

Krosaki Harima Corporation

Environment Report

2008



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 KROSAKI HARIMA

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

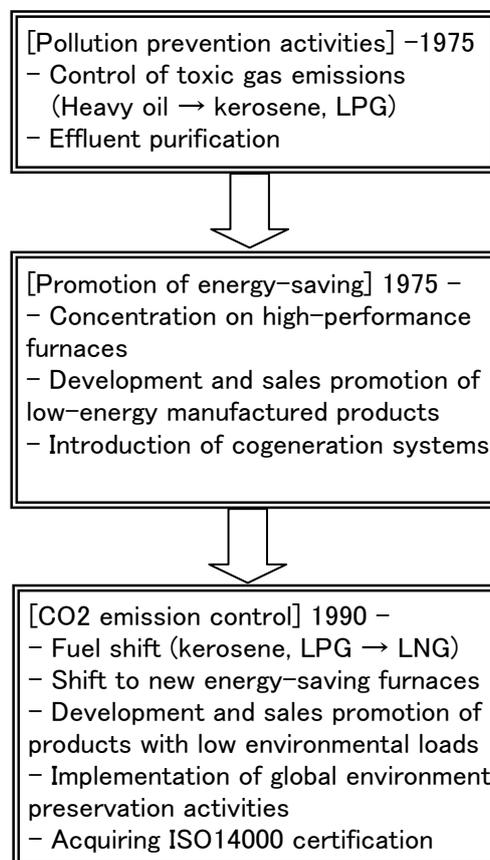
2. Global Environment Preservation Approach and System

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 announced the Environment Declaration and started activities to acquire the ISO14001 certification. As a result, we acquired the ISO14001 certification in the Yahata Area in 2002, and since 2003, we have conducted activities in conformity with ISO14001 in other plants. In 2004, Kyushu Refractories Co., Ltd. joined in the sites to be included in the certification, and we have energetically promoted the global environment preservation activities with 25 groups in total.

The global environment preservation activities in fiscal 2007 have the following five 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

