

Harmony with the environment

Aiming to be a company in harmony with the environment, we practice energy conservation through our products.

Environmental issues are a common problem for the entire human race. Efforts to resolve environmental issues are essential to THK's existence and its activities. By producing the LM Guide and other products that utilize rolling technology, THK has helped conserve energy and resources and reduce the burden that human activities inflict on the global environment. In addition, by means such as the acquisition of ISO14001 certification for each of our manufacturing plants, we actively work to reduce environmental impact. THK promotes energy conservation and energy efficiency, and to combat global warming we have established the goal of achieving a 15% reduction in CO₂ emissions per basic unit by 2010, compared with 2005 emissions.

THK will continue to provide environmental solutions through its products and concentrate on developing environment-friendly products. Working in cooperation with our affiliates, cooperating companies, and local communities, we are striving to further reduce environment burdens while preserving and improving the natural environment.



Basic environment policy

THK established a basic environment policy in April 2001 and has engaged in business activities aimed at coexisting with the environment. In Fiscal 2005 THK designated a set of areas and targets for environmental efforts as common

objectives. We have made efforts to achieve these objectives, verifying our progress through companywide quarterly reviews and disseminating relevant information.

[THK Group's basic policy regarding the environment]

- Since the development of the LM Guide, the THK Group have contributed to both society and the economy through their pioneering role as manufacturers of linear motion systems and machine components. We also believe that it is a company's social responsibility to leave the global environment in a healthy state for the next generation, which is why we are undertaking the following initiatives to continually decrease environmental burdens and maintain and improve the natural environment.
1. Conservation of the environment is considered a major management concern, and we are striving to accurately grasp the impact on the environment produced by the Group's business activities, products, and services. Every division participates by setting relevant environmental goals.
 2. In addition to following environmental laws, we set self-imposed standards for Group companies and regularly review them to improve the efficiency and effectiveness of our environmental management.
 3. We will continually promote the development of products that help reduce environmental burdens.
 4. We will continually promote conservation and recycling of resources, with particular attention to reducing and recycling waste from our manufacturing divisions.
 5. To promote greater unity in our environmental activities, we will provide guidance and support to our affiliates and business partners, and strive to work in cooperation and harmony with local communities.
 6. This basic policy regarding the environment shall be disseminated to all divisions in the Group through education, training, and activities designed to improve awareness. We will disclose information concerning the environment to parties within and outside the Group in a timely manner.

■Environmental activities and targets

Area	Objectives and goals	Main activities
Energy conservation	<div>Cut greenhouse gas emissions</div> <div>Achieve 15% reduction in CO₂ emissions per unit of output relative to FY2005 levels by FY2010</div>	<div>1. Energy diagnostics</div> <div>2. Energy conservation</div> <div>3. Use of clean energy</div>
Material conservation, zero emissions	<div>Reduce environmental impact; achieve zero emissions</div>	<div>1. Input controls (materials, parts and by-products) to reduce usage and boost per-unit yields</div> <div>2. Controls on emissions and final waste disposal</div> <div>3. Material re-use/recycling</div>
Harmful substance controls	<div>Eliminate and control harmful substances in THK Group production/distribution activities</div>	<div>1. Substitution of PRTR-designated substances</div> <div>2. Green procurement and purchasing</div>
Environment-friendly products and services	<div>Develop products and supply services using LCA (Life Cycle Assessment) methods</div>	<div>1. Cage-embedded product series development</div> <div>2. Extension of service life and maintenance-free periods</div>

Promoting environmental management



Environmental management system

THK is proceeding with the acquisition of International Environment Management System ISO14001 certification, which has already been acquired at five THK plants in Japan, at THK NIIGATA, and at plants in the Americas and Europe. Based on this management system, THK is making efforts to improve environmental conservation at each plant, establishing policies and targets appropriate for each respective plant, and taking action to achieve these targets. THK will proceed with the acquisition of certification at all THK Group companies in Japan and plants in China. Furthermore, We are carrying out activities to improve the precision of its data, making it possible to view the results of these activities, and extending the scope of the data beyond the present five THK plants in Japan.

ISO14001 accredited business locations

Site	Date certified	Certifying body
YAMAGATA Plant	September 10, 1999	JQA
KOFU Plant	December 28, 2000	
YAMAGUCHI Plant	February 2, 2001	
MIE Plant	September 6, 2002	
TMA (USA)	July 14, 2003	QMI
TME (Europe)	February 3, 2004	AFAQ
GIFU Plant	December 24, 2004	JQA
THK NIIGATA	October 21, 2005	

Environmental audits

THK conducts internal audits to continually improve the environmental management system. Audits are conducted at our sales branches, production sites, and headquarters, to ensure that everyone has a thorough grasp of THK's basic environment policy, ensure adherence to environment-related laws and regulations, and monitor compliance with environmental surveys requested by customers. The Environmental Management Section at each plant conduct internal audits, and the performance of basic duties is verified through en-

vironmental management reviews. THK responds to every problem with specific improvements.

