

Krosaki Harima Corporation
Report on Contribution to Environment/Society
2009



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1. Introduction

Since its establishment in 1918, Krosaki Harima has played a vital role supporting Japan's core industries, especially the iron and steel industry, through the manufacturing and sales of refractories under the corporate motto "better, faster and less expensive." Presently, in order to "provide No. 1 value to customers worldwide," as defined in the management philosophy, the corporation is providing customers with solutions based on the technologies and know-how accumulated by its forerunners and promoting global business targeting growing overseas markets. Based on our materials technology developed from refractories, we have operations not only in the business for iron/steel industries, but also in the fine ceramics business and the life space ceramics business which aims to offer comfortable and beautiful life spaces, thus pursuing the various potentials of ceramics.

In terms of environmental preservation, on the other hand, the corporation has long contributed to environmental improvement through energy-saving and improvement and advancing of production processes triggered by the oil crisis in the 1970s. In the future, through technological innovation, we will further promote energy-saving and global environmental preservation activities such as the development of environmentally-friendly manufacturing processes, the development of products with lower environmental loads in the clients' production processes, the provision of landscape materials in consideration of the environment, and extend businesses which can be expected to grow sustainably .

2. Global Environment Preservation Approach and System

The corporation started our approach to protect the global environment rather early by establishing "Global Environment Preservation Regulations" and a "Global Environment Preservation Committee" in 1993.

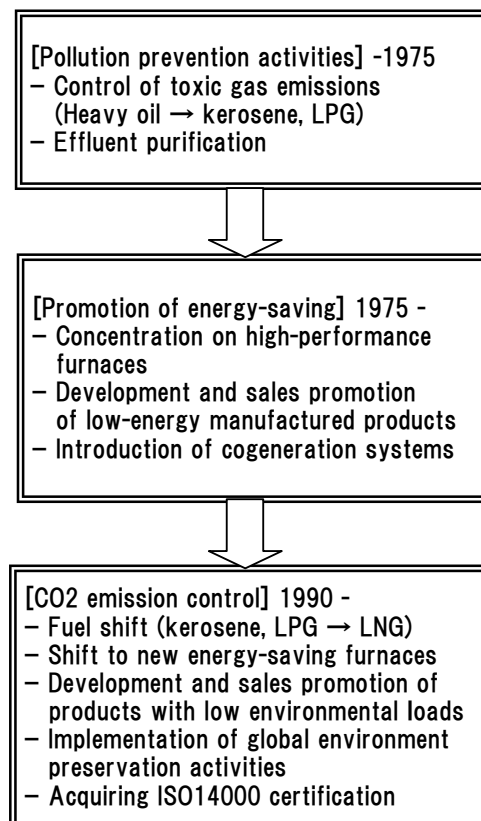
In 2001, we issued the Environment Declaration and started activities to acquire the ISO14001 certification. Having the outcome of those activities recognized, we successfully acquired the ISO14001 certification in the Yahata Area in 2002. In addition, since 2003, we have conducted environment preservation activities in conformity with ISO14001 in other plants.

In 2004, Kyushu Refractories Co., Ltd. acquired the ISO14001 certification, and today we are energetically promoting global environment preservation activities with 23 groups in total.

The global environment preservation activities in fiscal 2009 have the following five priority promotional targets.

- (1) Reduction of energy use (electric power and fuel)
- (2) Reduction of industrial wastes
- (3) Development and sales promotion of environmental products
- (4) Reduction of OA paper and office wastes
- (5) Compliance with environmental laws

We are steadily making efforts to achieve these targets not only through investment in energy-saving facilities and company-wide campaigns but also in the daily operations of each employee and further combining private practice.



Environment Declaration

The destruction of the environment continues on a global scale today, and we are determined to actively work to preserve and protect the global environment as a corporate citizen trusted by society to pass this beautiful earth on to our descendants.

