

THK

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CSR Report

2013/2014

## Introduction

From the very start, the THK Group (usually referred to in these pages simply as THK) has always conducted its operations with the aim of contributing to society through its core business activities.

This year's *THK CSR Report* includes an eight-page feature section examining THK's efforts to honor its corporate social responsibilities in two key areas. The first part looks at ways in which THK products are used in the field of robotics, a new area of business for THK. The second part recounts the experiences of people who rely on THK's seismic isolation systems for protection against earthquakes, which occur all too frequently in Japan amid the ongoing risk of a catastrophic seismic event.

The section entitled "Management system" includes a discussion of risk management efforts, while "Involvement in society" focuses on THK's relationships with its various stakeholders. "Harmony with the environment" examines THK's environmental initiatives in fiscal 2012 and presents some quantitative results.

The *THK CSR Report* is an essential tool for communicating with everyone who is connected in any way to THK and its activities. Reader comments and feedback will be greatly appreciated—please take the time to fill out the enclosed questionnaire.



On March 11, 2013, the entire THK Group observed a moment of silence to express sympathy for the victims of the Great East Japan Earthquake. Flags were flown at half-staff at all THK plants, including the GIFU Plant, shown here.

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### Reporting period

This report focuses mainly on activities from April 1, 2012, through March 31, 2013, although activity occurring shortly before and after this period is also discussed. For the most part, years cited in this report are fiscal years.

### Scope

This report is based on information provided by THK CO., LTD., and its consolidated subsidiaries and affiliates. The full scope of the data reported in the section entitled "Harmony with the environment," apart from that presented in the subsections "Environmental impact: The big picture" and "Environmental preservation: Costs," encompasses THK's five manufacturing plants in Japan, in YAMAGATA, KOFU, GIFU, MIE, and YAMAGUCHI; THK NIIGATA CO., LTD.; and two manufacturing plants owned by THK INTECHS CO., LTD., in SENDAI and MISHIMA.

### Target readership

This report is addressed to a broad range of stakeholders, including THK's customers, shareholders, investors, partner businesses (including subcontractors and suppliers), and employees, as well as government administrators and community residents.

### Reference resources

Reference information used in the preparation of this report has been drawn from the Global Reporting Initiative's G3 Sustainability Reporting Guidelines (2006) and the Ministry of the Environment's Environmental Reporting Guidelines (2012).

### Please direct inquiries to:

**THK Risk Management Division**  
**Phone: +81-3-5434-0569**  
**Fax: +81-3-5434-0315**

# Message from the Top



Akihiro Teramachi

President and CEO  
THK CO., LTD.

寺崎 彰 博

## A look back at 2012

A variety of factors contributed to continuing adversity for the Japanese economy in 2012. Overseas, these included financial instability in southern Europe and an economic slowdown in China. At home, the high value of the yen undermined the competitive power of Japanese exports and electricity continued to be in short supply, despite rising rates. Nevertheless, with the formation of a new government in December and the subsequent enactment of a series of measures under the rubric of so-called Abenomics, signs of recovery have begun to appear. We are nearing the point where it will be reasonable to anticipate a beneficial effect on the actual economy.

Meanwhile, THK has been carrying out full-scale global expansion with the goal of entering the ranks of the world's top ten machine component makers early in the twenty-first century; we call this initiative Global 10 21. In China, where we foresee demand for mechanization to help businesses better serve their customers as well as growing demand for auto parts, we have opened four new sales offices, bringing the total to 34. In India, where further economic growth is anticipated, we have established a local subsidiary in Bangalore. As part of our continuing effort to locate manufacturing facilities at the optimal site for production, we have opened a third production facility at our WUXI Plant in China and have built a factory at THK RHYTHM CHANGZHOU. To improve our system for supplying auto parts to North and South America, we have started construction of a factory at THK RHYTHM MEXICANA. In addition, we opened our first overseas research and development facility, located in Liaoning, China, last April.

## Striving to contribute more

Providing innovative products to the world and generating new trends to contribute to the creation of an affluent society—this is THK's corporate philosophy. I would like to help make the world a more prosperous place by developing new products and creating new markets.

THK products enable many different kinds of mechanisms, devices, and equipment to move heavy objects smoothly and precisely, using very little force. They play essential functions in the so-called mother machines that produce machine components, as well as in industrial robots and semiconductor manufacturing equipment, and have helped bring about major advances in these areas. In recent years THK products have also been incorporated into medical devices and auto parts and have quickly acquired a reputation for excellence in these fields as well.

As time goes on THK will make further contributions to societal welfare, including seismic isolation and damping devices, which can save lives and protect buildings and other valuable assets in the event of a major earthquake. THK products will also facilitate advances in humanoid robots, which will be increasingly important to an aging society, and in the field of renewable energy, including wind-power and small-scale hydroelectric power generation, as part of the effort to curb global warming.

THK's linear motion systems dramatically decrease frictional resistance in a broad array of mechanical structures, paving the way for a revolutionary reduction in electric power consumption. This means motors can be reduced in size and mechanical structures themselves can be made extremely compact, which will reduce consumption of power and resources and contribute greatly to lowering of overall costs.

# Continuing to contribute through our business pursuits

## ■ Products that meet customer needs

The challenge for the manufacturing industry is to continually come up with new products and technology that the world needs. THK holds a great many patents, but just like the produce in a supermarket, eventually they turn stale. To be able to constantly turn out one new product after another, you have to have the right people—people who understand manufacturing, understand the market, and know themselves.

I constantly remind our employees to look at things from the customer's point of view and act with the customer's best interests in mind. In Japan and everywhere else, people basically want the same thing: a better product at a better price, at the right time and place and in the right quantity. To meet this universal demand, it's essential to humbly envision exactly what the customer needs and fully address that need. Some needs are overt and some are latent. THK focuses on developing new products and technologies to meet both kinds of needs.

We're not afraid to suggest beneficial uses for a product that might not have occurred to the customer, either. THK's linear motion systems, for instance, have been incorporated into seismic isolation and damping devices that have become indispensable for protecting all kinds of structures, from skyscrapers to single-family homes, from earthquake damage, as well as seismic isolation tables regarded as an absolute necessity for protecting server computers, costly production machinery, and cultural treasures and artwork. The same technology is used to operate protective doors on train and subway platforms, which are expected to become increasingly common in the future. THK is always on the lookout for product applications that promote public safety and security.

## ■ In closing

THK has been able to meet the expectations of our customers and contribute to society thanks to the loyal support of the customers themselves as well as our partner businesses, shareholders, and employees. I would like to take this opportunity to express my profound gratitude to all our stakeholders. We will continue to incorporate their input into our operations, including the development of new products, and we will keep striving to make meaningful contributions to public welfare.

In this year's *CSR Report* we have made a concerted effort to present a variety of examples illustrating ways in which THK honors its social responsibilities through its principal business pursuits, in keeping with our corporate philosophy. I thank you for your interest and hope you find the report enlightening.

# The THK Group

THK, the pioneering firm that produced the world's first Linear Motion Guide, is the world's foremost manufacturer of machine elements and components. As a creative, development-oriented company, THK has introduced a variety of products since its establishment in 1971, guided by a corporate philosophy devoted to providing innovative products to the world and generating new trends to contribute to the creation of an affluent society. Used in machine tools, industrial robots, and semiconductor production equipment, THK's LM Guides and other products are essential components that enhance precision, increase speed, and reduce labor.

As such, they have contributed to advances in many industries. In recent years, applications for THK products have expanded to include CT scanners, MRI machines, and other devices used in advanced medical care; more durable and environmentally friendly automobiles and railway cars; and seismic isolation and damping devices that protect lives and safeguard valuable property.

As a milestone for ongoing growth, THK has set a goal of achieving consolidated sales of ¥300 billion. To attain this goal, the company has embraced a two-pronged strategy aimed at full-scale globalization and

## THK's global network



### Europe

#### Sales offices

Germany	2	France	1
Britain	1	Netherlands	1
Italy	1	Turkey	1
Sweden	1	Russia	1
Austria	1	Czech Republic	1
Spain	1		

#### Production sites

Ireland	1	France	1
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#### THK Group companies

- THK Europe B.V.
- THK GmbH
- THK France S. A. S.
- THK Manufacturing of Europe S. A. S.
- THK Manufacturing of Ireland Ltd.

### China

Sales offices	34
Production sites	5
Development facilities	1

#### THK Group companies

- THK (CHINA) CO., LTD.
- THK (SHANGHAI) CO., LTD.
- DALIAN THK CO., LTD.
- THK MANUFACTURING OF CHINA (WUXI) CO., LTD.
- THK MANUFACTURING OF CHINA (LIAONING) CO., LTD.
- THK MANUFACTURING OF CHINA (CHANGZHOU) CO., LTD.
- THK RHYTHM GUANGZHOU CO., LTD.
- THK RHYTHM CHANGZHOU CO., LTD.



### Elsewhere in Asia

#### Sales offices

Taiwan	3	India	1
Singapore	1	South Korea	13
Thailand	1		

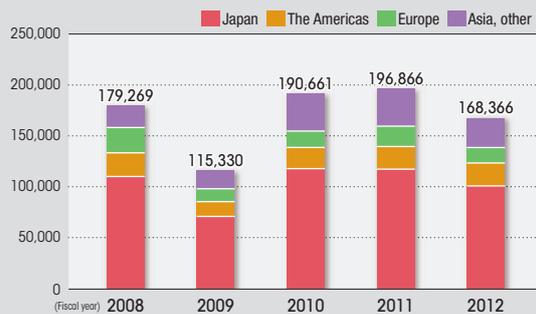
#### Production sites

South Korea	3	Vietnam	1
Thailand	1	Malaysia	1

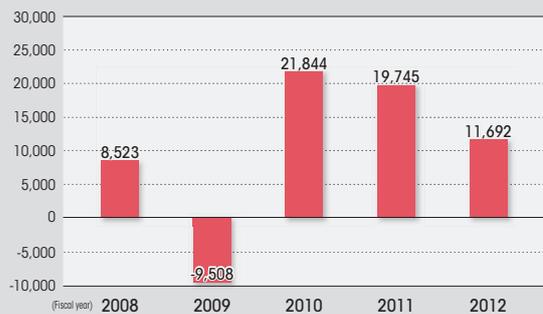
#### THK Group companies

- THK TAIWAN CO., LTD.
- THK LM SYSTEM Pte. Ltd.
- THK India Pvt. Ltd.
- Beldex KOREA Corporation
- THK RHYTHM (THAILAND) CO., LTD.
- THK RHYTHM MALAYSIA Sdn. Bhd.
- SAMICK THK CO., LTD.
- THK MANUFACTURING OF VIETNAM CO., LTD.

## Net sales, consolidated (¥ million)



## Operating income, consolidated (¥ million)



the development of new areas of business, to increase its geographical presence and expand the range of applications for which THK products are used. The globalization initiative, based on the idea that the site of demand is the optimal site for production, is devoted to developing and improving unified systems encompassing both production and sales in THK's four principal territories: Japan, the Americas, Europe, and the rest of Asia. The development of new areas of business is an effort to aggressively expand the range of product applications into areas of direct interest to consumers, including automobiles and housing.