Environmental education

The Environment Management Department Risk Management Division at THK headquarters promotes voluntary environmental activities by individual employees. THK carried out environmental education activities at seven sales offices in Fiscal 2006. In addition, environmental news, relevant laws, internal standards for green purchasing, and customer standards for environmental audits were posted on the THK intranet.

The environmental Management Section at each plant provide educational activities for employees, to promote the achievement of respective environmental objectives. Curriculums include the 5S¹ activities, emergency response, and global warming. The environmental divisions also promote the acquisition of environment-related certification and work to instill strict adherence to environmental laws.

¹ 5S: The five-S approach:
Sort, Set in Place, Shine,
Standardize, Sustain



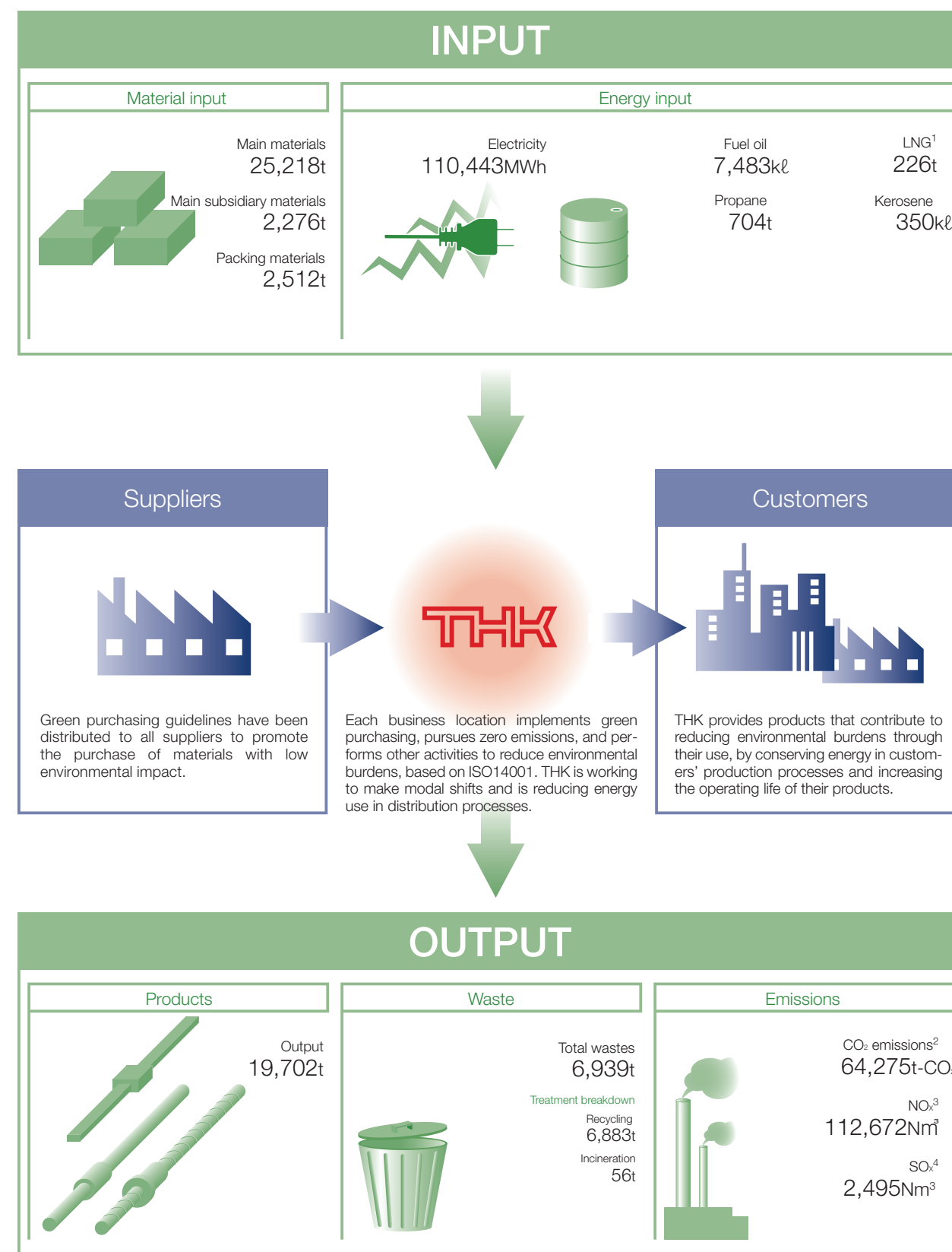
Training in the handling of LNG (August 2006)

