

Environmental Management

Basic environmental policy

Slogan

**Protect the Green Earth and
Create Products Gentle to the Environment**

Basic Environmental Policies

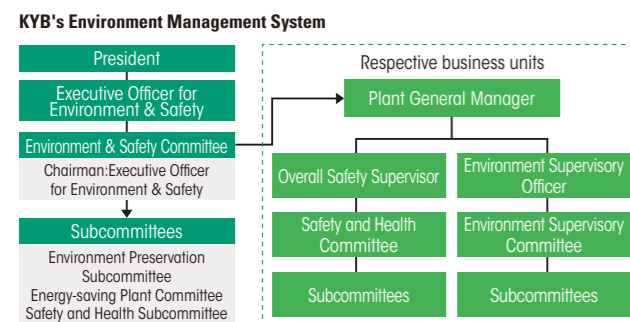
The KYB Group creates products gentle to both people and the earth. We are dedicated to the promotion of environmental activities as an important tool for evaluating management.

- Coordinates and builds up productive and corporate activities based on the recycling to reduce impacts on the environment.
- Strive to ensure long-term and sustainable operations throughout the entire KYB Group.
- Work to promote harmony with society and contribute to the global community as a good corporate citizen.
- Clarify every employee's role so that all employees can participate fully.

Environment & Safety Management system

The "Environment & Safety Committee" was organized with directors responsible for environment & safety as leaders to harmonize our intentions regarding environment and safety related approaches.

KYB has implemented the system shown below.



Message from Director in Charge

Aiming to be a corporation that can contribute to achieving a sustainable society

The new midterm policy started in 2017. In the situation where environmental preservation has become a global issue, companies are now required to promote a sustainable society. The KYB Group promotes energy conservation activities by adopting a new approach and introducing large compressors equipped with energy-saving technology and wastewater treatment equipment with high throughput capacity to reduce the environmental load. In addition, we will continue our efforts to achieve our target environmental load by implementing consistent activities to eliminate leaks of oil and air pressure used in production equipment and to control the temperature of air-conditioning equipment. However, we did not achieve our goals for activities to save manufacturing-related energy and could not reduce industrial waste. In fiscal 2018, based on reflection from activities in fiscal 2017, we will further work on the visualization of energy, waste reduction, and recycling to reveal and reduce waste. Finally, we would like to thank you for your interest in this report. We will continue to further enhance and improve our activities. We appreciate your continuous support and guidance.

(Masaru Tsuboi, Head of CSR Safety Headquarters)



Mid-term policy

Mid-term policy regarding the environment and safety

We have been formulating Phase 2 of our mid-term policy since fiscal year 2014.

We have started safety activities.

Environmental/Safety Mid-term Policy (2014 to 2016) Abstract below

1. Creation of factories aiming to minimize the energy consumption and waste

Reduce energy consumption per unit by 1% per year relative to 2013 levels, and reduce amounts of industrial waste per unit by 3% per year relative to 2013 levels.

2. Creation and expansion of industrial accident free production bases

The employees' awareness about the safety will be improved and critical hazards eliminated.

As of fiscal year 2017, the mid-term policy phase 3 will be developed, and we have started environment and safety activities based on the new mid-term policy formulated under the keywords: compliance with the rules, speed, and challenge.

Summary of the Environmental/Safety Mid-term Policy (2017 to 2019)

1. Creation of plants aiming to minimize energy consumption and waste

Environment development for partial supply of energy
Promotion of measures through energy visualization
Promotion of waste volume reduction and recycling

2. Creation and expansion of industrial and fire accident-free production bases

Risk assessment and promotion of measures for industrial accidents
Fire accident-free

Environmental conservation objectives

We developed the Environmental Management Activity Plan based on the company's environmental policy and implemented a variety of activities for each production base to achieve our goals. However, compared with fiscal 2016, which was the benchmark, we did not achieve our goals for CO2 emissions, zero emissions, and metal scraps. In fiscal 2018, we will further reduce energy consumption, improve productivity, and promote recycling.