**Corporate name** THK CO., LTD.  
**Date established** April 10, 1971  
**Address** 3-11-6 Nishi-Gotanda, Shinagawa-ku Tokyo, Japan 141-8503  
**Capital** ¥34,606 million\*  
**End of fiscal year** March  
**Employees, consolidated** 8,958\*  
**Employees, non-consolidated** 3,381\*  
**Consolidated subsidiaries** 7 in Japan; 25 overseas\*  
 \*As of March 31, 2013

### The Americas

#### Sales offices

USA	7	Mexico	1
Canada	1	Brazil	1

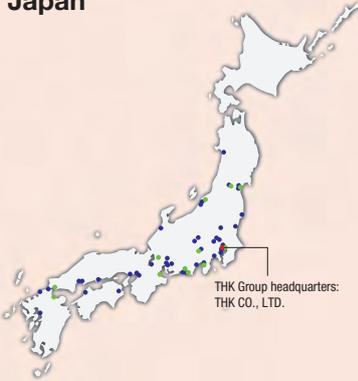
#### Production sites

USA	2
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#### THK Group companies

- THK Holdings of America, L.L.C.
- THK America, Inc.
- THK Manufacturing of America, Inc.
- THK RHYTHM NORTH AMERICA CO., LTD.
- THK RHYTHM MEXICANA, S.A. DE C.V.
- THK RHYTHM MEXICANA ENGINEERING, S.A. DE C.V.
- THK Brasil LTDA

### Japan



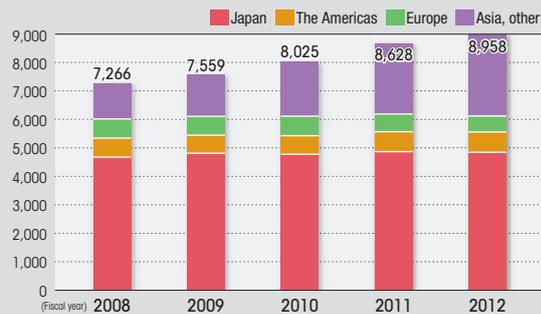
Sales offices	45
Production sites	12
Development facilities	1
Distribution sites	3

#### THK Group companies

- THK INTECHS CO., LTD.
- THK NIIGATA CO., LTD.
- TALK SYSTEM CORPORATION
- NIPPON SLIDE CO., LTD.
- THK RHYTHM CO., LTD.
- THK RHYTHM KYUSHU CO., LTD.
- L Trading Co., Ltd.

● Sales office ● Production site

### Employees, consolidated



### THK personnel, non-consolidated (as of March 31, 2013)

Status	Number	Average age	Average years of service
Employees, male	2,895	38.8	16.1
Employees, female	486	32.9	11.6
Employees, total	3,381	38.0	15.4
Board members	20		
Advisers	3		
Part-time employees	5		
Personnel from affiliates	160		
Temporary personnel	6		

# Bringing dreams to life: THK robot technology

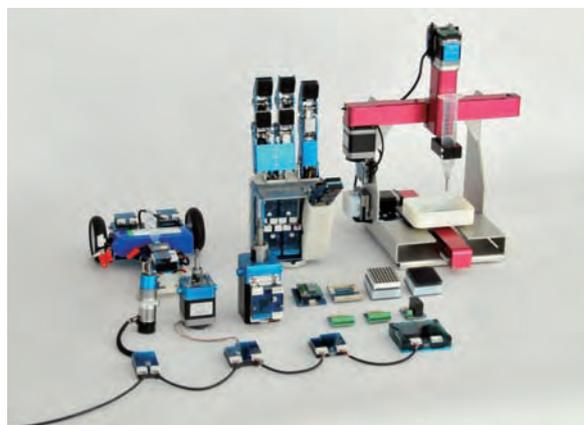
THK has already employed its highly regarded linear motion technology and machine-tool products, including LM Guides and ball screws, in the development of seismic isolation systems. Now THK is developing components for use in the next generation of service robots and rescue robots, which are expected to play a prominent role in the world of the future.

THK has created a new type of robot component, collectively known as Seed Solutions, equipped with actuators, an operating system, sensors, and network communications capability. The actuators and operating devices, which have been miniaturized, fit neatly inside the robot itself, eliminating the need for the big external control boxes used to operate conventional robots. The programs that govern the robot's movements are stored inside as well, enabling the robot to move independently. From among the comprehensive array of robot systems available, modules specifically addressing the intended uses can be selected and combined. This provides a simpler and more efficient way to build the right robot for the task at hand.

The technology behind Seed Solutions was developed through collaborations on robot projects with the Japan Aerospace Exploration Agency and Japan's National In-

stitute of Advanced Industrial Science and Technology. Industrial applications for this sort of technology already abound, and it is increasingly being employed by organizations involved in research and development concerned with advanced robot systems. Robot technology is also attracting interest as an educational tool in science programs, in schools as well as businesses.

As the name implies, Seed Solutions are intended to provide a means for new robot technology to take root and grow, and as a contribution to the robot industry of the future.



The Seed Solutions lineup.

## Seed Solutions honored with Robot Award

Japan's Ministry of Economy, Trade and Industry and the Japan Machinery Federation sponsored the Fifth Robot Awards in 2012. The Robot Awards program, which recognizes promising new robots and robot components and software, especially those that help generate new business opportunities, is intended to encourage innovation and promote greater use of and demand for Japanese robot technology. In 2012 THK's Seed Solutions project was honored with an award for excellence in the components and software category.

Better components and software are essential to the development of the next generation of robots. THK is convinced that the continued refinement of its Seed Solutions will enable further advances in the robot technology industry.



(From left) Robot Awards Committee Chairman Hirofumi Miura, THK Executive Vice President Toshihiro Teramachi, and Masaki Nagatsuka of Business Development Department, THK Engineering Division, at the Fifth Robot Awards ceremony.



## The key to success: Compact drive technology. Expectations high for even greater reliability.

Tamio Tanikawa  
Intelligent Systems Research Institute,  
National Institute of Advanced Industrial Science and Technology  
Robot Technology Synthesis Research Group  
Group leader, AIST-CNRS Joint Robotics Laboratory  
Visiting professor and principal researcher, Osaka University

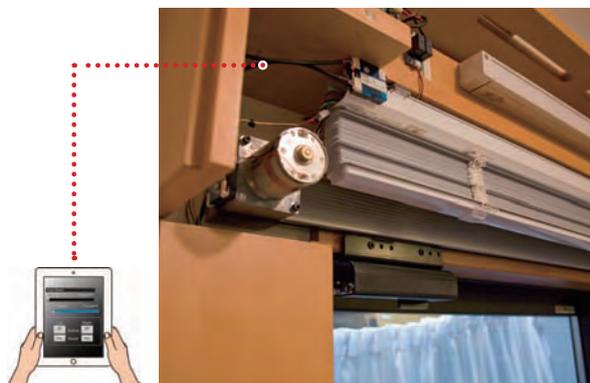
My research is concerned not with humanoid robots, which seems to be what people think of when they hear the word “robot,” but with efforts to incorporate robot technology into human habitats. Imagine a home that’s equipped with sensors to monitor the internal environment, and, based on its own assessment, reacts by automatically opening a door or window. That’s the sort of robot home we’re aiming for.

This isn’t just for the sake of convenience. It will benefit society, such as by lowering environmental burdens through more efficient energy usage and providing support and protection for elderly people who live alone. In the summer time, for example, if you turn on the air conditioning when it’s hot inside the house, you use a lot of electricity, but if you open the windows first and let some fresh air in, you use less electricity. Suppose the windows themselves could detect and evaluate the temperature inside and open automatically, and then if it’s still too hot they would close themselves and turn on the air conditioning. That’s the kind of system we’re trying to create. We already had a standard communications technology, called RT middleware (RT stands for “robot technology”) for this kind of robotic home, but we didn’t have the technology or the expertise for the moving components, so we turned to THK for help.

Right now we’re working on making small modules that function as both sensors and actuators and installing them in windows, doors, and furniture, so that each can move on its own as part of the robotic home. THK’s Seed Solutions, which have highly advanced motors and drivers, have been very helpful in this effort. We had prototypes before but we didn’t have anyone who could properly produce such compact modules. THK made the

device we had envisioned—a unit small enough to be installed in a whole range of devices, to provide the specific robotic functions that meet the user’s needs. They’ve been a great help.

When the time comes for this technology to be put to use, in self-operating robotic windows and furniture in the homes of elderly people, for example, it will have to be guaranteed to be completely safe, of course. For this reason, Seed Solutions have been tested to make sure they keep working in all sorts of situations. Absolute reliability is required to ensure that they keep working properly even if the network becomes overloaded. This will be a big challenge for robotic household technology. We’re hoping THK will make some breakthroughs in the areas of safety and reliability.



Window blinds operable via tablet computer.

## THK and JAXA

THK has collaborated with the Japan Aerospace Exploration Agency (JAXA) on joint research aimed at developing a robotic hand. This effort arose out of a proposal THK submitted to JAXA's Aerospace Open Laboratory program, which organizes promising space-related projects through collaboration among government, academia, and private industry. JAXA wanted to study the creation of a nimble yet powerful robotic hand for use in outer space, as an alternative to having crew members perform work outside the spacecraft. THK, having already developed technology enabling the use of robotic hands for disaster relief and remote medical care, was confident that it could build on these achievements and readily accepted the challenge.

Through the Aerospace Open Laboratory program, a compact, high-thrust linear-motion actuator was developed to enable the fingers of the robotic hand to flex and extend. According to JAXA's specifications, the robotic hand had to be no larger than the type of glove worn by astronauts when working outside the spacecraft, and had to provide the same grip strength. By combining the motor with a miniature ball screw, THK was able to devise a compact yet sufficiently powerful actuator that met the required conditions. Then, just as the joint research on the actuator-equipped robotic hand was beginning to bear fruit, THK received a request to build a robotic hand for JAXA's REX-J project, an experimental effort to use helper robots for extra-vehicular activity at Kibo, the Japanese module that forms part of the International Space Station.

The REX-J project involved sending a prototype helper robot into space to dock with Kibo and experimenting with the actual use of the robot to support crew members working in outer space. When the robotic hand was built, it was subjected to heat, vibration, and vacuum, to approximate the conditions in which it would be used, and adjustments were made to adapt it to the simulated outer space environment. In July 2012 the prototype helper robot was launched into space aboard the Kotonori 3 unmanned cargo spacecraft. All the scheduled experiments were successfully carried out over the next seven and a half months, concluding in March 2013.

THK is working to further refine the linear-motion actuator technology that emerged from its collaboration with JAXA, with the aim of contributing to the development of robotic hands that perform useful functions in outer space and here on earth as well.



The movements of JAXA's robotic hand (at left) mirror those of a robotic glove.

## Happy to help bring the future to life



Yoshimasa Endoh  
Business Development Department  
THK Engineering Division

When I joined THK, the joint research project with JAXA conducted through the Aerospace Open Laboratory program was already underway. My first assignment was working on the design of a robotic glove that would make it possible to operate the robotic hand in a natural, intuitive way. When the operator put on the glove and moved his or her fingers, the robotic hand moved its fingers exactly the same way. The representative from JAXA at that time, who was the same age as me, was a very accomplished guy. I remember working like crazy so he wouldn't show me up. The glove, along with the robotic hand that THK developed, is now stored at JAXA's laboratory facility. It's often exhibited at public events, and I hear it's a popular attraction, which makes me very happy.

My current job is developing new areas of business—areas other than industrial applications, which have been THK's mainstay in the past—to broaden the clientele for Seed Solutions. It requires skills different from those involved in development work. There are still a lot of things I don't understand, and I make a lot of mistakes, but I carry on and keep my head down. I feel that more and more people are pulling for me, both within and outside THK, and that makes it all worthwhile.

I'd like to have another chance to help develop new types of robots, and I hope I'll be working with useful and interesting new technology again in the future.