Employees possessing environmental qualifications

- Pollution Control Managers (air)..... 7
- Pollution Control Managers (water quality)..... 2
- Pollution Control Managers (noise)..... 1
- Pollution Control Managers (vibration)..... 3
- Pollution Control Managers (dioxins)..... 1
- Energy Officers (heat, electric power)..... 13
- Controlled Industrial Waste Supervisors..... 13
- ISO14001 Internal Environment Auditors..... 114

Environmental impact: The big picture

THK conducts its business activities with constant attention to reducing environmental burdens. By promoting effective recycling, THK succeeded in significantly reducing the volume of industrial waste for permanent disposal in Fiscal 2006.



¹ LNG: Liquefied natural gas

² CO₂ emissions: The equivalent CO₂ volume corresponding to the amount of electricity, fuel oil, propane, kerosene, LNG, butane, gasoline, and light oil utilized at the plant (conversion values are based on data from the Ministry of the Environment)

³ NO_x: Oxides of nitrogen, generated by fuel combustion in boilers, etc

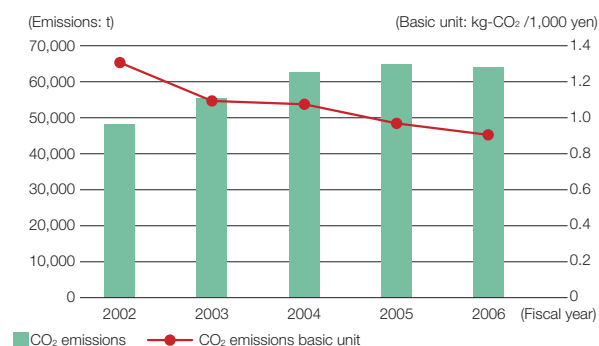
⁴ SO_x: Oxides of sulfur, generated by combustion of fuel containing sulfur in boilers, etc

Energy conservation

Reducing CO₂ emissions

THK is directing its efforts toward three priority areas: energy diagnostics, energy conservation, and the use of clean energy, as objectives for reducing output basic unit¹ CO₂ emissions by 15% by 2010, compared to the figure for Fiscal 2005. Over the last five years, as annual output has increased, the total CO₂ emissions have also increased. In Fiscal 2006, however, THK succeeded in reducing CO₂ emissions by 1.5% in comparison to Fiscal 2005, for a basic-unit decrease of approximately 6%. THK will continue to actively practice energy conservation while pursuing both economic expansion and the prevention of global warming.

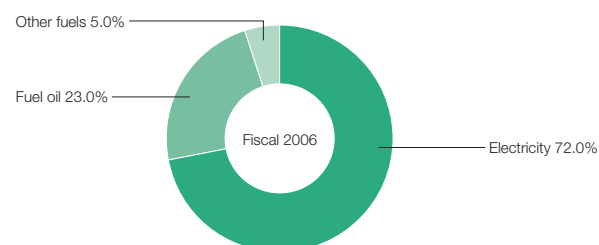
¹ Output basic unit: CO₂ emissions per 1,000 yen of output (kg-CO₂ / 1,000 yen of output)

Trends in CO₂ emissions

Reducing energy consumption

Energy is principally used to provide power for machining, thermal processing, and other processes, as well as for air conditioning, compressors, and lighting. Electricity purchased from power companies accounts for 72% of the energy consumed, fuel oil accounts for 23%, and the remainder is obtained from propane, LNG, and other fossil fuels. In order to reduce CO₂ emissions while increasing output, it is essential to reduce the amount of energy consumed, while shifting to energy sources with low CO₂ emissions. THK is working to increase overall energy efficiency by replacing and improving plant equipment and applying energy diagnostics to existing equipment.

Energy consumption breakdown



Plant activities

Energy diagnostics are applied at each plant, appropriate maintenance is practiced, and outdated equipment is replaced. At the YAMAGUCHI and YAMAGATA Plants, cogeneration systems have been introduced to enable fuel-oil-powered in-house power generation. Due to sudden increases in crude oil prices, the plants have adopted a flexible approach enabling them to increase the percentage of purchased electricity, which produces lower CO₂ emissions compared to electricity generated in-house. In addition, THK employees practice energy conservation by preventing air leaks and turning out lights during breaks.