June 1, 2001
Krosaki Harima Corporation

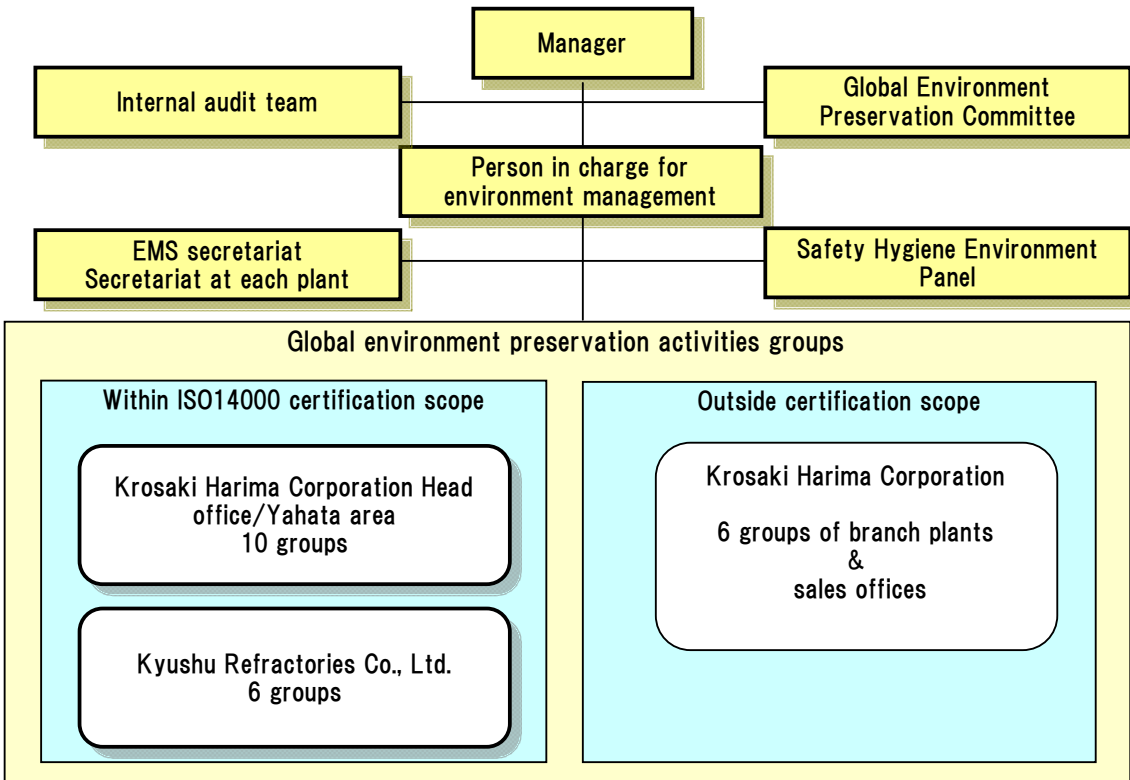
Environmental Policy

Under the Environment Declaration, we lay down Environmental Polices as follows:

- a) In the course of our comprehensive solution business of refractories and ceramics, we will aggressively tackle the reduction of environmental loads including prevention of global warming, resource saving, recycling, reduction of waste, and prevention of contamination in all stages of research and development, design, material procurement, manufacturing, services, and the use and disposal of products by customers.
- b) We will clarify our responsibility for promoting environmental protection and preservation and develop our environmental management organization so that all employees endeavor to continuously reduce environmental loads and prevent pollution. For all our activities, we will set environmental purposes and targets, implement and promote them, and review them periodically.
- c) We will observe environmental laws/regulations and agreements with stakeholders.
- d) We will aim at coexistence between the global environment and human society and contribute to the creation of a better environment.