## Grateful for technology that never failed: Every single test went off without a hitch.

Mitsushige Oda  
Professor  
Department of Mechanical and Aerospace Engineering,  
Graduate School of Engineering,  
Tokyo Institute of Technology  
Senior Guest Researcher  
Robotics Research Group  
Japan Aerospace Exploration Agency



At the International Space Station, where invaluable experiments that can only be done in outer space are conducted every day, there are never enough hands for all the work that needs to be done. Only a limited number of crew members can be aboard and they can only work for a limited time, so a robot is needed to stand in for the humans. The robot should have hands to do the work, legs to get it to the work site, and a brain to size up the situation and figure out what to do next. I created the REX-J project in order to develop a new type of robot that can support and assist astronauts. THK is in charge of developing a robotic hand for the project.

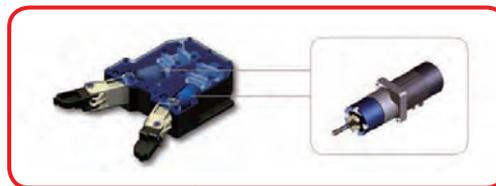
Whether you're out in space or here on earth, when you perform physical labor you have to be able to grip things with a certain amount of force. A hydraulic motor could provide plenty of gripping power, but in outer space we need to be able to attach different tools to the end of the robot's arm so it can perform a variety of tasks, and a hydraulic motor would never fit inside the arm. This is what drew our attention to THK's linear actuators.

Working under the auspices of JAXA's collaborative Aerospace Open Laboratory program, THK had already developed a linear actuator small enough to fit in the palm of your hand. They had also produced a prototype robotic hand incorporating a linear actuator, intended for commercial use, equipped with 30 kilograms' worth of gripping power—strong enough to crumple a beer can with ease.

To ensure that this robotic hand could be used in space, in the REX-J project it was tested to see if it could withstand the noise and vibration of a rocket launch and a thermal vacuum and radiation while in orbit. The robotic hand system is highly complex, but it passed all the

tests and operated without any problems when it arrived at the station. We were very pleased.

THK has been assisting us as a participant in the REX-J project since 2007. It's amazing that they came up with such a reliable robotic hand in such a short time. It happened because the THK employees involved were committed to creating something really good. In developing a robotic hand that has both aerospace and consumer applications and paving the way for its actual use, for the first time, in outer space, THK has played a very important role in our program. Their efforts are an inspiration to researchers involved in space exploration.



Robotic hand used at the International Space Station experiment module.

# Reducing the impact of a natural disaster

In March 2013 the Japanese government's Central Disaster Management Council issued a report on damages expected to result from a massive earthquake occurring along the Nankai Trough, near Japan's Pacific coastline. The details are summarized below.

	Major Nankai Trough earthquake	Great East Japan Earthquake
Magnitude	9.0–9.1	9.0
Buildings destroyed	2.38 million	130,000
Economic damage	¥220 trillion	¥22 trillion

The report also noted, however, that the damage estimate can be reduced to ¥31.8 trillion if disaster-prevention and disaster-mitigation measures, including fire prevention, are enacted. Such measures also include preemptive efforts to make buildings and other large structures earthquake-resistant.

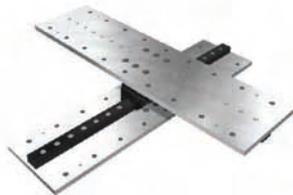
Since the government can only undertake limited countermeasures against earthquakes, it is essential that citizens and businesses realize that they are at risk and take responsibility for implementing effective countermeasures themselves.

## THK seismic isolation and damping devices

### Seismic isolation for large structures

#### Linear Guide CLB

This seismic isolation device, incorporating the THK LM Guide, supports buildings and other large structures and converts seismic motion into gentle, fluid motion.



### Seismic isolation for large structures

#### Rotary Damping Tube, for seismic isolation and damping Inertial Rotary Damping Tube, for seismic damping

These devices absorb seismic energy using THK ball screws, reducing the size of tremors in proportion to earthquake velocity.



### Seismic isolation for machines and other objects

#### Model TSD Seismic Isolation Table

This device, used to protect sensitive equipment, works of art, and other valuable items, can simply be placed on the floor. It can handle loads weighing from 30 to 1,200 kilograms.



#### Model TGS Seismic Isolation Module

TGS modules can be laid out in almost any configuration to provide seismic isolation for heavy objects or for an entire floor. They accommodate loads weighing up to 3,000 kilograms per square meter.



### Earthquake-simulation vehicle

THK has developed simulators that enable people to physically experience the chaos of an earthquake and the effectiveness of seismic isolation technology. This vehicle delivers that experience to people all over Japan, to focus attention on earthquake preparedness.



**THK's seismic isolation technology: Recommended by all the architects**



Koji Ise  
Statutory Auditor, Myotoku Ltd.

Myotoku had a seismically isolated building constructed at our office complex in Iwate Prefecture, for three reasons. First, to provide a temporary place of refuge for employees in the event of a major earthquake like the Great East Japan Earthquake. Second, to protect our server computers, which are essential for business continuity. Third, to have a place where we can immediately hold emergency meetings even after a large-scale disaster, to ensure that the business keeps functioning. In addition to seismic isolation, the building was equipped with solar panels and its own electric power generator, as well as tanks to collect rainwater and a three-day food supply for the employees, should they need to take refuge in the facility. The servers had been housed at our headquarters in Tokyo, but

earthquakes can strike anywhere in Japan. We wanted them protected by the most effective means available, so we built the seismically isolated building in Iwate and stored them there.

The idea of using THK's seismic isolation technology came from the architects who submitted designs for the building—all of them recommended using THK. Of the three architectural firms we dealt with, two incorporated THK devices into their designs from the outset. The third originally favored rubber dampers made by another company but eventually revised its design and switched to THK, because, given the total weight of the building, THK's system was more suitable. As a manufacturer of vacuum pump systems and related products, Myotoku was familiar with an essential component of THK seismic isolation devices, the LM Guide, which is used in some of our production machinery. It's easy to see how the system works, and we now feel we're prepared for another earthquake.



Equipped with seismic isolation, solar panels, rainwater tanks, and provisions needed for business continuity, the new building houses Myotoku's server computers.

**Grateful for consideration as well as quality**



Kenji Aoki  
Operating Officer and  
Senior General Manager  
Production Division,  
Miyano Company  
CITIZEN MACHINERY MIYANO CO., LTD.

Citizen Machinery Miyano has had a long and close relationship with THK. Over 90% of our machine tools use THK's LM Guides, and we hold events where our engineers and theirs get together to exchange ideas and discuss technical issues.

This is the first time we've used seismic isolation devices. We have a lot of faith in THK products, though, so we had no doubts about the quality. The installation work had to be coordinated with the moving of three-dimensional measuring equipment from another plant, however. We couldn't spare much time for the project, and it took a while to get company approval for the seismic isolation devices. The people at THK waited patiently to get the final go-ahead and then installed the devices within a very short time. We're grateful to THK for being so accommodating.

The three-dimensional measuring device now protected by seismic isolation is used to perform final inspections on our in-house jigs. If it gets shaken up in an earthquake, it loses all accuracy and has to be recalibrated, which takes a week and is very costly. From a cost-performance standpoint as well, we're glad we opted for seismic isolation.



Seismically isolated 3D measuring device.

## Seismic isolation in action: Protecting servers



Daigaku Okada  
Manager, Engineering Department  
Toyohashi Cable Network Inc.

Our old building was built to survive a level-6-minus earthquake (measured on the Japanese scale), and the new one is designed to withstand a level-7 quake. When it was built we decided to have a seismic isolation device installed under the entire floor of the transmission room, where we keep our server computers and critical transmission equipment. The aim is to prevent any disruption of telephone, Internet, or cable television service to 70,000 households in the cities of Toyohashi, Tahara, and Shinshiro, even in the event of a chain of earthquakes in the Tokai, Tonankai, and Nankai regions.

There were three things that led us to select THK's seismic isolation device. First, through simulations of three major earthquakes that had previously occurred—the 1995 Great Hanshin-Awaji Earthquake, the 2007 Niigata-Chuetsu-Oki Earthquake, and the 2011 Great East Japan Earthquake—we were able to ascertain the effective range of motion once the devices were installed. Second, the devices consist of individual modules that can be freely configured, which appealed to us. Third, they could easily accommodate our transmission cables.

The THK sales representatives and technicians we met all conveyed real enthusiasm for their seismic isolation products. They stayed on site throughout the installation work, despite the midsummer heat, and showed a determination not just to sell their products but to seriously take care of the customer's needs.

THK develops its own products, and they have the flexibility to address a customer's specific needs. I hope they'll offer even more guidance on construction methods in the future and keep finding more customers for their seismic isolation equipment, to help alleviate natural disasters here in earthquake-prone Japan.



The entire transmission room floor is protected by seismic isolation devices.

## Fulfilling a mission to preserve the temple for posterity



(From left) Chief Abbot Nisou Sugahara  
and Chief Steward Taikou Akada  
Honno-ji Temple, headquarters  
of the Hokke Buddhist sect

It is our mission to ensure that the temple Honnoji, the main temple of the Hokke sect of Buddhism, and the icons it houses, are continually passed on to future generations. Honnoji is the main temple for over 50 branch temples in Hyogo Prefecture, including the island of Awaji, some of which were completely destroyed in the Great Hanshin-Awaji Earthquake. As we endeavored to recover, thanks to disaster-relief funding and other financial assistance, we contemplated protective measures against natural disasters. Ultimately we opted for earthquake-resistant renovations based on seismic analysis, to protect the temple and its icons from the effects of a major earthquake.

Our temple has been rebuilt seven times, but it includes structures that have endured for over 600 years and is thus considered a valuable cultural asset. Accordingly, some people were apprehensive about incorporating metal seismic isolation and damping devices into the temple's entirely wooden construction. Whether to take protective measures against a major disaster or preserve the original structure of a precious cultural property posed a very difficult dilemma, but after much testing and a great deal of debate we determined that incorporating seismic isolation and damping would not compromise the temple's status as a cultural asset. Quake-proofing and seismic isolation work was carried out as part of a renovation project begun in 2008 to mark the 600th anniversary of the founding of the temple. The entire main hall is now protected by THK seismic damping devices employing ball screws, while our icons are protected by seismic isolation devices employing LM Guides.

We hold sermons in our main hall for visiting schoolchildren, attended by as many as 500 people. We can now welcome all such visitors with greater peace of mind.



Honnoji: Seismic damping has been provided under the floor and roof, and seismic isolation tables support the statuary in the main hall.

## Using seismic isolation technology to protect even lightweight artwork



Hideyuki Urano  
President, Sansei Technos Co., Ltd.

We deal in electrical equipment and electronics, including systems for protecting buildings, and we use THK products. To be able to sell our goods, we have to understand how they work. Lately we've been involved with a new exhibition facility housing ceramics and other items of traditional craftwork, which are being preserved as cultural assets. We've used THK seismic isolation devices to keep these valuable works safe from the effects of a major earthquake.

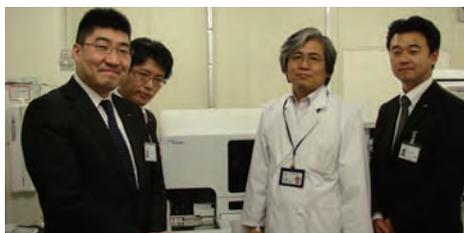
There are many different ceramic pieces displayed inside the facility, some lightweight and some quite heavy. A big tremor wouldn't just knock over lightweight items, it would send them flying, so ordinary seismic isolation devices wouldn't suffice. I don't think THK had previously made a device designed to hold a lightweight load like ceramic ware, but they persevered through trial and error. Eventually it became clear that placing each piece on its own isolation table was the wrong approach. They decided to use multiple linked tables instead, and this enabled them to perfect a seismic isolation system providing equal protection to pieces of widely varying weight.