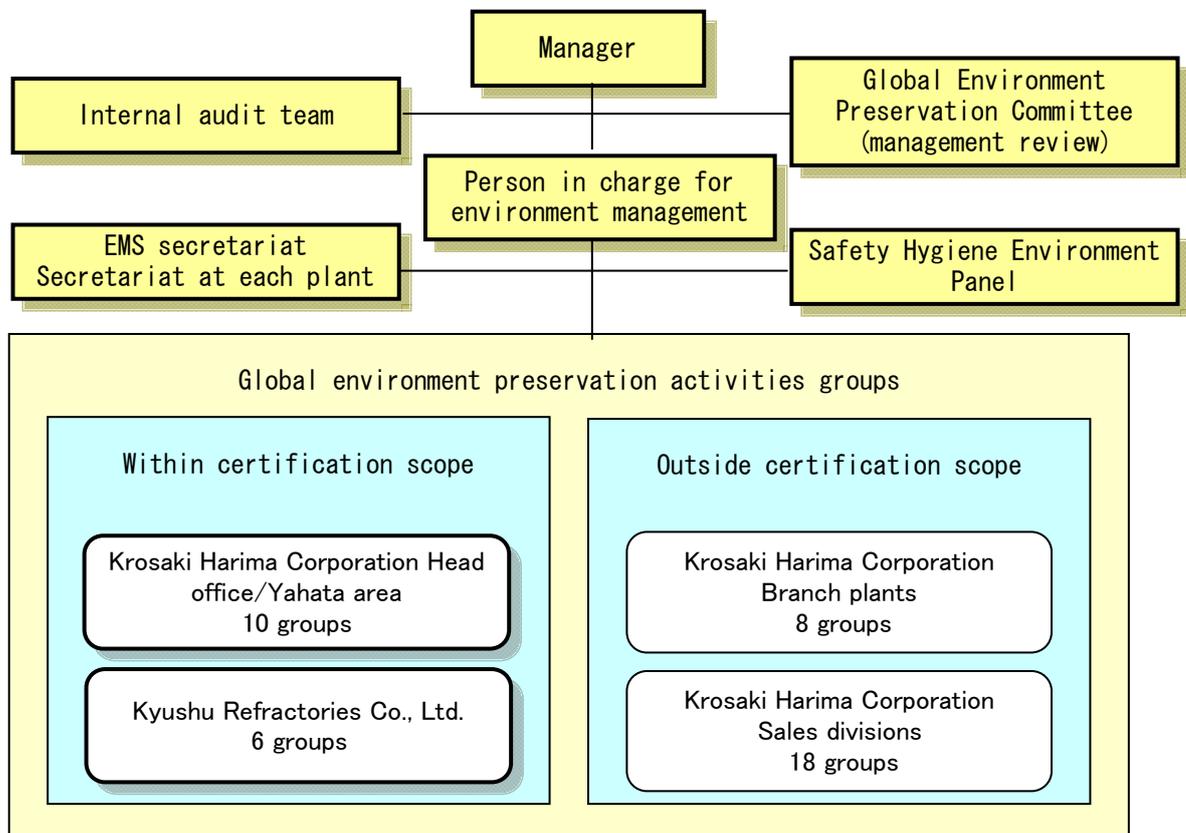
Environmental Policy

Under the Environment Declaration, we lay down Environmental Policies 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, 2007
Director & Technical Division Manager, Krosaki Harima Corporation

Global Environment Preservation Management System



3. Environmental Improvement Targets and Achievement Status (Fiscal 2007)

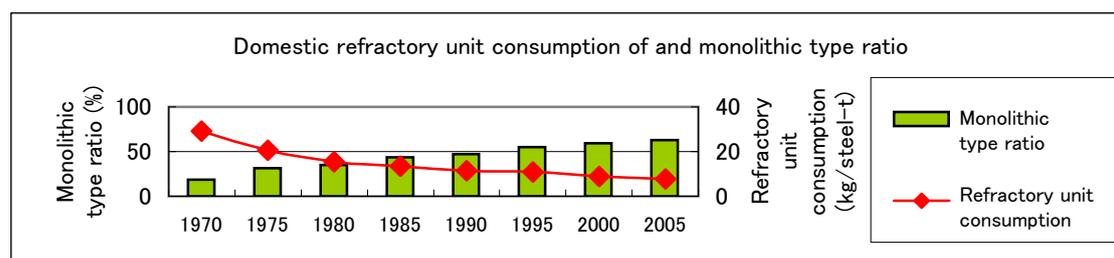
Environmental improvement targets	Achievement status
Reduction of power consumption Annual 1% reduction in unit consumption	In fiscal 2007, unit power consumption increased because equipment for stabilizing quality was added. We could only accumulate small-scale improvements not knowing what acility investment and improvements would result in considerable energy saving.
Reduction of fuel consumption Annual 1% reduction in unit consumption	We considerably reduced CO2 emissions by making facility improvements to replace kerosene fuel with LNG fuel. However, the unit fuel consumption increased because of an increase in the ratio of product types with high-energy consumption. We expect a large energy-saving effect because a new firing facility started full-fledged operations in the latter half of fiscal 2007.
Reduction of industrial wastes 45% 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 30% 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 30% 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.

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 co-generation systems and through concentrated production.

On the other hand, we have succeeded in developing low-temperature firing refractories, which are low-energy-consumption 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.