April 1, 2009
Director & Technical Division Manager,
Krosaki Harima Corporation

Global Environment Preservation Management System



3. Environmental Improvement Targets and Achievement Status (Fiscal 2008)

Environmental improvement targets	Achievement status
Reduction of power consumption Annual 1% reduction in unit consumption	Up to fiscal 2007, unit power consumption increased because equipment for stabilizing quality was added. In fiscal 2008, however, we consolidated the compressors and introduced quantity control, which led to an improvement in unit power consumption. Though we are still exploring new facility investment and improvements which will result in considerable energy saving, those are not really viable and we are only accumulating small-scale improvements.
Reduction of power consumption Annual 1% reduction in unit consumption	A new firing facility started full-fledged operations in the latter half of fiscal 2007 and the shift from the former facility was completed in the second half of fiscal 2008. Thus our original goal was almost achieved.
Reduction of industrial wastes 47% reduction against fiscal 2000	Almost achieved. We have reduced industrial wastes by reducing cutting/machining chips by using near-net shaping, recycling materials, and promoting reuse of work materials. Recently, however, it has been getting difficult to make further reductions.
Reduction of quantity of OA paper purchased 32% reduction against fiscal 2002	Great achievement. The target was substantially achieved by introducing ERP, using less paper with OA equipment, and promoting the use of the backs of sheets.
Reduction of office wastes 32% reduction against fiscal 2002	The target was achieved overall at each office. Thorough collecting of sorted wastes and the recycling effect of paper through shredder processing led to the target achievement.
Development of environmental products 1 project or more a year	The target was achieved by developing and expanding the sales of refractories without toxic substances (chrome oxide), refractories with low thermal conductivity, and landscape materials utilizing lots of recycled materials.
Compliance with environmental laws/regulations No noncompliance	No case of noncompliance. According to environmental auditing which occurred sequentially at the plants, compliance with environmental laws/regulations was favorable.

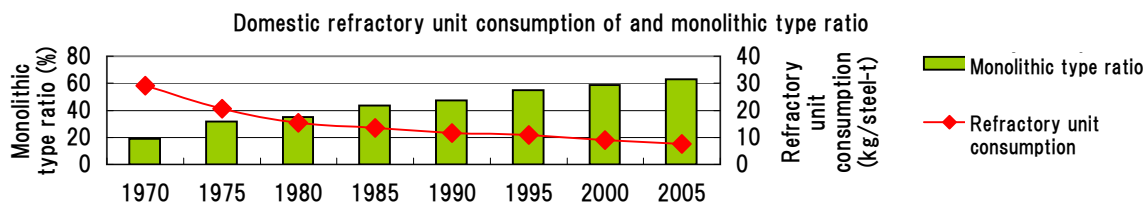
*A forming process which makes near finish shape aimed at saving machining time and costs

Substantial amounts of heat energy and electric power are consumed to manufacture refractories. Since the oil crisis in the 1970s, we have realized a large reduction of CO₂ emissions by introducing energy-saving equipment and promoting a shift to alternate fuels. Subsequently we are promoting the efficient use of energy by installing cogeneration systems and through concentrated production.

On the other hand, we have succeeded in developing low-temperature firing refractories, which are low-energyconsumption products (eco-products), and unburned/monolithic refractories, and the ratio has been increased (66% at Yahata plant). Recently we are expanding the application of heat-insulating refractories and refractories with low heat conductivity in cooperation with iron/steel companies, our customers, along with increasing momentum to prevent global warming.

As an achievement of the research and development, the performance of refractories has improved remarkably by marketing high-performance refractories and replacing conventional products with them. As a result, prolonged life has contributed to both resource-saving and energy-saving effects, and further to increased production efficiency in iron and steel making. As the refractories have increased in performance, however, the production process has become more advanced and complicated, showing a rising tendency in unit energy consumption.