After the Great East Japan Earthquake in 2011, I was saddened to hear from people who trade in and collect art and craftwork that a lot of pieces were no longer being displayed, having been packed up in crates out of concern that another major earthquake might occur. It's a great pity when works of art and fine craftsmanship, created for people to see and enjoy, are stowed away out of sight for protection. Our exhibition facility offers proof of the effectiveness of seismic isolation devices. I hope people will come and see how well they work so more people will understand that, with these devices, it's safe to put these beautiful pieces on display again.



Exhibition facility equipped with seismic isolation.

## Keeping people safe and keeping the lab going

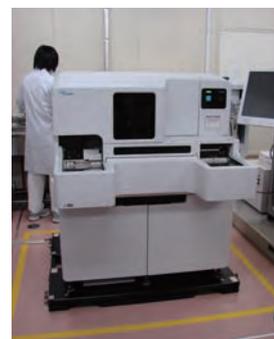


(From left) Sysmex employees Kazuo Sugihara and Tetsuya Namura, Mitsuaki Nagasawa, and Sysmex employee Naoki Kai.

Mitsuaki Nagasawa, Head of Laboratory Testing  
Deputy Director, Department of Laboratory Medicine  
Tohoku University Hospital

When the Great East Japan Earthquake struck, a 300-kilogram autoanalyzer was knocked over at Tohoku University Hospital. When the first tremors hit, the people working in the laboratory were all safely evacuated, but the electricity went out, the water stopped, and other equipment was damaged as well, making it impossible to perform crucial lab tests. Afterward, even while repair and restoration work was being done to enable us to get back to doing ordinary lab work, we decided to implement some comprehensive countermeasures to ensure that testing would be able to continue even if another major earthquake occurred. Under the plan, lab work was divided between two locations, one of which would be equipped with a minimal amount of testing equipment and made earthquake-resistant.

One alternative was to quake-proof the whole floor of the latter location, but Sysmex\* presented a plan that would utilize THK's seismic isolation tables to protect the analysis and testing equipment, and that's the plan we ultimately adopted. We needed to get the job done quickly, and they had expertise in constructing testing laboratories. Their proposal was also persuasive because, being located in Kobe, Sysmex had experienced damage firsthand in the 1995 Hanshin-Awaji Earthquake. The THK devices deflect seismic motion, which will keep our people safe and prevent any harmful impact on the accuracy of our equipment. I fully expect to be able to continue our lab tests even in the event of a natural disaster.



Seismically isolated blood analyzer.

\*Sysmex Corporation, a leading manufacturer of medical testing equipment and reagents. An interview with Sysmex employees was featured in the 2011/2012 edition of the THK CSR Report.

## 3 major areas of endeavor



### Management system

Page 17–19

As the concept of corporate social responsibility becomes more widely established, businesses are faced with increasingly demanding expectations from the society at large. At THK we feel that, as an enterprise engaged in *monozukuri*, our most essential duties are to maintain transparency in our operations and foster a corporate culture that is responsive to societal expectations. We have instilled a thorough awareness of our corporate social responsibilities and established a highly effective management system to ensure they are fulfilled.

#### In focus in 2012

- ▶ Education and training to support global compliance
- ▶ Business continuity planning

### Involvement in society

Page 20–29

Faced with the need to assist in the recovery following the Great East Japan Earthquake, as well as the need to help rebuild Japan's long-struggling economy, THK and other firms engaged in *monozukuri* are finding more opportunities to contribute to society than ever before. As we work to strengthen our relationships with our many stakeholders, we will continue to demonstrate the vital importance of *monozukuri* in everyday life.

#### In focus in 2012

- ▶ Exhibitions
- ▶ Training programs
- ▶ Volunteer leave system
- ▶ Contributions by LIAONING employees

### Harmony with the environment

Page 30–37

Dramatic improvements in energy efficiency, increased product longevity, and other technological advances have played a major role in reducing energy consumption in everyday life. THK has contributed to further advances in Japan's environmental technology, which is already regarded as the best in the world. We continue to pursue a variety of initiatives in this field, convinced that, by passing these advances on to future generations, we are helping to preserve the global environment.

#### In focus in 2012

- ▶ Commendation for waste management in China
- ▶ Honors for energy management
- ▶ Green purchasing training at overseas sites

# » Corporate governance

## Governance system

Fundamentally, THK views corporate governance as a means of making management transparent to shareholders and ensuring appropriate and efficient operations, in order to maximize shareholder returns.

THK's primary management structure consists of its Board of Directors and Board of Auditors. To facilitate sound, timely, and strategically apt decision-making by the Board of Directors, THK has established an Executive Council made up of the president, two managing directors, and an outside director.

The Executive Council sets basic management policy from a strategic perspective. With the cooperation of various departments, the council collects the data required to enable the Board of Directors to hold informed discussions, soliciting expert opinions from lawyers, accountants, and other third parties whenever necessary. The council meets for consultations and keeps track of important issues and information.

## Internal controls

THK continually strives to improve its internal controls in order to further solidify its operational foundations and ensure full compliance with all its legal obligations.

In 2008 THK established regulations instituting internal controls on financial reporting. The entire THK Group, including subsidiaries and affiliates, continues to maintain and improve systems designed to ensure the reliability of

financial reporting, in accordance with Japan's Financial Instruments and Exchange Law.

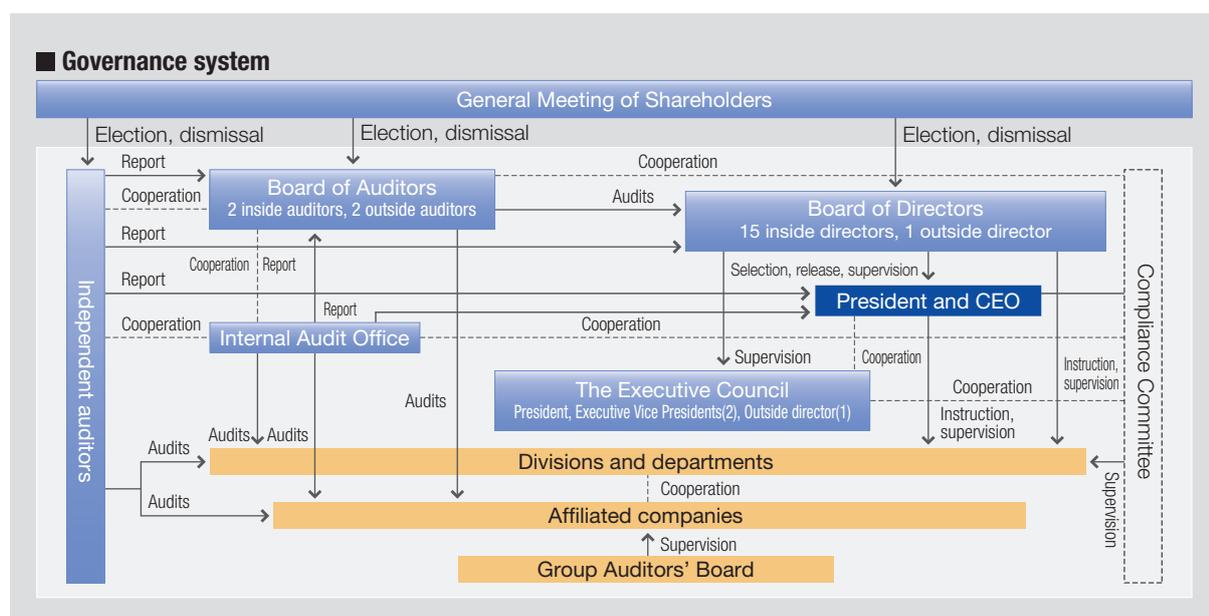
The Internal Control Audit Department, part of the Internal Audit Division, conducts an annual evaluation of the operational impact of THK's internal controls. Based on the findings, any necessary improvements are overseen by the Internal Control Department, which serves as the secretariat of the Risk Management Division.

The 2012 evaluation found no material weaknesses in internal controls. A report disclosing the findings was submitted to the Prime Minister of Japan, via the Kanto Local Finance Bureau of the Ministry of Finance, in June 2013.

## Security-related trade controls

THK has improved its security-related trade controls by providing management tools and training for overseas sales divisions. This will help prevent inadvertent violations of the Foreign Exchange and Foreign Trade Control Law in dealings with overseas customers and countries from which products were not previously exported, in accordance with THK's midterm plan for increasing overseas sales.

THK is continually improving its intranet- and Web-based parameter-sheet management system to quickly provide accurate documentation to customers exporting THK products, and working to lower the cost of preparing parameter sheets, to provide greater customer satisfaction.



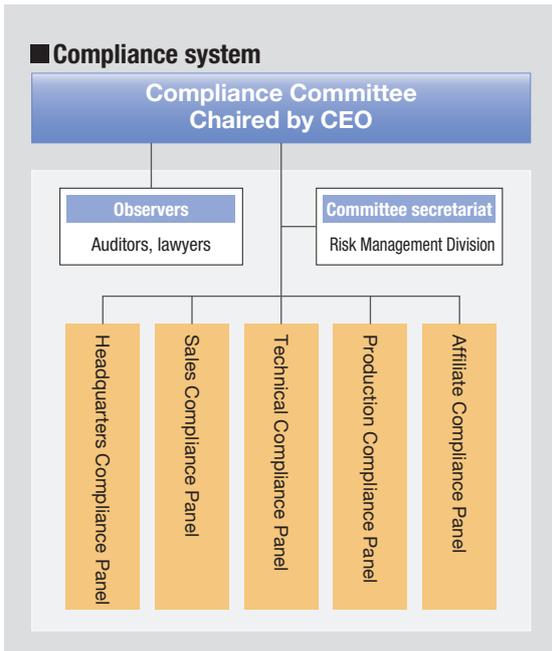
# » Compliance

## Compliance system

THK has had a permanent Compliance Committee since 2005, chaired by its president and CEO. The Compliance Committee sets policy in relation to THK's compliance system and deals with violations of laws, regulations, and internal rules, as well as internal reports of such infractions. In addressing specific violations, the committee consults with legal advisers who attend its meetings as observers, to ensure that the response is appropriate and legally sound.

THK has also established the THK Helpline, an internal notification system designed to deter potential compliance-related violations by executives or employees and ensure that prompt and appropriate action is taken in the event that a violation occurs. Infractions can be reported by telephone or e-mail or by contacting the company's legal advisers, who provide an external channel for such notifications. In 2012 eight reports were received via the helpline; all eight were resolved with the cooperation of the departments involved.

Each business division has its own Compliance Panel, all of which report to the Compliance Committee. Compliance Panel members provide guidance and act as liaisons to help ensure observance of the compliance system at each THK location and within each area of business. They play an important role, organizing workshops and other efforts to help ensure full compliance with all legal and regulatory requirements.



## Education and training

In December 2012 Compliance Panel members attended a periodic training session, conducted by a visiting legal expert, to improve their knowledge of legal matters and reinforce efforts to address compliance-related issues. The participants examined case studies and took part in exercises concerned with legal prohibitions against monopolies and unfair competition, in order to develop a better understanding of the issues involved.