Activity results of 2017

○: Goal attained ×: Goal not attained

Theme	Target values	Results of 2017	Evaluation	Publication page
Prevention of global warming	CO ₂ emission volume	95,581 t-CO ₂ or less	101,289 t-CO ₂	×
	Energy saving	Energy usage volume basic unit	0.71 kl/million yen or less	0.70 kl/million yen
Improvement of resource recovery and recycling rate	Recycle rate	91.3% or higher	90.1%	○
	Zero emission	4.7% or less	4.7%	×
Reduction of waste	General waste	519 t or less	504 t	○
	General waste per unit	2.15 kg/million yen or less	2.09 kg/million yen	○
	Metal scraps	17,751 t or less	19,755 t	×
	Metal waste per unit	249 kg/million yen or less	251.8 kg/million yen	×
	Industrial waste	1,678 t or less	3,539 t	×
Industrial waste per unit	28.36 kg/million yen or less	28.5 kg/million yen	×	

Overview of major approaches in the fiscal year of 2018

Global warming prevention
Measures for replacing lighting with LEDs, LVDs, and other highly efficient devices, adopting inverter control for hydraulic units, reducing air consumption in plants, and reducing the air-conditioning load.

Waste material reduction
Paint gas volume reduction through biological treatment, introduction of waste treatment systems, and turning sludge and white gasoline into valuable products.

(Note) Basic units are calculated on the basis of marginal profit.

For energy, crude oil equivalent is calculated for electricity and fuel and the total value is displayed as total energy consumption. CO₂ emissions and energy consumption are calculated using methods determined by KYB.

Chemical substance management

Support for environmental controls on products

For protection of the environment, the REACH Regulations, other ELV and RoHS directives, and various laws and regulations are established under which stricter regulations are implemented. In order to address the stricter REACH and other regulations, we built a database of chemical substances subject to the regulations after conducting an investigation of the chemical substances contained in our products to accumulate the data. We can use this database to provide a rapid response to whether or not prohibited and restricted substances are used at the request of our customers and to respond to inquiries about highly concerned substances additionally registered to prohibited and restricted substances since the implementation of the REACH Regulations.

We will continue with activities that enable us to provide products that conform to the needs of our customers and of the market.

Risk assessment of chemical substances

In fiscal year 2015, we assessed the health risks of chemical substances at all of the production sites in Japan. In fiscal year 2016, we assessed the explosion and fire risk from chemical substances at the Gifu South Plant and Gifu East Plant. For the assessment, we submitted an explanation to all departments that handle chemical substances about the three elements for combustion (i.e., combustibles, oxygen, and ignition sources), flashpoint, and ignition temperature, which are the basic factors in explosion and fire phenomena. Chemi-

cal substances handled by the plants include invisible gaseous substances and those with a flashpoint below room temperature. We strive to provide useful information to those who handle chemical substances so that they understand through risk assessments the importance of eliminating ignition sources to prevent explosions and fires caused by chemical substances.

Response to PCB disposal

Transformers and other electrical equipment containing PCBs are stored securely at each business establishment. We concluded a disposal contract with a company specializing in detoxification processes and started disposal since fiscal year 2012. So far, we have completed the disposal of transformers stored at KYB-YS Co., Ltd., its Casting Center, and the KSM Mie Plant. We will proceed with disposal under the plan for each fiscal year.



PCB waste removed from KSM

Activities to reduce the environmental load

Activities to reduce the environmental load

Introduction of LED lights in plant

At the Gifu North plant, more than 10,000 lighting devices are used. In 2017, those installed in the upper positions, where replacing would be difficult, were preferentially replaced with LED lighting devices. Along with the replacements, the number of lighting devices was cut down since lighting devices are used at hand in some places at the plant. These efforts have led to energy-saving effects of a drop in the consumption of crude oil of about 150 kiloliters a year.



LED light devices in the high ceiling

LED lighting devices of the fluorescent tube type

Concerning chemical substance management

We developed a chemical substance database for chemical substance risk assessments and raised employee awareness of the hazards of chemicals to prevent accidents caused by chemical substances. In 2017, at the Gifu South and Gifu East plants, we re-implemented chemical substance risk assessments and conducted surveys on how to release chemical substances to reconfirm the hazards of chemicals and promote proper treatment methods. We also updated all safety data sheets (SDSs) in the database to cover the latest information on applicable laws and hazards. We will continue to regularly implement these measures to prevent accidents and compliance violations caused by chemical substances.