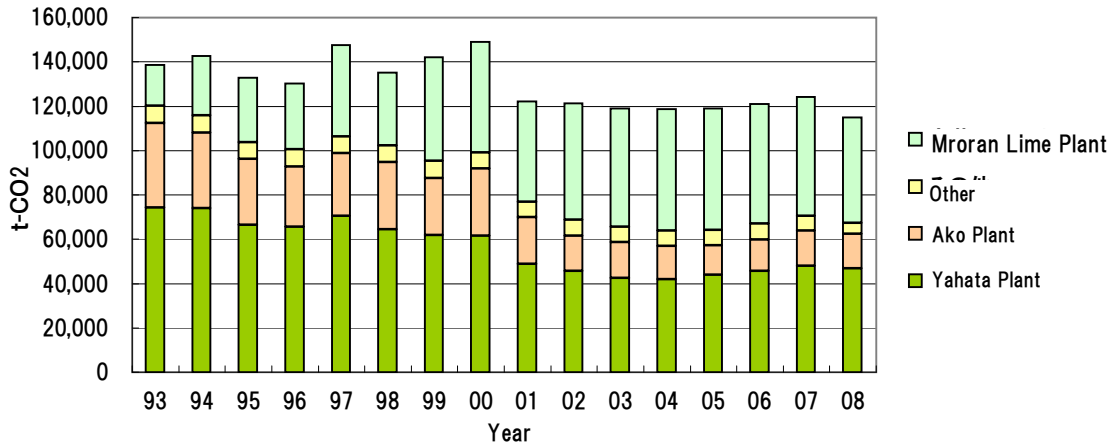
To control this rise in unit energy consumption, we will further promote facility improvement and electricity-saving activities. We will contribute to the global environment preservation by tackling the research & development being encouraged by the general effect including energy saving and the reduction of CO₂ emissions when refractories are used.



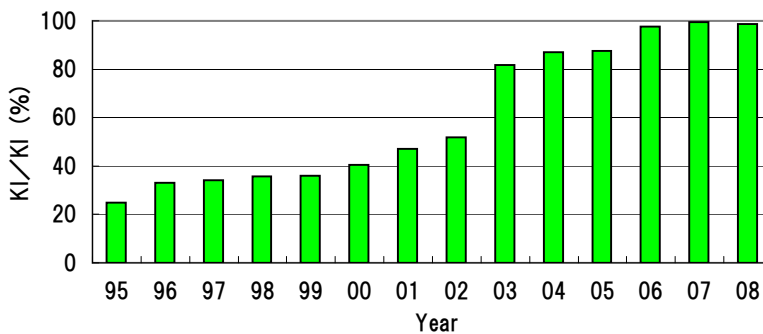
4. Environment Performance Data

4. 1 Promotion of Energy-Saving, Emission Control of Global Warming Gasses

Carbon dioxide emissions (energy origin)



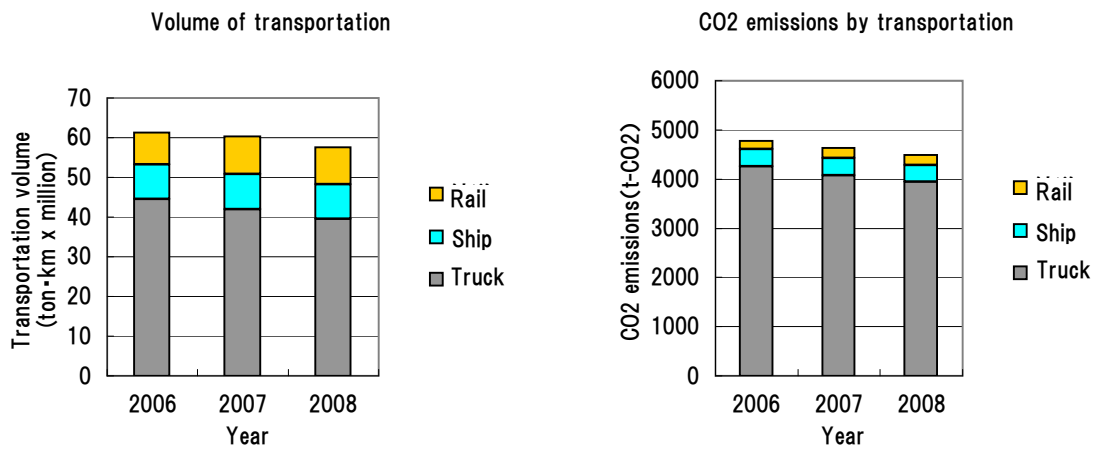
Fuel LNG ratio (Yahata Plant)