To help employees better understand the laws governing everyday conduct in the workplace, compliance-related study materials have been made available via THK's in-house e-learning program. In March 2013, 29 new study problems dealing with information security were added, bringing the total to 107. Employees can also review 30 compliance-related case studies via the e-learning program.



Training session for Compliance Panels.

In December 2012 training was provided at THK TAIWAN for all local employees—34 in all, from the company's offices in Taipei, Taichung, and Tainan—as well as employees on loan from other firms, to improve their understanding of the fundamental issues underlying compliance and its relation to corporate social responsibility. Attention was also devoted to the corporate philosophy, basic principles, and code of conduct presented in the employee handbook, to help ensure that these values are upheld at THK locations all over the world.



Training session at THK TAIWAN's Taipei office.

At THK MANUFACTURING OF VIETNAM, monthly workshops on ethics have been held since January 2013. Topics have included THK's basic philosophy, the 5S rule, and attitudes toward work. Each workshop winds up with a simple test designed to provide employees with an objective measure of their progress in mastering ethics. Employees have been invited to come up with slogans to encourage companywide participation in the ethics campaign, and other consciousness-raising efforts have been made as well. The aim is to facilitate incremental progress toward a proper grasp of ethical behavior.



Ethics workshop at THK MANUFACTURING OF VIETNAM.

# » Risk management and information security

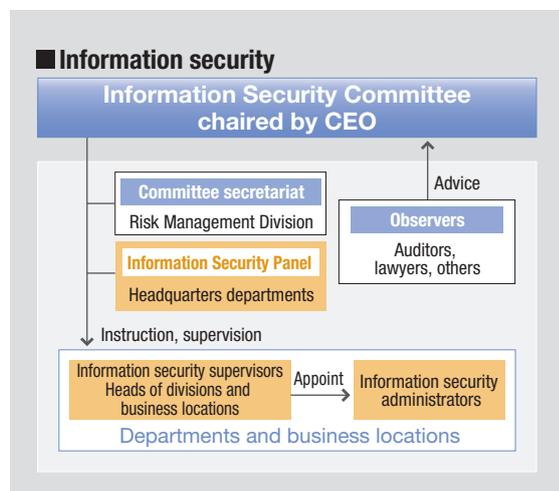
## Information security

To help ensure that reliable information security systems are in place throughout the THK Group, in 2012 the Information Security Committee Office conducted internal audits of information security arrangements at four business sites in Japan, including those of affiliated companies.

Training sessions were offered at 26 THK locations in Japan in 2012 to help educate employees about the importance of information security. THK also conducts self-assessments via its intranet to ascertain the current status of information security throughout the group. When problems are identified, improvements are carried out.

In light of the growing importance of its overseas business sites, THK had internal audits conducted on the information security arrangements at five affiliates in China, applying the same standards employed at its business sites in Japan. As time goes on, further measures will be carried out to improve information security systems at both domestic and foreign business locations.

THK is also enacting more forceful measures prohibiting unauthorized access to its computer networks, to protect against viruses and other malevolent incursions and prevent disclosure of private information.



## Business continuity planning

To ensure that it's prepared for a major earthquake or other disaster, THK has been formulating business continuity plans and taking a variety of other actions to reduce the scale of potential damage and help ensure rapid resumption of operations.

### Securing servers

To protect its critical server computers, for some time now THK has kept its actual servers and backup servers

in two separately located data centers. To further reduce the risk of damage in the event of a natural disaster, in 2012 other computer systems were also relocated to separate data centers.

### Securing office supplies and equipment

At THK offices, to protect employees from being injured in an earthquake and facilitate rapid resumption of operations afterward, fixtures designed to prevent objects from being moved or toppled by seismic tremors have been affixed to copiers and other office machines and installed on storage shelves holding spare parts, tools, and office supplies.

### Stockpiling emergency supplies

To provide for the needs of those who may be unable to reach their homes in the event of a major earthquake or other disaster, all THK offices have been equipped with a three-day supply of food, drinking water, blankets, portable toilets, and other emergency supplies. Offices located in heavily populated urban areas have been provided with a seven-day supply of emergency goods. At THK plants where large numbers of people are employed, stretchers and other rescue supplies have been procured, along with emergency generators and other key equipment. To prepare for all potential scenarios, procedures have been established for assisting disaster victims and quickly resuming business operations in the aftermath of a disaster.

### Training for a disaster

THK Headquarters has long conducted evacuation drills, firefighting exercises, and training in first aid, including the use of defibrillators, and training in the use of emergency generators. In 2012 the program was expanded to include instruction in using first-aid slings and transporting the injured using stretchers and conveyance devices designed for stairways.

Each THK Group business location has been equipped with satellite telephones. Regular training is provided in emergency communications procedures, and a system has been established to enable THK to rapidly assess the situation at each location in the event of a disaster.



THK employees receiving training in first aid.

# » Together with our customers

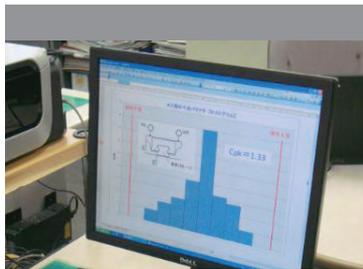
Product quality, customer satisfaction, and relationships with partner businesses

## Quality assurance system

THK continually strives to provide customers with safe and dependable products.

### Providing reliable product quality

To ensure that customers can use THK products with complete confidence, the company has established a strict quality management system utilizing statistical data at every stage in the process, from the acquisition of materials through the completion of the finished product. The system employs a process capability index, expressed as a Cpk value, which quantifies the extent to which a given process yields products that conform to specifications. THK maintains a target Cpk value of 1.33, which means only 3 of every 10,000 units fails to meet internal quality standards, in its ongoing effort to ensure that customers receive products of the highest quality.



Statistical quality analysis is part of the quality management system.

### Ensuring safety

To ensure compliance with the European Union's Restriction of Hazardous Substances Directive and other laws and regulations, THK subjects parts and materials to nondestructive analysis, employing x-ray fluorescence analyzers, Fourier transform infrared spectrometers, absorption spectrometers, and other devices. Components, materials, and surface coatings are regularly inspected to ensure that customers can use THK products with complete confidence in their safety.



Equipment used for content analysis.

## Exhibitions

THK takes part in a variety of trade shows and industry events in Japan and elsewhere in the world, where it exhibits new products and provides information about technical support services. For the benefit of those who are unable to attend these events, THK also hosts its own community-oriented shows and holds exhibitions at customer facilities that focus on applying technology to meet specific needs.



Demo units on display at a THK exhibition.

## Technical training for nontechnical personnel

In November 2011 THK launched a training program at its KOFU Plant that provides basic knowledge about THK products, presents simulated cases of products in actual use, and provides hands-on experience with product assembly and precision adjustments. As of March 2013 a total of 351 sales and office employees and other personnel had taken part in the program, including sales people from THK distributors.

In February 2013 a similar program was begun at the MIE Plant. THK is working to expand its training programs in order to enhance its capacity to swiftly address customer needs and continue to provide high added value.



A training session at the KOFU Plant.

## Takeki Shirai honored by JSME

THK Senior Advisor Takeki Shirai has received an award for distinguished service from the Manufacturing & Machine Tool Division of the Japan Society of Mechanical Engineers.

The JSME's membership consists of engineers, scholars, students, and employees of businesses involved with mechanical technology, the bedrock of the technological world. The organization consists of 21 divisions covering a broad range of machine-related academic fields, and 8 branches that sponsor events for members, focusing on community activities. Shirai was honored for his energetic leadership as head of the society's Manufacturing & Machine Tool Division from 2011 to 2012.

Shirai commented, "Due to the impact of newly emerging economies, Japan's machine tool industry is seeing higher demand from overseas. We have a responsibility to lead the world in maintaining high quality, meeting the need for multifunctional goods, and developing environmentally friendly, low-emission technology. We look to the JSME to support this role by gathering information from all over the world and providing venues for vigorous exchanges of views."

THK supports the JSME's efforts, in the hope they will help invigorate Japan's domestic manufacturing industry.



THK Advisor Takeki Shirai.

## Together with suppliers

Having long understood that the optimal site for production is the site of demand, THK is working to perfect integrated production and sales systems on a global scale, and this includes greater attention to local procurement of parts and materials to accommodate increased overseas production. Securing suppliers in other countries is a desirable strategy from the standpoint of business continuity planning as well. THK will continue to select and foster mutual trust with overseas suppliers who meet its demanding standards for quality, offer competitive pricing, and deliver on time.

THK's Quality Assurance Division, Material Purchasing Department, and Environmental Management Department all handle various types of data on suppliers, making it difficult to coordinate the flow of information. To provide more efficient oversight, a supplier database has been created that enables information to be shared between the head office and the Production Division. Suppliers sometimes receive duplicate requests for various types of information from different THK locations, and efforts are being made to reduce this type of redundancy as well.

## Presentations for improvements

The second Sekigahara-cho Quality Control Circle presentation event was held in February 2013. As the leading business in the area, THK's GIFU Plant helped organize the event.

The plant's Manufacturing Section I Assembly Group received an award for its presentation, entitled "Three Principles for Standardization: The Right Thing in the Right Amount in the Right Place." The presentation highlighted the importance of having the correct quantity of parts stationed in the appropriate place at the assembly station and keeping the space neat and well-organized, to eliminate the possibility of using the wrong parts. When these principles are applied, less space is needed for the work station, mix-ups involving incorrect parts are eliminated, the overall work space expands, and production volume ultimately increases.

Quality-control initiatives such as this one also produce other, less tangible results. They elicit interest in potential improvements in all areas of work, help increase productivity and reduce inventory, improve teamwork, and raise awareness of the 5S rule, as well as the sixth S—safety. The 5S rule calls for *seiri* (neatness), *seiton* (organization), *seiso* (cleanliness), *seiketsu* (standardization), and *shitsuke* (discipline).

THK will continue to encourage quality-control activities and will share the lessons of this latest initiative with other divisions, with the intention of raising overall productivity.



Quality Control Circle presentation event award.

# » Together with our customers

In their own words

## Nikon Corporation

Established in 1917. One of Japan's foremost manufacturers of optical instruments and precision measurement and manufacturing equipment. Nikon has developed a broad range of technologies, products, and services based on its core technologies, opto-electronics and precision, focusing on three areas of business: precision equipment, imaging products, and microscopes and measuring instruments.



Nikon's Kumagaya Plant.



(From left) Junior Executive Staff, Research Toshikazu Ebina, Manager Masaru Okada, Junior Executive Staff, Research Yasuyuki Goda. All three work in 6<sup>th</sup> Development Section, 2<sup>nd</sup> Development Department, Development Headquarters, Precision Equipment Company.

## Grateful to THK for faithfully meeting difficult requirements unique to semiconductor exposure equipment.

### How did you come to use THK products?

We design and produce semiconductor exposure equipment, and we were looking for a linear guide for a damper on an optical vibration device used in that equipment. This was around 2000. At that time we heard from colleagues that THK made linear guides providing very high rigidity and that it produced the largest share by far of the linear guides used in machine tools, so we met with some of their sales people.

Since then there's been a big surge in demand for switching mechanisms for illumination optics, and we've used THK's LM Guides, ball screws, and other products for a variety of purposes.

### What's your opinion of THK and its products?

We work for the Seiki Company Semiconductor Exposure Equipment Division. Our development and production facility is in the city of Kumagaya in Saitama Prefecture, but we deal with people from THK's Tokyo location. We're pretty far away, but they've been very conscientious about coming out to make sure our needs are met, and we're very impressed with that.