Introduction of GHP equipment

THK's CHUBU Distribution Center was rebuilt in January 2007, expanding the floor area requiring air conditioning. Gas heat pump (GHP) air conditioning equipment fueled by LNG, which produces lower CO₂ emissions than crude oil, was installed; the same type of equipment is used at the nearby Gifu Plant. In this way, despite the expansion of floor area, an increase in energy consumption was avoided.



LNG-powered GHP equipment at the CHUBU Distribution Center

Changing energy consumption

In March 2007 a drip-feed carburizing furnace (carburizing quenching facility) was installed at the Yamagata Plant for use in heat-treating LM Guide blocks. This constituted a shift to an electrically powered heat source. In comparison to the old gas furnace, propane gas use is expected to be reduced by approximately 43 tons (CO₂ emissions: 131 tons) annually. Other maintenance and improvement activities are also advancing, based on annual plans.



Drip-feed carburizing furnace installed in March 2007 at the YAMAGATA Plant

Energy conservation

Energy-saving equipment

In March 2007 an inverter-controlled air compressor was installed at the KOFU Plant, and the plant switched to centralized control. This is expected to result in energy savings in Fiscal 2007.



Inverter-controlled air compressor installed at the KOFU Plant

Lights Off Campaign

Employees at DAITO SEIKI'S SENDAI plant took part in the Ministry of the Environment's Lights Off Campaign to reduce CO₂ emissions, turning off lights on the plant's outdoor signs and in the tennis courts, walkways, and the plant entrance from 8:00 p.m. until the following morning, from June 16 through June 21, 2007—one day ahead of the campaign schedule. The campaign featured an event on the evening of June 18 called Black Illumination 2006, which called for the electricity to be turned off at various sites, including Tokyo Tower, from 8:00 to 10:00 p.m. During the five-day campaign 39,845 buildings were involved, reducing power consumption by 812,508 kWh (based on self-reporting).



Black Illumination 2006

Promoting green distribution

After Japan's energy conservation laws were revised in April 2006, THK's Distribution Department, which oversees four Distribution centers in Japan, developed a Green Distribution Project aimed at reducing environmental burdens arising from distribution. The Distribution center will begin implementing improvements in Fiscal 2007, based on the Green Distribution Medium-term Plan for 2007 to 2008. This plan sets forth a list of priority improvements for accurately determining ton-kilometers² and energy consumption. THK alone shipped more than 30 million tons in Fiscal 2006 and was therefore designated a shipper by the presiding Bureaus of Economy,

Trade and Industry. THK pursues a policy devoted to improving distribution efficiency and reducing CO₂ emissions by improving means of transport, such as by enacting a modal shift from transportation by truck to shipping by rail and using low-emission vehicles.

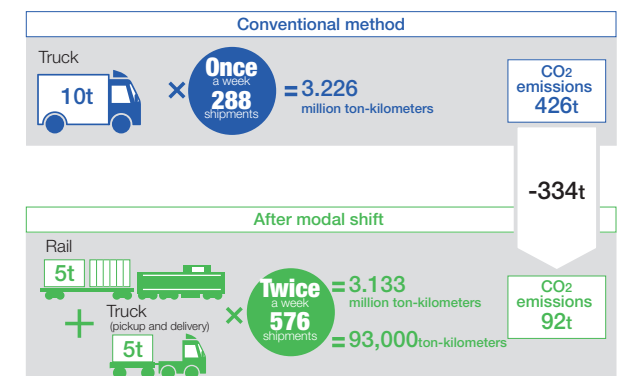
² Ton-kilometer: Unit used to express amounts of cargo transported; one ton of freight transported one kilometer equals one ton-kilometer

Modal shifts

In April 2005 the means of distribution from the YAMAGUCHI Distribution Center to customers switched from transportation by truck to shipping by rail. The shift from weekly distribution using 10-ton trucks to semiweekly distribution by rail using 5-ton containers made it possible to reduce CO₂ emissions in Fiscal 2006 by 334 tons. Longer transportation times and other factors are still an issue, but THK is efficiently balancing various modes of transportation and reducing CO₂ emissions. In Fiscal 2006 THK implemented a similar modal shift³ for transport from the CHUBU Distribution Center to selected customers. THK is pursuing a policy devoted to implementing modal shifts wherever possible and is proceeding to do so gradually, while consulting and cooperating with our customers.