Tunnel type furnaces

In comparison with fiscal 1993, the energy consumption in the refractory division was reduced 44% in terms of CO₂ emissions. As a whole, a 17% reduction was made. This is the result not only of the introduction of energy-saving facilities but also the effects of environment improvements including the fuel shift to LNG, the introduction of production processes with low energy consumption, and higher efficiency by production consolidation. The LNG ratio in fuel consumed at Yahata Plant is almost 100%. These years, the emissions of CO₂ have tended to increase because of increases in facility investment with the purpose of stabilizing and improving the quality of products. We will further promote the reduction of CO₂ emissions by optimizing operational conditions and additionally introducing energy-saving facilities.

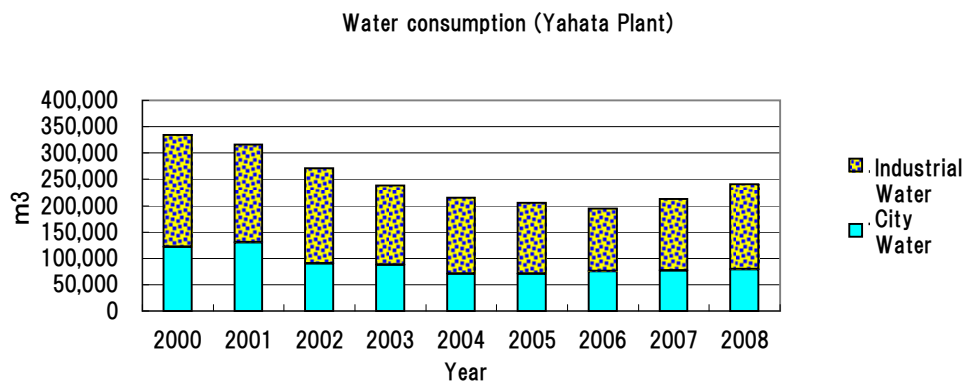
4. 2 Promotion of energy-saving in transportation



As the revised energy-saving law was enforced, we started data collection of total transportation volume from fiscal 2006.

We have long endeavored to reduce truck transportation and switch to ship and railway transportation. As a result, the ratio of ship and railway transportation to total transportation has increased to 30%. In truck transportation, we are working at energy saving and CO2 emissions control by raising the ratio of large trucks and trailers used by collecting cargo as well as promotion of utilization of mixed cargo. For the CO2 emissions per transportation volume, we maintain a low level among manufacturing industries. We will further promote the modal shift.

4. 3 Reduction of water consumption



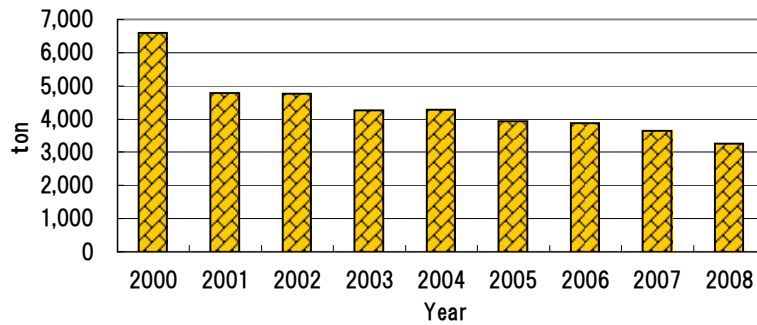
We have adopted the policy of increasing the ratio of industrial water and limiting the consumption of city water. As a result, the ratio of the industrial water has reached 65%.

At the same time, in response to water leakage and overflow, we have taken detailed measures and promoted recycling and reuse. As a result, water consumption was reduced 28% in comparison with fiscal 2000. In fiscal 2008, we added flowmeters so that the water consumption can be grasped for each manufacturing area. We will further realize water-saving by strengthening water management.