The optical systems in semiconductor exposure devices are extremely precise, and even minor irregularities in optical dynamics will upset their delicate patterns. Exposure to ultraviolet light causes ammonium sulfate, silicon, and other contaminants to adhere to lenses, making them cloud up. That causes irregularities in the light passing through, so ordinary lubricants and anticorrosive agents can't be used on the guides. Fluorinated lubricants have to be used, and the guides have to undergo a special chemical cleaning process. THK has been very conscientious about dealing with

these types of specifications, which are unique to semiconductor exposure equipment. They continually meet our highly demanding requirements, making it possible for us to do things we couldn't do before. We think of them as a reliable partner, a company we can have a lasting relationship with.



The Nikon NSR-S622D, a semiconductor exposure device.

### What do you expect from THK in the future?

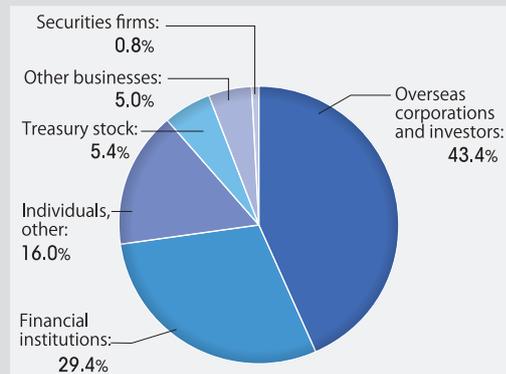
We'd like to develop an even stronger partnership with THK, with more interaction between our development divisions. In terms of technology, we're hoping they expand their product lineup by making products even smaller and thinner, and we'll be glad to hear more ideas from them for combining drive mechanisms in various ways. We hope to do more designing and producing of components and controls for custom-made products, dividing the work between our two companies, with each bringing its own technology to the task. We want to keep our win-win relationship going.

# » Together with our shareholders and investors

## Events for investors

Twice a year THK holds a financial briefing for investors, where THK's CEO discusses the group's business performance and business strategies. Ample time is provided for questions from those in attendance, to ensure that investors have a chance to candidly communicate their views to THK management. THK is working to expand the dialogue to include more investors through small-scale meetings and individual interviews. THK is also creating more opportunities for interaction with institutional investors overseas, including teleconferences and annual visits with investors in the United States and Europe, in an effort to engage in more extensive communication with all its investors.

### ■ Shareholdings by investor type (as of March 31, 2013)



## Tools for investors

THK publishes an annual report on its business operations as well as a quarterly fact book containing information for investors. These publications, along with statutory disclosure documents and materials presented at investor meetings, are available in both Japanese and English versions in the Investor Relations section of the THK website. Video coverage of investor meetings is also provided in both languages. In these and other ways, THK discloses relevant information in a fair and appropriate manner to all investors, regardless of affiliation or geographical location.



THK's annual report.

## General Shareholders Meeting

As part of a continuing effort to ensure greater openness, since 1998 THK has held its annual General Shareholders Meeting on a Saturday, avoiding the days when most corporate shareholders meetings are scheduled, to enable more THK shareholders to attend. Seats for observers are provided at the meeting venue to permit other stakeholders to learn about THK's operations, and attendance by representatives of partner businesses and others has been encouraging.

The 43rd Ordinary General Shareholders Meeting was held on June 15, 2013, with 343 shareholders in attendance. An exhibition was presented in an adjoining venue to provide visitors with a firsthand look at essential THK products seldom encountered in daily life. This year's exhibition featured machine tools, semiconductor production equipment, and other devices used to manufacture key components for various advanced technologies, as well as applications for THK products in new areas of business, including seismic isolation, transportation equipment, and robotics.



The 43rd Ordinary General Shareholders Meeting.

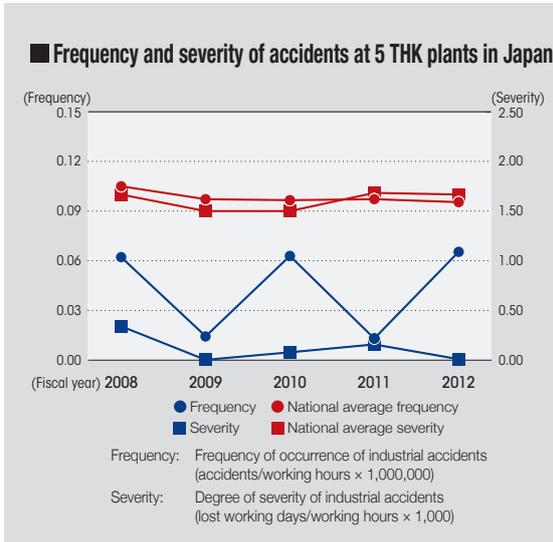


Concurrent exhibition of THK products.

# » Together with our employees

## Health and safety

### Preventing accidents and protecting health



A variety of measures have been put in place to create a safe working environment for THK employees. From December 15, 2012, to January 15, 2013, THK held its second annual New Year's "zero accidents" campaign, to heighten employee awareness of the dangers of workplace injuries and traffic accidents and help eliminate their occurrence.

To protect employees in China from hazardous substances contained in particulate matter smaller than 2.5 microns, THK monitors the air pollution index at all business locations there and has created a website to publicize that information. Breathing masks are issued to all employees at high-index locations. When the air pollution index is particularly high, THK issues advisories to encourage employees to stay indoors, to minimize their exposure. All THK employees traveling from Japan to China are provided with N-95 respirator masks.

THK will continue to safeguard the health of all its personnel and will keep working to ensure a safe and secure workplace for each employee.

### Testing safety knowledge at DALIAN THK

In July 2012 DALIAN THK held a safety seminar for all personnel, offering expert instruction to increase employees' knowledge and awareness of matters related to safety and help ensure safe work habits and lifestyles.

To test their grasp of safety issues and encourage further study, in late September the company held a contest for employees focusing on safety-related knowledge. The contest covered a broad range of

information about safe production practices, first aid, and traffic safety. Based on the results of a final written test and oral quiz, one team was awarded first place, two teams finished in second place, and three teams finished in third place. All six teams received gift sets of towels as prizes and certificates of merit for their efforts.



Safety seminar at DALIAN THK.

### MIE Plant safe-driving campaign

In April 2012 THK's MIE Plant, with assistance from the Nipponkoa Insurance Company and the firm NKSJ Risk Management, presented a safe-driving course for 30 newly hired high school and university graduates and for senior citizens. Diagnostic devices were used to administer a speed anticipation reaction test, discriminative reaction test, and judgment test, and assess each participant's overall driving aptitude. The results, presented on a scorecard, provided the participants with an immediate assessment of their driving skills and served as the basis for individual consultations covering key points.

One of the participants commented that, although he had considered himself to be a safe driver, the test results and subsequent consultation made him realize that he had been overconfident about his driving skills and gave him a new understanding of driving safety.

In December 2012 the MIE Plant instituted alcohol-detection breath tests for employees driving company vehicles. In January 2013, to help raise awareness about safe driving, employees in Manufacturing Section No. 1 were shown videos on improving driving skills and the dangers of drunk driving.

In the coming year the MIE Plant plans to expand its safe-driving education program to include all employees.



Diagnostic devices are used in the safe-driving program.

# » Together with our employees

## Support for employee development

### Proposals for improvements

THK has a system for eliciting proposals to improve products, efficiency, quality, safety, productivity, and technology, reflecting the value THK places on its employees' insights and ingenuity. Every proposal is evaluated, and commendations are awarded for proposals that satisfy certain criteria. Employees receive points based on the results of the evaluations and accumulate more points for successive proposals. When an employee's point total surpasses a certain level, he or she receives a second-level commendation.

In 2012, 11,871 proposals were received, including ideas for new markets for THK products and proposals for improving the content of product catalogs. By soliciting such proposals from its employees, THK not only finds new ways to improve its operations but also encourages employees to show initiative and cultivate stronger powers of observation.

#### ■ Second-level commendations for improvement proposals

	Proposals	Commendations
2010	10,454	331
2011	11,840	352
2012	11,871	331

### Technical training at THK RHYTHM

The THK RHYTHM HAMAMATSU Plant has been conducting a safety campaign for all employees in an effort to reach the goal of 3.9 million accident-free working hours (calculated by multiplying accident-free normal working hours by the number of employees working).

To ensure that everyone working in the plant has a thorough mastery of basic operations, repeated rounds of hands-on training are being provided for newly hired or transferred employees and employees from affiliates. The training sessions, conducted at the plant's "skill center," include an emphasis on differentiating right-hand and left-hand tasks.

As of March 31, 2013, the plant had recorded 2.94 million accident-free working hours. The goal of 3.9 million accident-free hours is expected to be reached on December 27, 2013.

The plant also encourages employees to take national proficiency tests for various skills and offers workshops where participants can hone their abilities prior to taking a test. As of March 31, 2013, 727 plant employees had passed national proficiency tests.



(From left) Trainer Yoshimi Matsumoto and trainee Hirofumi Matsumoto.

### e-learning

THK provides an e-learning system that enables employees to pursue personal development whenever they have access to the Internet. The system includes courses in business skills, product knowledge, and compliance—a topic of particular interest in recent years. As of March 2013 a total of 43 e-learning courses were available.

#### ■ Educating employees via e-learning

	Enrollment			Completion
	Eligible employees	Employees enrolled	Percentage of eligible employees	Percentage of enrolled who completed course
September 2010	2,103	1,142	54.3	72.7
September 2011	2,130	1,212	56.9	73.1
September 2012	2,049	1,192	58.2	73.2

### Training system

THK's training system encompasses a broad range of educational opportunities. The system includes stratified training programs focusing on knowledge and skills required for specific ranks and positions, from the newly hired to those who preside over entire divisions and facilities. Also included are divisional training programs intended to increase the knowledge and skills of the employees who work in sales, technology (including research and development), and production, respectively. These programs are generally led by well-experienced senior employees who can pass on specialized knowledge and skills.

THK provides other types of training as well, including coaching and guidance for employees who oversee on-the-job training for junior colleagues, instruction in foreign languages and cultures for employees being posted overseas, and programs designed to ensure compliance with legal and regulatory obligations.

#### ■ Training system

		Stratified training	Divisional training	Special training
Administrative	Executive management		Sales Technology Product	Executive program
	Department management		Business etiquette training THK Advantages Program	Overseas posting Vehicular safety Compliance
	Section management			
Non-administrative	Supervision	Task setting	Basic technical training	
		Evaluation		Internal proficiency testing
	Improving skills			
	Entry level			

# » Together with our employees

## Embracing diversity

### Hiring people with disabilities

THK continues to hire people with disabilities to work at its plants and offices. As of April 1, 2013, people with disabilities constituted 2.01% of THK's overall workforce, exceeding the legally prescribed minimum percentage, which rose to 2.00% at the beginning of April.

Further efforts have been made to facilitate the employment of people with disabilities. In September 2012 a GIFU Plant employee became a certified job coach, a qualification already held by an employee at the YAMAGUCHI Plant. THK's overall support system has been improved by both employees' expertise in providing support both on and off the job and improving the work environment for disabled employees. One of the job coaches visits each THK business location once a year to monitor working conditions, inquire about health, and interview disabled employees and their supervisors, to help sustain a hospitable working environment.

Some of THK's disabled employees have distinguished themselves outside the workplace as well. In October 2012 Masahiro Fujii, an employee in the Order Management Section at the YAMAGUCHI Plant, won the gold medal in product packing at the 2012 Abilympics competition, along with the honor of being recognized as

Japan's best in that event. It was the second year in a row that a YAMAGUCHI Plant employee won a gold medal at the Abilympics, a major achievement.