³ Modal shift: A transition from transportation by truck to shipment by sea and rail, to permit shipping in bulk and reduce CO₂ emissions

Modal shift: YAMAGUCHI Distribution Center



Ton-kilometers remain the same, but shipping by rail reduces CO₂ emissions by 334 tons

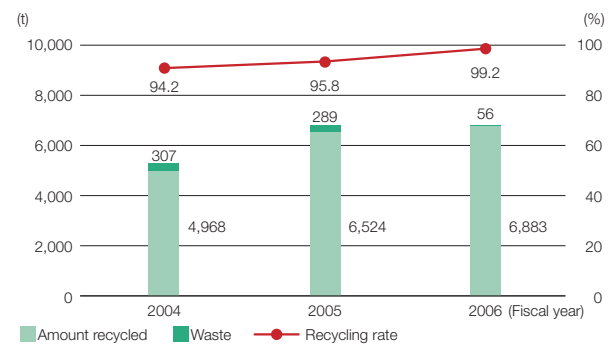
Material conservation and zero emissions

Promoting zero emissions

THK has established targets for the achievement of zero emissions¹ at each of its plants, in the areas of managing input of materials, parts, and subsidiary materials; managing emissions and waste for permanent disposal; and reusing and recycling. The principal materials used in 99% of THK products are metals, mainly steel. Improvements in rail-cutting yield for LM Guides and machining yield for Ball Screw shafts and nuts have enabled increases in the yield ratios for raw materials. In addition, THK has succeeded in increasing the operating life of grindstones and reducing the amount of grindstone molding (dressing) required, by changing the methods of use. Industrial waste unavoidably generated through business activities is thoroughly separated from ordinary waste, recycled, and reused as a useful resource. As a result, the percentage of waste requiring permanent disposal has been reduced to 0.8% at THK's five plants in Japan. THK will continue to strive for zero waste and is working to reduce the amount of waste generated and implement rigorous recycling.

1 Zero emissions: A model system of circulating resources in which waste matter is used as a resource, leaving no waste whatsoever

Trends in waste emissions



Plant activities

THK has established specific targets for the achievement of zero emissions at each plant.

Sludge as a useful resource

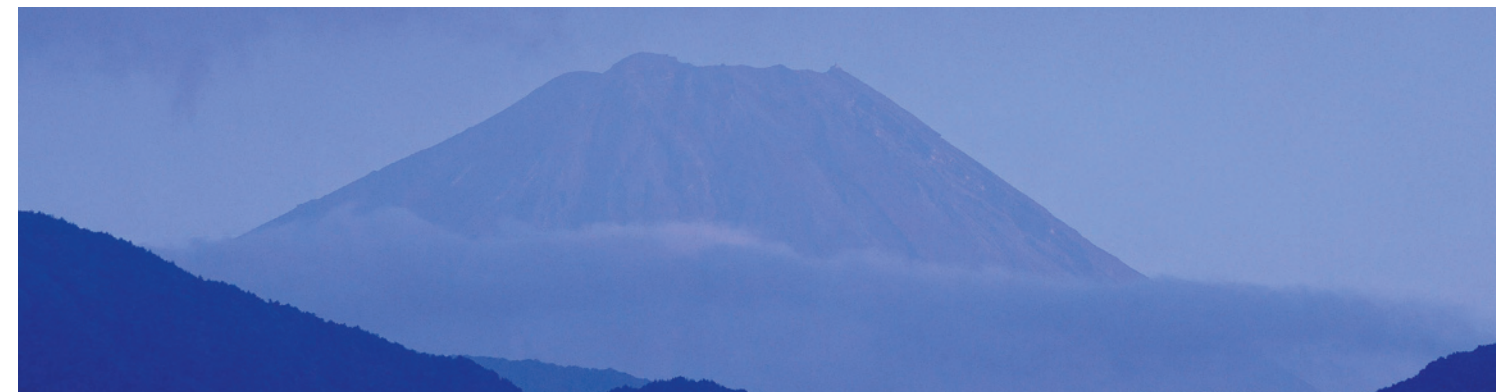
Impurities such as coolants are contained in sludge generated by the many grinding processes involved in THK's production processes. Until recently, this sludge has been treated



Grinding sludge generated by manufacturing processes



Compressed, solidified briquette



as grinding waste and discarded for landfill disposal. THK has switched to processes that do not cause impurities to be mixed into sludge, which can now be compressed, solidified, and converted into briquettes. These are sold as a useful resource at the YAMAGUCHI and YAMAGATA Plants.