The effluents from plants are carefully controlled, being treated through water treatment facilities and then connected to sewage piping to prevent the pollution of rivers.

4. 4 Reduction of Industrial Wastes

Final disposal volume of pottery/ceramics wastes (Yahata Plant)



Promoting reduction of cutting/machining chips by using near-net shaping and materials recycling, the discharge quantity of ceramics wastes was reduced 50% in comparison with fiscal 2000. However, since the reduction of the total discharge of industrial waste has not produced a satisfactory result, we will make further efforts in this area.

4. 5 Emission control of air pollutants



Example of installation of a large dust collector

At Krosaki Harima, we continuously endeavor to control air pollutants such as the soot/dust, SO₂, and NO_x discharged from manufacturing facilities including kilns, drying furnaces, and boilers. We first minimized the heavy oil which was conventionally used as fuel by switching to kerosene, and recently we have promoted another fuel shift from kerosene to LNG. As a result, we have considerably reduced air pollutants as well as CO₂ emissions. We comply with the emission control stipulated in the Air Pollution Control Act and there has been no noncompliance with environment-related laws or any complaints from neighbors.

5. Compliance Status of Environmental Laws/Regulations (Fiscal 2008)

Environmental laws/regulations	Requirements and compliance statu
Pollution related laws such as Air Pollution Control Act	We appoint a pollution prevention administrator to comply with the emission control of soot/dust.
Waste disposal	We enforce proper storage and disposal of wastes, manifest issuing and record retaining, storage of polyvinyl chloride (PCB) wastes, and periodical reporting. The detoxifying of PCB wastes (waste PCB) stored and controlled in the Yahata Area is completed at the Kita-Kyushu Eco-Town Treatment Plant. (Note)
Waste water	We check regulatory compliance by conducting environment measurement of effluent such as sewage. We also inspect wastewater facilities on a regular basis.
Noise control	We report designated facilities and observe regulatory values.
Measures against global warming such as energy consumption	We appoint an energy administrator and report on the following items to the national government every year. <ul style="list-style-type: none"> - Actual energy consumption and energy-saving plan - Actual total transportation volume and energy-saving plan - Actual emissions of greenhouse gases
Specific chemical substances	We monitor emissions of specific chemical substances and report them. We issue an MSDS for products containing specific chemical substances and products containing substances subject to the Safety and Hygiene Law.
Fire Service Law	We report on the installation/change of storage or the handling places of hazardous material for approval as necessary.

We have developed a mechanism to perform internal auditing periodically (once a year) to check if the sections/departments are operated in accordance, not only with the environment related laws/regulations, but also the Industrial Safety and Health Law and Fire Service Law and check if there are any improvements to be made. The mechanism has been in practice since fiscal 2008.

(Note) When the PCB disposal facilities in Kita-Kyushu Eco-Town started their operations, we completed the treatment of all the capacitors and transformers using PCB stored within Yahata Plant of Krosaki Harima within fiscal 2006.

6. Plant Scene with Volcano - Myokenzan



Myokenzan crater (top)

At our Yahata Plant, there is the smallest volcano in the world. It is Myokenzan, 41m above sea level. There is no threat of an eruption since it is an extinct volcano. It erupted and consolidated in the Cretaceous period (the dinosaur period which goes back to between about 140 million years and 65 million years ago).

You can see columnar joints of lava blown up and slowly cooled and hardened, and it is designated as a cultural asset of Kita-Kyushu City.

Path to Myokenzan (right)

This is the uphill path leading to the Myokenzan crater through the premises of our Yahata Plant.



Guardian shrine (left)

At the foot of Myokenzan, there is the guardian shrine of the Yahata Plant. It is a sanctuary which quietly protects the safety of every employee and gives motivation to work. We work at afforestation and gardening of the shrine and its periphery.

7. Rooftop Greening - New Control Center



This is the New Control Center of the Yahata Plant, completed in June 2009. With consolidation of the offices in this new building, energy saving and other higher efficiency are expected.

