

( )

**Q6 : What do you expect Kyocera to achieve in terms of environmental protection activities? Please specify.**

( )

**Q7 : What is your position? (Multiple answers are accepted.)**

- 1. Citizens in the regions where Kyocera’s plants or operation centers are located
- 2. Kyocera’s dealers 3. Government or administration 4. NOPs such as Environmental groups
- 5. Press 6. Kyocera employees or family members 7. Others ( )

**Q8 : If you have any other opinions or thoughts, please let us know.**

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# Living Together

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Living in Harmony with the World,  
Nature and Society



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Publication in October 2001.



**KYOCERA CORPORATION**

Environmental Safety Department, Environment Section

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