Promoting recycling through thorough separation

For waste materials generated by various processes at THK's KOFU plant, records are kept of the controlling department, type and amount of waste, and personnel responsible. Departments that separate waste erroneously receive warnings and are required to separate the waste correctly. Starting in fiscal 2007, waste will be separated into more categories, and designated contractors will begin purchasing waste materials, which will be converted to useful resources.

管理場所	テクノー2
種類	F
重量	5.9Kg
管理責任者	深山修一

Label attached to waste material



Waste separation at the GIFU Plant

Recycling cutting tools

Japan is almost entirely dependent on other countries for the many rare metals, such as tungsten, contained in cutting tools. For social and economic reasons, these rare metals are expected to become difficult to obtain in the future. At the YAMAGATA Plant, used cutting tools began to be recycled in fiscal 2006. Previously, used cutting tools were either reground or discarded, and cutting tools that were not reground were all treated as scrap metal. Now, expert contractors determine which tools can be reground and which should be recycled. In fiscal 2006 640 kilograms were recycled as rare resources.



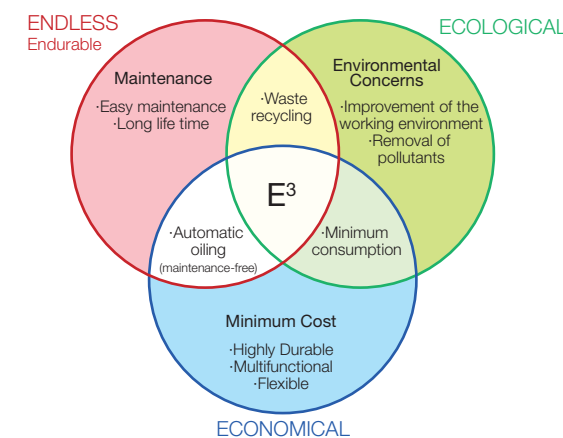
Used cutting tools to be recycled

Environment-friendly products and services

Creating products with minimal environmental impact

THK is concerned about environmental impact at every stage of operations, from the procurement of raw materials through production, sales, and permanent disposal. THK's linear motion systems reduce friction resistance for objects in motion, and this helps reduce electricity consumption by machines and conserve energy. In developing new products, THK is embracing the basic concept of "cubic E." This is a development principle devoted to improving the serviceability and safety of products while extending their operational life (Endless); reducing waste and contaminant emissions and improving the plant work environment by greatly reducing amounts of grease and other lubricants used (Ecological); and increasing cost performance by providing multi-functionality and high durability (Economical). THK actively strives to develop environment-friendly products of this sort and helps to reduce environmental burdens by providing them.

Cubic E



Green products

THK considers "green products" to be products manufactured from parts and materials that do not contain environmentally hazardous substances² or contain less than the maximum allowable amount of such substances. Harmful substances used in surface treatments or parts are steadily being replaced in both new and preexisting products. Begin-

ning in Fiscal 2006, virtually all products produced according to standard specifications will be green products.

2 Environmentally hazardous substances: Chemical substances capable of inflicting some type of adverse impact on the human body or on ecosystems

Promoting green purchasing

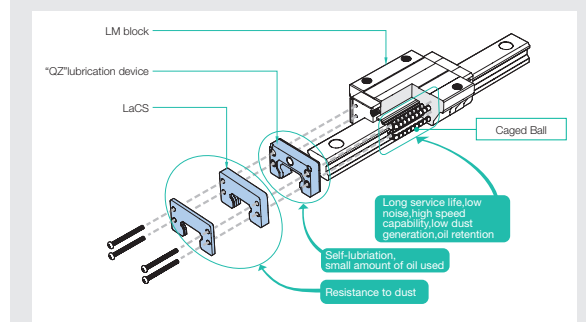
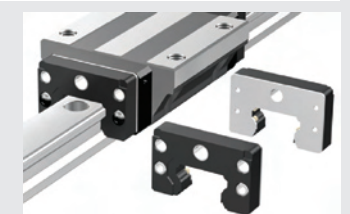
In Fiscal 2004 THK issued a set of green purchasing³ guidelines. These guidelines, which were explained and distributed to our suppliers and posted on the THK website, require that suppliers be surveyed concerning hazardous substances and urge suppliers to reduce or eliminate the use of prohibited materials, establish environmental management systems, and take action to reduce environmental burdens. In addition, in evaluating and selecting suppliers, THK has added an "E," for "environmental consciousness" to the old QDC criteria, and now places a high priority on purchasing from suppliers conforming to the high standards of QDCE.

Based on surveys of hazardous substances used, THK has prepared a database of environmentally hazardous substances contained in all parts used to make its products (the THK Group Chemical Substances Standards list includes approximately 800 types of chemical substances). This data is updated whenever a new product is developed or new materials are used. This also provides a system that enables us to answer queries from our customers regarding substances subject to risk management.