Reducing compressor power consumption by reducing air supply pressure

The Gifu East plant has been working on energy savings with regard to the air supply equipment by controlling the number of compressors and introducing inverters. In addition, we have been monitoring air use and air pressure at each site on a daily basis and found that we could save energy by decompressing the compressor's air feed pressure. However, because of concerns that an excessive decrease in the compressor's air feed pressure might cause problems in any equipment using air and trouble in the production processes, we determined the allowable range of air pressure by continuously measuring air pressure at sites with the longest pipelines from the compressor. Furthermore, we took careful precautions by compressing

the compressor's air feed pressure in two stages. As a result, we reduced the compressor's air feed pressure by 0.04 MPa without hindering production and thus reduced the compressor's power consumption by about 3%.



Before applying heat-shielding coating

Weeding by goats at the Gifu East plant

Approximately 30% of the total site area of the Gifu East plant is a green belt where we regularly maintain the scenery of the plant by weeding the green areas. In 2017, we introduced goats to do the weeding. Goats eat grass and make fertilizer, which contributes to weeding and soil improvement of the green belt. At a summer festival in the neighborhood housing complex, we provided weeds to the residents so that they could interact with goats by feeding them through the fence. We believe we offered good memories of summer vacation to the residents, especially the children. We were also interviewed on cable TV Kani for broadcast to the public. We will continue to use goats so that neighboring residents can enjoy our activities.



Interview by Cable TV Kani



Summer festival in the neighborhood housing complex



Preventing goats from escaping by using solar electric fences

Our new administration and welfare building ranked A in CASBEE

The administration and welfare buildings at the Kumagaya plant were integrated into a new building in August 2017, which was ranked A (BEE = 1.8) in the Comprehensive Assessment System for Built Environment Efficiency (CASBEE). As a comprehensive evaluation, we suppressed the height and volume of the building in consideration of the surrounding landscape and adopted top lights and high side lights using daylight. We also adopted several motion sensor lighting systems to address concerns for the in-house environment. Furthermore, we reduced the thermal load of buildings for efficient energy operation. In terms of resources and materials, we use recycled materials for items other than body materials and recycle components. The construction had been conducted during the period from November 2015 to August 2017 and ended successfully without major delays or accidents.



Reducing power consumption of small once-through boilers

At the Sagami plant, we are trying to reduce power consumption by the small once-through boilers to address the issue of global warming and to reduce the environmental load. We updated two boilers in 2017. A belt drive system was used for the blower fan of a small once-through boiler, which supplies steam to air conditioners and plating tanks but caused a lot of transmission loss of power owing to slipping and other symptoms. We therefore changed the drive system to a direct fan-driven high-efficiency electric motor and thereby reduced power consumption by about 25%.



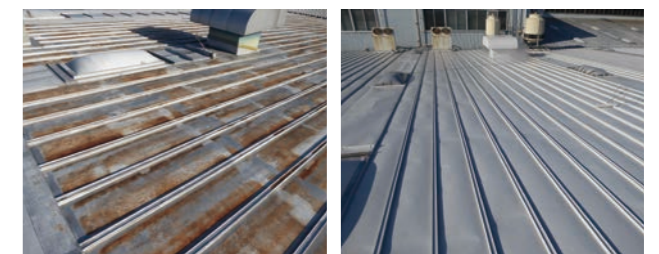
Small once-through boilers in general



High-efficiency electric motor

Heat-shielding coating applied to the plant's roof

The Gifu North plant started operation in 1968. One of the buildings is 50 years old and requires periodic repairs. We repair a predetermined area of the plant's roof every year. In 2017, we applied a heat-shielding coating to the roof. The coating resulted in a high heat-shielding effect of about 3.5° C in terms of the temperature difference in the attic of the plant. We will continue to apply heat-shielding coating systematically to improve the air-conditioning effect at the plant.



Before applying heat-shielding coating

After applying heat-shield coating



Comparison of heat-shielding coating

Adopting inverter control for cooling towers for production

The Gifu North plant has many cooling towers for production, one of which used a large motor. Accordingly, we installed multiple small motors to change the operation method to one that operates according to the load. In addition, we adopted inverter control for the motors to maintain a constant level of supplied water pressure. As a result, power consumption at light loads during break time and at night was reduced, which resulted in energy savings by about 30%.



Applying inverter control for cooling towers