In November 2012 YAMAGUCHI Plant employee Shunsuke Yoshinaga was honored for supporting the hiring of disabled people and contributing to job security, and the YAMAGUCHI Plant itself was cited for excellence in hiring the disabled. Both honors were conferred by the Japan Organization for Employment of the Elderly, Persons with Disabilities and Job Seekers, which operates under the authority of the Ministry of Health, Labour and Welfare. Yoshinaga works in the Manufacturing Promotion Department's Environmental Management Section, as well as the Human Resources Department, where he is in charge of promoting the hiring of disabled people.

### ■ Disabled employees in the THK workforce (%)

December 2009	December 2010	April 2011	April 2012	April 2013
1.64	1.70	1.80	1.89	2.01

### In their own words



(From left) YAMAGUCHI Plant Manager Katsunori Yamamura and employee Shunsuke Yoshinaga at the 2012 awards ceremony for excellence in the field of employment for the disabled.

Festival for People with Disabilities in Gifu.

As time goes on, we hope to train employment counselors for people with disabilities and have them assigned to each business location, and keep working to build up a companywide support system for our disabled employees.

### »»» In his own words: Shunsuke Yoshinaga

In February 2011, to help disabled people adjust to the workplace and improve the work environment in connection with the hiring of the disabled, I became a certified job coach. I was able to provide only limited support until a THK employee at the GIFU Plant acquired certification as well. Now that there are two of us, we're engaged in a variety of efforts. Among other things, we conduct regular interviews with disabled employees at THK locations all over Japan and run a program that brings in trainees from special-needs schools.

Another THK employee is expected to become certified as a job coach in 2013, and we're hoping to establish more efficient support systems for the eastern, western, and central regions of Japan.

Not only did one of our employees win THK's second consecutive gold medal in product packing at the 2012 Abilympics, disabled employees were also very active in sports in 2012, including participation in the foot baseball event at the 12th National Sports



(From left) THK employees Masahiro Fujii, a gold medal winner, and Shunsuke Yoshinaga, at the 33rd Abilympics in Nagano.

## Length-of-service awards

While many businesses honor employees at the end of each decade of service, THK presents length-of-service awards to its employees after every five years of continuous service. This provides more opportunities to show appreciation for the many contributions made by THK's employees. In fiscal 2013, 744 employees received commendations and commemorative gifts to honor their long-term service. The recipients included THK's first 40-year employee.

### ■ Length-of-service awards

Continuous service	2009	2010	2011	2012	2013
40 years	0	0	0	0	1
35 years	6	10	11	14	17
30 years	16	25	23	69	120
25 years	91	139	129	54	85
20 years	107	143	163	128	96
15 years	43	146	177	92	167
10 years	74	77	113	68	81
5 years	104	84	167	161	177
<b>Total</b>	<b>441</b>	<b>624</b>	<b>783</b>	<b>586</b>	<b>744</b>

## Volunteer leave

THK's volunteer leave system was originally envisioned as a way to enable employees to lend their talents for short periods to volunteer projects, such as efforts to improve the welfare of disadvantaged people, provide disaster relief, reinvigorate rural areas, and support healthy development for young people. In light of THK's expanding overseas business ventures, however, the company decided it was entirely valid to establish a system permitting employees to participate not only in short-term volunteer projects in Japan but also in longer-term programs overseas. Under the system that has been enacted, THK personnel can serve in the Japan Overseas Cooperation Volunteers, for example, while retaining their status as employees. Through such experiences, employees can learn lessons and acquire new perspectives that go well beyond ordinary working life, and this will surely be an advantage when they resume their duties at THK as it continues to pursue global expansion.

### In their own words

## »»» A participant in the volunteer leave system



Haruka Seino  
Electric Actuator Engineering  
Department, IMT Division

When the Great East Japan Earthquake struck in 2011, I wanted to help out somehow, partly because my parents are both from Fukushima Prefecture in northeastern Japan, where some of the worst destruction occurred. I signed up to work in the region as a volunteer.

Ota Ward, the part of Tokyo where I live, has a mutual aid agreement with the city of Higashi Matsushima in Miyagi Prefecture, which is in northeastern Japan. Starting in February 2012, I worked as a volunteer in four weekend sessions there, from Friday to Sunday. When I saw the actual conditions in the disaster area and talked with the people who had been affected, I realized a lot more volunteers were needed, so in June 2012 I took volunteer leave for five days and joined a one-week project devoted to clearing vegetation and transporting supplies in the Tona area of the city. We cleared weeds along the Japan Railways Senseki Line. One section of the tracks had been so badly damaged by the tsunami that trains couldn't run on it anymore, so that section was being turned into a walkway for children to use to travel back and forth to school. As the work went on, here and there we began to see people smiling again, and sometimes we'd hear kids laughing and shouting and just having

fun. That made me so happy.

These days I sign up for a weekend session every one or two months. A lot of companies don't have a volunteer leave system, and a lot of the other volunteers were envious when I told them about our system at THK.

The recovery effort hasn't progressed as fast as I had hoped. I didn't think they'd still need volunteer assistance two and a half years after the disaster struck. I hope more people will help out with the activities going on around them and realize the bonds we all have with the people affected by the disaster.



Railroad tracks damaged in the tsunami.



Newly cleared walkway for schoolchildren.

# » Together with our employees

## In the community

### Charitable contributions

As part of its contributions to society, THK provides monetary assistance when disasters strike and donates money to organizations devoted to the advancement of science and the future development of *monozukuri* in Japan. In addition, THK sponsors a variety of events in communities where it has business locations.

#### Disaster relief donations

August 2012	Disaster relief following torrential rains in Oita	Japanese Red Cross Society Oita Branch
August 2012	Disaster relief following torrential rains in Fukuoka	Japanese Red Cross Society Fukuoka Branch
August 2012	Disaster relief following flooding in Kumamoto	Japanese Red Cross Society Kumamoto Branch

#### Other donations

April 2012	New Japan Philharmonic Orchestra
August 2012	Japan Science Foundation
March 2013	The Green Fund Committee to Promote Afforestation in Yamaguchi Prefecture

### Pitching in to clean up the beach

On July 14, 2012, employees from the THK INTECHS MISHIMA Plant assisted in a beach clean-up project in the scenic Miho no Matsubara area, located in the city of Shizuoka's Shimizu Ward. The event, which was publicized on the Internet, was sponsored by a local nonprofit organization.

The clean-up effort began at 9:00 a.m. under clear skies. For about two hours, the 15 volunteers cleared refuse from the beach and cut grass, filling some 30 trash bags in the process.

Renowned for scenic vistas that include a majestic view of Mount Fuji across Suruga Bay, Miho no Matsubara was designated a World Cultural Heritage Site on June 22, 2013, as was Mount Fuji itself. Japan's most famous peak was especially beautiful when viewed from the newly cleaned beach. This year's clean-up was carried out by individual volunteers, but in years to come the organizers intend to publicize the event more widely among local residents and turn it into a community event.



Participants in the Miho no Matsubara beach clean-up.

### Clean-up in the mountains of Liaoning

On May 5, 2012, 22 THK LIAONING employees helped clean up a climbing path in a mountainous area of Dalian, Liaoning, in a project co-sponsored by the Dalian Free Trade Zone Charity Federation. Refuse discarded by some of the climbers who frequent the area had accumulated along the path; the project was devoted to restoring the natural beauty of the environment by clearing away the refuse.

Having pledged to leave no mark on the natural environment, other than collecting trash and taking a few photographs, the participants went about their task. Some of the tourists visiting the area that day joined in and helped clean up the climbing path as well.

THK LIAONING employees will continue to seek out opportunities to help advance the cause of environmental preservation.



Participants in the mountainside clean-up project.

### In-school lessons

THK presents in-school lessons designed to provide a realistic understanding of the manufacture of components that support Japanese industry and of the importance of *monozukuri*. In 2012 lessons were presented at eight high schools located all over Japan. Some of the lessons were combined with tours of THK manufacturing facilities, providing students with a firm grasp of what manufacturing is all about.



A page from the school newspaper at Matsuzaka Technical High School in Mie Prefecture. Inset: (from left) THK Application Engineering Department employee Rie Nagatomo and MIE Plant employee Masami Fujita.

**Lending a hand at the Nagaoka Festival**

Six employees from THK's NAGAOKA Branch volunteered to serve as shrine bearers in the 2012 Nagaoka Festival, held on the first three days of August. The festival is renowned for its magnificent fireworks displays, which were presented last year on August 2 and 3.

The Nagaoka Festival has been held annually since 1946, in part to commemorate the air raid on Nagaoka that occurred on August 1, 1945. The shrine bearers from the NAGAOKA Branch, who were invited to participate by neighborhood associations in the city of Nagaoka, were happy to get some much-needed physical exercise and enjoyed their role in the festival.

On the day the NAGAOKA Branch employees took their turn, about 50,000 spectators were on hand; total attendance at the three-day festival was about 90,000. The crowd was in high spirits as portable shrines from neighborhoods in central Nagaoka were paraded about. The experience left the THK volunteers with a vivid sense of the historical importance of the festival and the enthusiasm it generates, as well as a satisfying feeling of

solidarity with the people of the community. The NAGAOKA Branch and its employees will continue to seek out opportunities to make a positive impact on the local society.

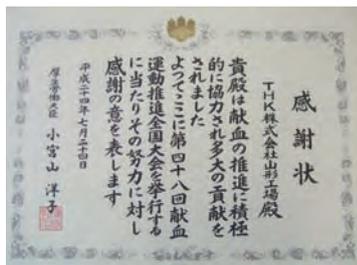


Festival participants from the NAGAOKA Branch.

**YAMAGATA Plant honored for giving blood**

In August 2012 THK's YAMAGATA Plant was awarded a ministerial commendation and a certificate of appreciation for its blood drives.

The YAMAGATA Plant has held blood drives ever since it was established in 1991, soliciting individual donations of 200 or 400 milliliters from volunteer donors twice a year. In recognition of these efforts, the plant received a commendation from the Minister of Health, Labour and Welfare as well as a certificate of appreciation from the city of Higashine.



Commendation from the Minister of Health, Labour and Welfare.

**YAMAGATA Plant certified as a Volunteer Fire Corps site**

In February 2012 the YAMAGATA Plant was certified by the Fire and Disaster Management Agency as a Volunteer Fire Corps business site. Certification was awarded in recognition of the fact that approximately 80 of the plant's 650 employees have registered with local fire departments and pledged their assistance, for compensation, in the event of a fire, flood, blizzard, or other emergency.

The actual duties involved, which vary among the various local fire departments, include helping to put out fires, search for missing people, prevent waterways from flooding during heavy rains, and take part in preliminary efforts to put out wildfires, and participating in training exercises and demonstrations.

Last year YAMAGATA Plant employees were called away to assist in fire department activities 7 times while on the job and 44 times while off the job. THK will continue to support efforts by individual employees to serve their communities and develop programs to facilitate local contributions by the company as a whole.



Volunteer Fire Corps business site certificate.

**THK LIAONING supports education for the disabled**

In February 2013 THK LIAONING collected used clothes and school supplies and donated them to a school for children with disabilities. The school is operated by Gao Shuzhen, who was honored in 2012 as one of 10 people who have made a special contribution to Chinese society. Gao started a school in her own rural home in April 1998 to educate disabled children who were unable to attend ordinary schools. In the intervening years about 100 children have received tuition-free instruction at the school.