3 Green purchasing: Giving preference to purchasing raw materials that have minimal environmental impact from suppliers who strive to reduce environmental burdens

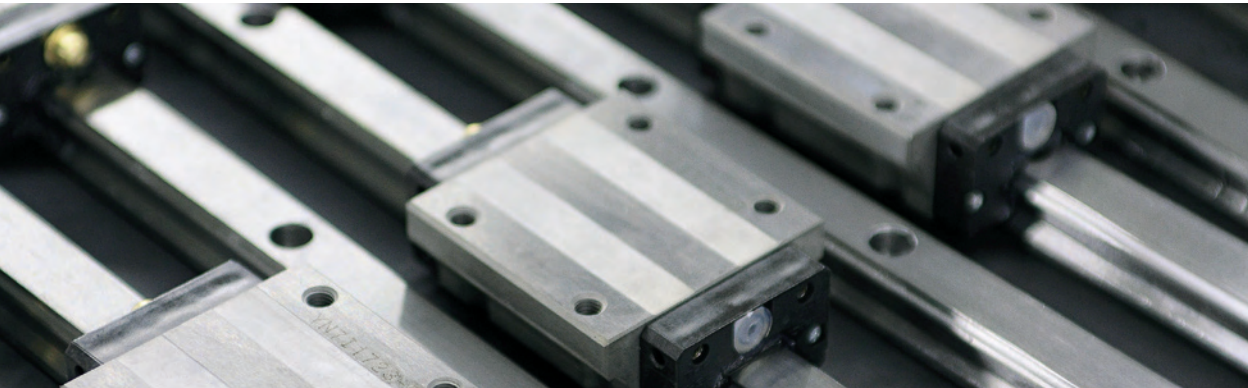
Products based on cubic E

QZ lubricator



Amount of lubricant used reduced to $\frac{1}{500}$

Attaching the QZ to the LM Guide enables long-term maintenance-free operation without requiring the installation of forced lubrication systems. The lubricant efficiently coats the ball transfer surfaces, reducing lubricant usage to 1/500 the volume required by previous lubricating mechanisms. Reducing the amount of lubricant also reduces the amount of waste lubricant, which results in greener machining and work environments.



Dealing with environmental risk

THK classifies measures taken to deal with environmentally hazardous chemical substances included in products, environmental pollution, greenhouse gas emissions, and environment-related domestic and overseas laws and regulations under the heading of “environmental risk.” Strict adherence to the law is our foremost priority. THK’s Risk Management Division is leading the effort to study methods of ensuring Group-wide compliance, transmitting relevant information to the departments involved, and helping to implement appropriate measures.

Substances prohibited by THK

THK designates harmful chemical substances that can affect the human body or the environment as “environmentally hazardous substances,” and, in principle, prohibits their use in parts and materials. For substances that may be present in the form of impurities, maximum allowable values are specified.

Substances prohibited by THK

Substance	Limit value and conditions
Cadmium or cadmium compounds	100 ppm. 75 ppm or less for metals
Mercury or mercury compounds	1,000 ppm.
Polychlorinated biphenyl (PCB)	—
Polychlorinated terphenyls (PCT)	—
Polychlorinated naphthalene (PCN)	Restricted to 3 or more chlorine elements
Chlorinated paraffin (CP)	Number of carbons in chain is restricted to 10–13; chlorine concentration of 50 or more only
Polybrominated biphenyls (PBB)	—
Polybrominated diphenyl ethers (PBDE)	—
Bis(tributyltin)oxide (TBTO)	—
Tributyle tins (TBT)	—
Triphenyl tins (TPT)	—
Asbestos	—
Azo compounds	Azo group compounds that can generate specified amines
2,4,6-tri-tert-butyl-phenol	—
Lead or lead compounds	1,000 ppm. The following are permitted: lead-free cutting steel, 0.35% or below by weight; aluminum alloys, 0.4% or less by weight; copper alloys, 4% or below by weight
Hexavalent chromium compounds	1,000 ppm.

Compliance with the RoHS directive

In response to the RoHS¹ directive, the European Union law regulating toxic substances that went into effect on July 1, 2006, THK has switched to different surface treatment processes and parts for existing products and has expanded the application of the green purchasing guidelines to include unit products in Japan and overseas plants. When delivering products to customers in China, THK provides them with the information required to enable them to comply with China’s new law on preventing contamination in the manufacture of electronic information-related products,² which took effect in March 2007. THK has also gathered information, improved procedures for managing chemical substances, and expanded its data resources in preparation for REACH,³ the European Union’s new regulatory system governing chemical substances, which was enacted in June 2007 and is scheduled to take effect in 2008.