Greening of an area of 300m² has been installed on the rooftop of the New Administration Center. In addition to the eye-friendly view, it reduces the rooftop surface temperature; we expect energy saving effects such as power saving for air-conditioning. 270 staff members work in this building. State-of-the-art energy-saving fluorescent lights have been installed in the offices and energy-saving air-conditioners have been introduced, aiming at an environmentally-friendly facility.



8. Contribution to Community



Cleaning activities

Here at Krosaki Harima Group, we volunteer to pick up trash around the Yahata Headquarters Office once a month. Also, on the once-a-year whole-city clean-up day designated by Kitakyushu City, we get employees' family members involved in cleaning. We will continue our cleaning activities with the belief that we are contributing to environmental improvement though we cannot really say this activity will save the earth.

Wasshoi Summer Festival in Kitakyushu

We participate in the largest festival in Kokura to promote vital town-building. There are 100 participants from the Krosaki Harima Group. Rewarding our practice, we won the Outstanding Performance Award in 2007 and the Hustle Award in 2009. It's a day when employees' passion gets united.



Ako Loyal Samurai Festival

Every year, On December 14, a day when 47 loyal retainers of Ako, famous from the Chushingura stories, made a revenge attack, our employees also participate in the Loyal Samurai Festival in Ako City. The festival's highlight is a street parade, in which they march over 1.3 km from Ako Castle Otemon Gate to Banshu-Ako Station in costumes of different loyal retainers, entertaining visitors and adding their energy to the festival.





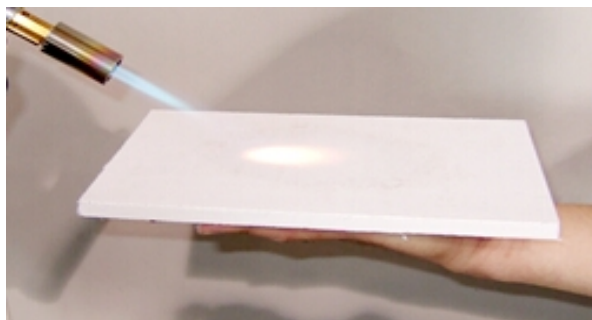
Refractories with low thermal conductivity

We use refractories with low thermal conductivity for transportation and refining containers in the steel-making process, thereby contributing to energy-saving efforts by our customers.



Refractories for incinerators

Our chrome-free refractories are being used for high-temperature incinerators and melting furnaces to prevent dioxin emissions. The material is free of chrome, which is a hazardous waste.



High-performance heat insulating materials

The use of high-performance heat insulating materials with thermal conductivities lower than that of air is expanding. We are contributing to energy-saving in a wide range of fields such as highly anticipated fuel cells, iron-making facilities, and household electrical appliances.



Recycled landscape bricks

We provide landscape bricks recycled from construction waste and refractory bricks, thus contributing to the formation of a recycling-oriented society.

10. Corporate Governance Status

The basis of corporate governance at Krosaki Harima is to ensure management transparency and efficiency to all interested parties, including shareholders.

In April 2003, we established the “Mission Statement” which lays down the “Mission,” “Goal,” and “Management Policy” of the Krosaki Harima Group. We are determined to work to heighten our corporate value by following the guidelines stated in the “Mission Statement.”

10. 1 Krosaki Harima Group Mission Statement

● OUR Mission

KROSAKI HARIMA Group is committed to playing an important role in global industrial development, and to making contributions to the prosperity of society by providing high-value products and technology for the ceramics industry worldwide through continuous innovation.