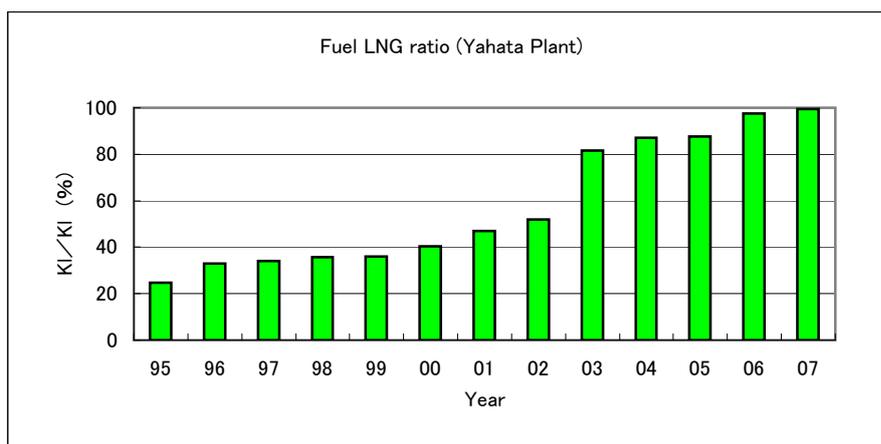
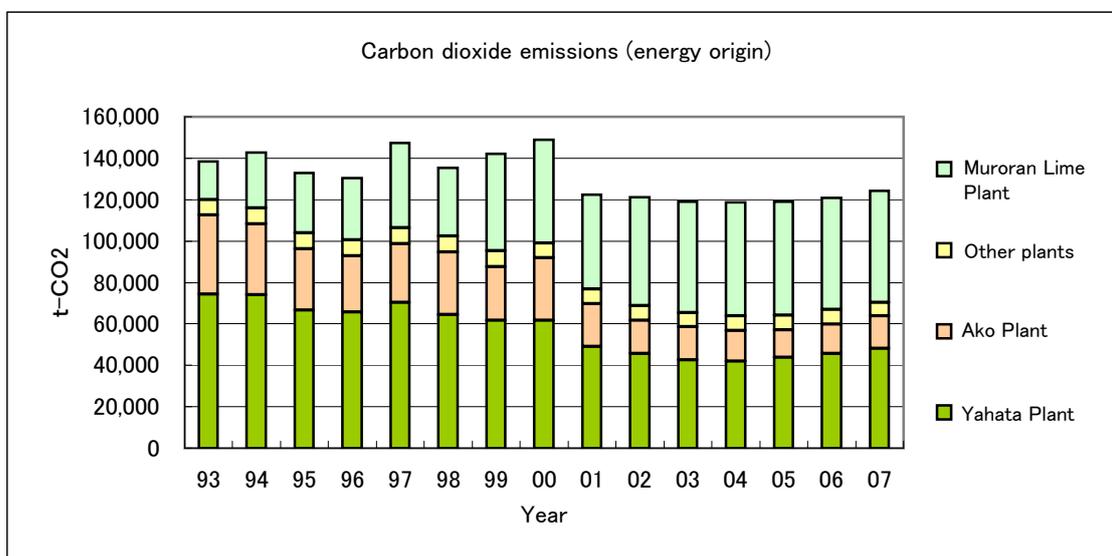
As an achievement of the research and development, the performance of refractories has improved remarkably by marketing high-performance refractories and replacing conventional products with them. As a result, prolonged life has contributed to both resource-saving and energy-saving effects, and further 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

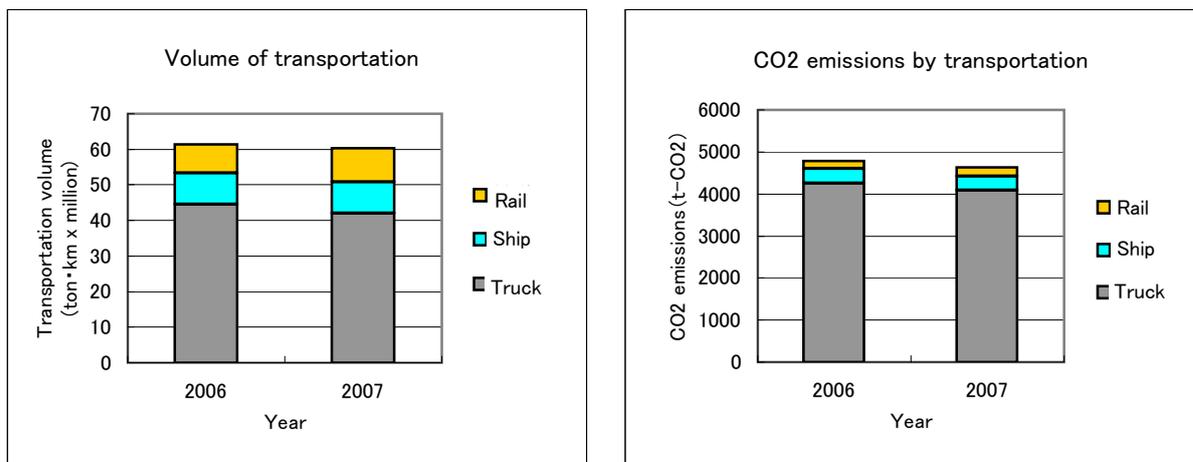


Tunnel type furnaces

In comparison with fiscal 1993, the energy consumption in the refractory division was reduced 41% in terms of CO₂ emissions. As a whole, a 10% 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.