- 1 RoHS directive: Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
- 2 China’s new law on preventing contamination in the manufacture of electronic information-related products: A law that requires labels indicating specific hazardous substances contained in electronic information-related products and parts. In Japan it is generally referred to as China’s RoHS directive
- 3 REACH: Registration, Evaluation, and Authorization of Chemicals in the European Union

Examples of product changes

Surface treatment including hexavalent chromium

Examples: Black chromate
Luster chromate
Colored chromate

Adoption of alternative surface treatments and changes in materials

Examples: Trivalent chromate
Abolish surface treatment by changing to stainless
Ferrosoferric oxide film treatment

THK has conducted corrosion-control proficiency tests on existing products and decided on alternatives for surface treatments and materials. Lead- or cadmium-laden grease, vinyl chloride, and copper alloys have been replaced with materials that are free from lead and cadmium.



Compliance with the PRTR Law

Currently, only two substances, xylene and toluene, are designated by the PRTR Law⁴ as substances requiring notification, and THK properly reports emissions of these substances. THK requires special handling of all chemical substances classified under the PRTR Law as designated chemical substances and is switching to alternative materials that do not contain these designated chemical substances. In Fiscal 2006 we switched to such alternative substances for materials used in 13 product items. THK will continue to work to ascertain the amounts of designated chemical substances emitted into the environment and displaced as waste materials, handle them properly, and reduce the amounts.

⁴ PRTR Law: Law promoting better management and understanding of environmental emissions of designated chemical substances

Materials subject to PRTR Law (Fiscal 2006) (Units: kg)

Type	Amount handled	Amount emitted into the atmosphere
Xylene	6,510	44
Toluene	4,811	132
Ethyl benzene	822	23
Benzene	322	49

Plant activities

At each plant, equipment has been improved and the emergency response capabilities have been strengthened, based on ISO14001, to prevent environmentally hazardous substances from being released into the environment.

Dealing with emergencies

Voluntary emergency response training is provided at each plant in preparation for accidents. At the GIFU Plant, underground waste solvent tank levels are marked and monitored to ensure that



Emergency response training: removing spilled oil with absorbent mats at the KOFU plant

leaks do not occur. The tanks are emptied every two years and checked for cracks.

At the KOFU plant, emergency kits are installed in locations where coolant containers are exchanged, and emergency training for dealing with oil spills is provided once a year.

Preventing waterborne emissions

All waste solvents inside THK plants are treated as industrial waste materials. Waterborne emissions of oil are prevented by the installation of oil-water separators and sewer equipment. In November 2006, an incident occurred at the YAMAGUCHI Plant in which waste oil became mixed with rainwater and was released off site. Corrective action was quickly taken, and the incident was reported to local government authorities, so there was no actual damage to the local community.

Water quality (Fiscal 2006)

Site	Item	Limit Value	Actual value
YAMAGATA Plant	BOD (mg/l)	600	59.6
	COD (mg/l)	—	164.0
	Nitrogen (mg/l)	—	—
	Phosphorus (mg/l)	—	—
	Release destination	Sewer	
KOFU Plant	BOD (mg/l)	600	77.5
	COD (mg/l)	—	76.0
	Nitrogen (mg/l)	240	119.0
	Phosphorus (mg/l)	1	0.05
	Release destination	Sewer	
GIFU Plant	BOD (mg/l)	600	140.0
	COD (mg/l)	600	130.0
	Nitrogen (mg/l)	240	89.0
	Phosphorus (mg/l)	32	6.1
	Release destination	Sewer	
MIE Plant	BOD (mg/l)	20	13.0
	COD (mg/l)	20	9.0
	Nitrogen (mg/l)	60	2.7
	Phosphorus (mg/l)	8	0.05
	Release destination	Public waterway	
YAMAGUCHI Plant	BOD (mg/l)	30	2.5
	COD (mg/l)	20 (voluntary controlled value)	9.8
	Nitrogen (mg/l)	100	8.8
	Phosphorus (mg/l)	10	1.5
	Release destination	Public waterway	

• BOD: Biological Oxygen Demand; Index used to indicate water contamination by organic materials; the amount of oxygen required for the oxidative decomposition of contaminant substances in water by microorganisms

• COD: Chemical Oxygen Demand; Index used to indicate water contamination by chemical substances; the amount of oxygen consumed by oxidizing agents when oxidizing contaminant substances in water