● Goal

Provide No. 1 Value to Customers Worldwide

● Employee Policy

- Dedicated employees with independent thinking
- Corporate culture where individuality is encouraged
- Work environment where technology is realized
- Management that encourages a challenging spirit

● Management Policy

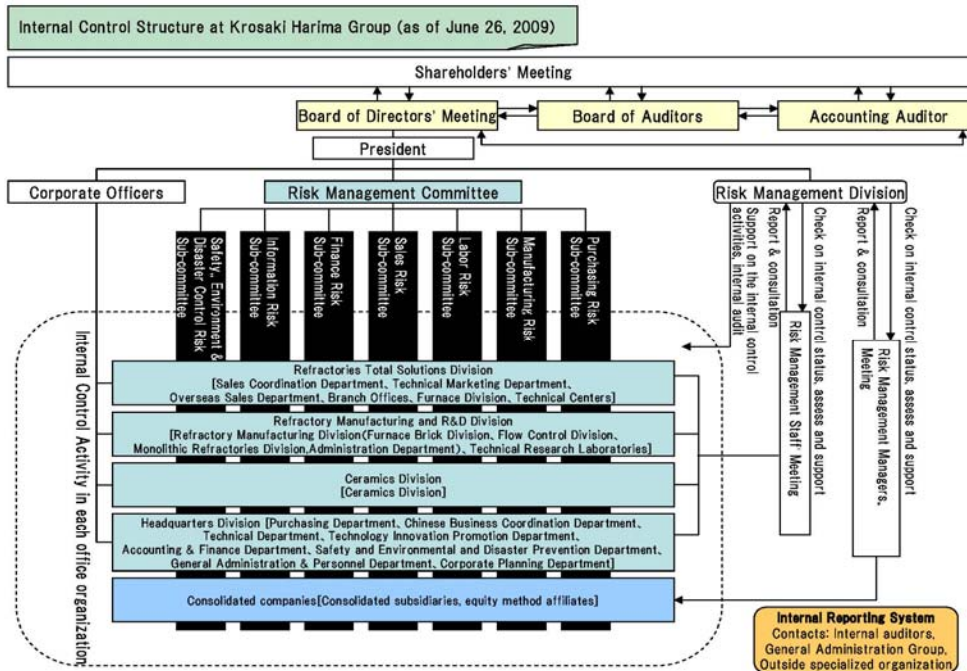
- We aim to be a trusted enterprise by providing the best quality as well as the most reliable products to our customers.
- We respect the humanity of each employee, and offer opportunities for self-growth and realization.
- We pursue the way of coexistence and co-prosperity by sharing strategies with our partner enterprises.
- We obey the law as a sensible enterprise member of society, and we meet the challenge of dealing with global environmental problems.
- We make every effort to increase shareholders’ profit by pursuing all activities which will maximize the business value.

10. 2 Organizations

Krosaki Harima uses an auditors system and a board of auditors system.

A board of directors’ meeting is held once a month, in principle, to make decisions on business executions and supervise each board member’s performance. Krosaki Harima has also adopted an executive officers system, which aims to clearly separate the business execution function from management decision-making and supervisory functions. This system enhances the decision-making and supervisory functions of the board meeting, while accelerating and streamlining business execution.

10. 3 Present Status in Structuring Internal Control System



With the internal control structure shown above, Krosaki Harima conducts internal control and risk management in each office organization in accordance with company regulations.

1. Office Organizations

Our internal control system operates based on autonomous management in each office organization in accordance with the regulations for operating the internal control system.

2. Risk Management Committee

The Risk Management Committee consists of the president as a chairman, with directors and heads of divisions as members. Involving auditors, chairmen of sub-committees, and risk management managers, the committee holds a regular meeting once every six months to prevent the outbreak of a crisis and minimize losses caused by the outbreak of a crisis. At the outbreak of a crisis, an emergency headquarters will be set up within the Risk Management Committee to solve problems swiftly and flexibly.

3. Risk Sub-Committees

Risk sub-committees have been set up according to the work process to assist office organizations with their internal control activities. The sub-committees report job-related risks and how those are handled as well as action plans to the Risk Management Committee.

4. Internal Reporting System

This system has been established for the purposes of preventing violations of laws and expansion of fraud, and taking proper actions at an early stage. In addition to internal auditors and Administration Group, an outside specialized organization serves as a contact for this system. The system is open to our employees and group companies' employees as well as their family members and business partners.