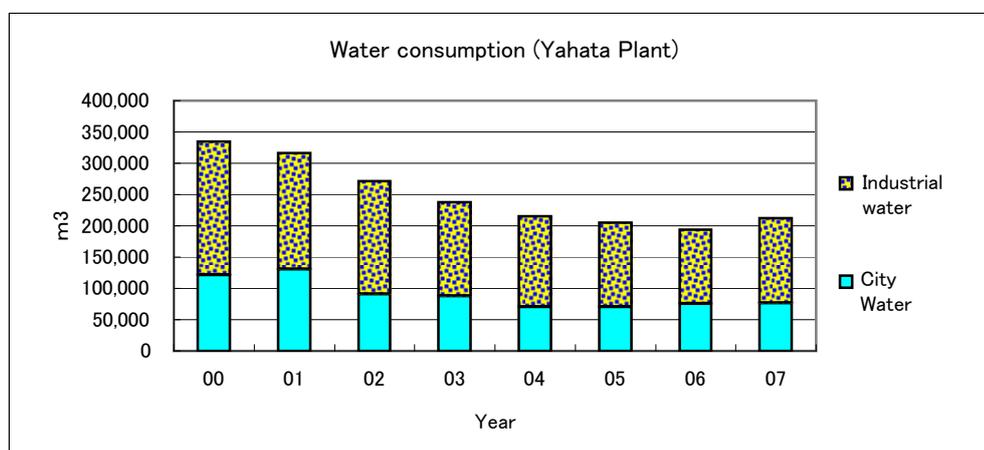
4. 2 Promotion of energy-saving in transportation



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

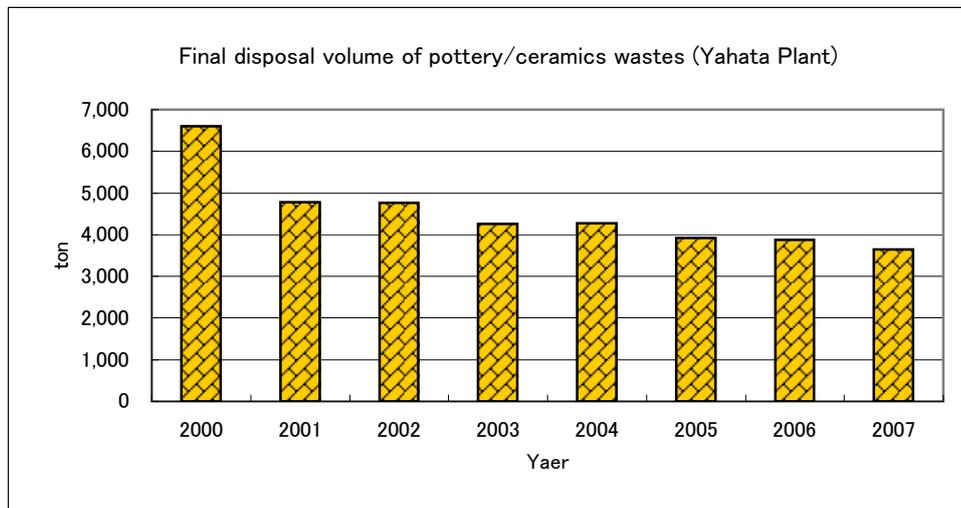


We have adopted the policy of increasing the ratio of industrial water and limiting the consumption of city water. As a result, the ratio of the industrial water has reached 65%.

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 40% or more 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



Promoting reduction of cutting/machining chips by using near-net shaping and materials recycling, the discharge quantity of ceramics wastes was reduced 45% 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



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.

Photograph at left: Example of installation of a large dust collector

5. Compliance Status of Environmental Laws/Regulations (Fiscal 2007)

Environmental laws/regulations	Requirements and compliance status
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. Contributing to Community – Cleaning Activities



As part of our contribution to the community, employees periodically volunteer for cleaning activities around the corporation in cooperation with the community association, thus contributing to the beatification of the community.



Scene of cleaning activities



The day's results