In a heartfelt show of support, THK LIAONING collected more than 200 items of clothing and around 1,000 books and 2,000 pencils. All these supplies were donated to Gao's school, as a way of providing hope and happiness to children with disabilities.



THK LIAONING employees with boxes containing donations of used clothing.

# » Environmental management

## Basic environmental policy

THK has contributed to social and economic progress through its pioneering role as a manufacturer of linear motion systems and machine components. THK recognizes that businesses have a vital responsibility to help maintain a healthy global environment for the benefit of

future generations. Accordingly, THK has undertaken a broad range of initiatives to steadily reduce its environmental impact and preserve and improve the natural environment.

### The THK Group's basic environmental policy

(revised June 3, 2013)

1. Preserving the environment is one of our most important tasks. We will strive to accurately determine the environmental impact of our products, services, and overall business activities and to ensure that every unit within the Group establishes and observes appropriate environmental targets.
2. We will abide by all laws and regulations concerning environmental matters and establish and observe voluntary environmental standards, reviewing these whenever necessary in pursuit of more efficient and effective environmental management.
3. We will continually strive to develop products that help reduce environmental burdens.
4. We will continually strive to reduce our overall energy usage as well as specific energy consumption and reduce our greenhouse-gas emissions.
5. We will continually conserve and recycle resources, primarily by reducing and recycling waste from our manufacturing divisions, and strive to prevent environmental pollution.
6. To extend our environmental efforts throughout the entire Group, we will assist and help guide efforts by affiliates and partner businesses and cooperate and collaborate with the communities where THK conducts business.
7. This basic environmental policy will be communicated to every division in the THK Group through education, training, and other means of raising environmental awareness. We will disclose relevant environmental data to parties both within and outside the Group in a timely manner.

### ■ Environmental initiatives and objectives

Initiative	Objectives	Principal efforts
Conserving energy and inhibiting global warming	Reduce greenhouse-gas emissions	(1) Energy diagnostics (2) Energy conservation (3) Clean energy
Conserving resources and achieving zero emissions	Reduce environmental impact, achieve zero emissions	(1) Input controls on materials, parts, and supplies (2) Controls on emissions and waste (3) Reuse and recycling of resources
Controlling hazardous substances	Eliminate or restrict hazardous substances in production and distribution	(1) Replacement of PRTR-designated substances (2) Identification and replacement of substances subject to the REACH regulation (3) Green purchasing
Providing environmentally benign products and services	Develop products and services based on life-cycle assessments	(1) Expansion of Caged Ball product line (2) Efforts to extend service life and maintenance-free periods

# » Environmental management system

## Overview

THK production sites in Japan and overseas continue to acquire ISO 14001 certification for environmental management. The THK INTECHS MISHIMA and SENDAI Plants became certified in 2012. Both plants conducted training sessions for internal auditors, prepared environmental management manuals, and fulfilled other requirements to earn this distinction. Acquisition of certification will help make employees more aware of environmental issues and prompt further action to address them.

Because environmental management is an endeavor extending throughout the THK Group, the Risk Management Division's Environmental Management Department, located at THK Headquarters, coordinates environment-related efforts undertaken by THK plants, offices, and distribution facilities.

In 2012 THK achieved two of its three primary environmental objectives for the year, meeting numerical targets for conservation of resources, progress toward zero emissions (reduction of the volume of end waste), and reduction of PRTR-designated hazardous substances. The 2012 targets for energy conservation and reduction of CO<sub>2</sub> emissions, however, were not met.

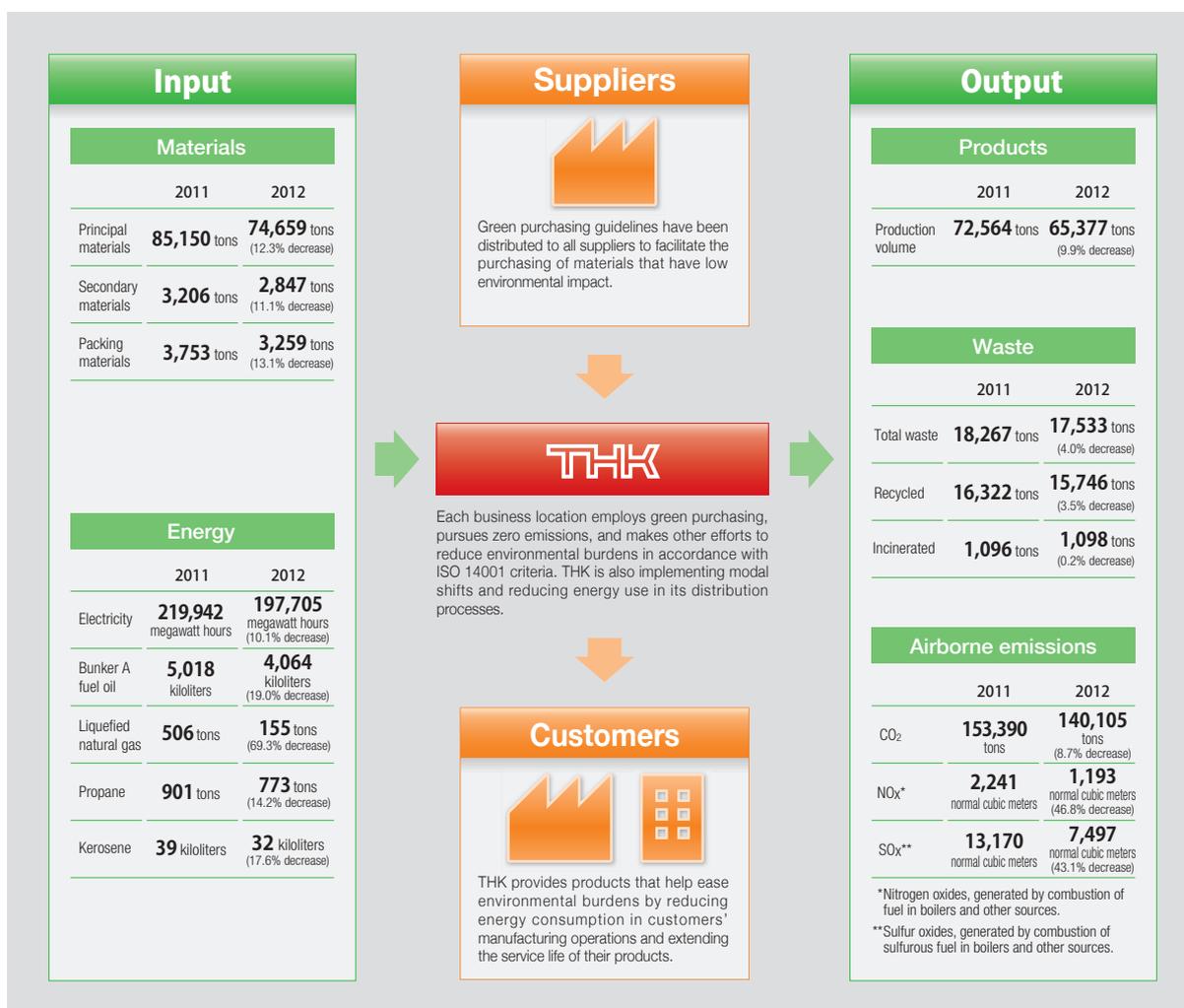
### ■ ISO 14001 certified facilities

Facility	Date certified	Certifying body
YAMAGATA Plant	Date renewed: Dec. 17, 2010	JQA
KOFU Plant		
YAMAGUCHI Plant		
MIE Plant		
GIFU Plant		
THK RHYTHM NORTH AMERICA	Jun. 13, 2001	SQA
THK RHYTHM Headquarters & HAMAMATSU Plant	Dec. 20, 2001	JIA
THK RHYTHM KYUSHU	Dec. 20, 2002	JIA
TMA (USA)	Jul. 14, 2003	QMI
TME (Europe)	Feb. 3, 2004	AFAQ
THK NIIGATA	Oct. 21, 2005	JQA
THK RHYTHM INASA Plant	Dec. 20, 2006	JIA
THK WUXI (China)	Jan. 7, 2008	CQC
DALIAN THK (China)	Dec. 18, 2008	TUV
THK LIAONING (China)	Jan. 12, 2010	TUV
THK INTECHS MISHIMA & SENDAI Plants	Mar. 21, 2013	ClassNK

### ■ THK's environmental targets

No.	Task	Fiscal 2013 targets	Targets to be achieved by 2015
1	Conserving energy and inhibiting global warming	<p>Reduce basic-unit CO<sub>2</sub> emissions to 1.08 kilograms per ¥1,000. (1% lower than in 2012) 2012 target was 1.09; 1.11 achieved (target not met).</p> <p><b>Major efforts in 2013</b> (1) More energy-efficient heating and air-conditioning systems (2) Conversion to energy-efficient LED lighting (3) Continuation of all-out effort to reduce power consumption</p>	<p>Reduce basic-unit CO<sub>2</sub> emissions by 1%. Baseline: 1.10 tons per ¥1 million</p>
2	Conserving resources and achieving zero emissions	<p>Keep emissions rate under 0.50%. 2012 target was a rate under 0.50%; 0.48% achieved (target met).</p> <p><b>Major efforts in 2013</b> (1) Recycling of grinding materials (2) Recycling of plastic waste (3) Reduction of nonindustrial waste</p>	<p>Maintain zero emissions—less than 0.5% of waste undergoes final disposal.</p>
3	Controlling hazardous substances	<p>Use 49,961 kilograms or less of PRTR-designated substances. 2012 target was 52,626 kilograms; 51,506 kilograms achieved (target met).</p> <p><b>Major efforts in 2013</b> (1) Controlled usage of fuel-oil-powered equipment (2) Green purchasing (3) Reduced use of solvents, use of non-solvent alternatives</p>	<p>Reduce annual volume of PRTR-designated substances by 3%. Baseline: 54,254 kg</p>

# » Environmental impact: The big picture



## ■ Environmental conservation: Costs

(¥ million per year)

Type	Investment	Cost	Principal efforts
1. Business costs			
Pollution controls	8.9	19.6	Monitoring air and water quality, maintaining scrubbers and septic tanks
Global environmental conservation	5.6	356.5	Use of energy-efficient fixtures and equipment, heat-resistant roof coating
Recycling	1.7	93.6	Disposal and recycling of waste, maintaining equipment
2. Upstream and downstream costs			
	0.0	11.0	Green purchasing
3. Management			
	3.7	166.5	Acquisition of ISO certification, reduction of energy usage, management of chemical substances
4. Research and development			
	157.9	184.0	
5. Community activities			
	0.0	7.1	Planting and beautification, informational initiatives
6. Repairing environmental damage			
	0.0	0.0	
<b>Total</b>	<b>177.8</b>	<b>838.2</b>	

Notes: 1. The figures above are based on data from THK's five main plants in Japan: YAMAGATA, KOFU, GIFU, MIE, and YAMAGUCHI; other THK Group plants in Japan: THK NIIGATA, two THK INTECHS plants, NIPPON SLIDE, THK RHYTHM, and THK RHYTHM KYUSHU; and seven THK plants outside Japan: TMA (USA), TME (France), DALIAN THK (China), THK WUXI (China), THK LIAONING (China), TMV (Vietnam), and TMI (Ireland).

2. Figures on nitrogen oxide and sulfur oxide emissions apply only to THK's five plants in Japan.

# » Conservation of resources and zero emissions

## Status of current efforts

THK sets waste-reduction targets based on its emission rate—the volume of waste undergoing final disposal, expressed as a percentage of the total volume of waste generated. The 2012 target was a rate below 0.50%. For the second consecutive year, THK reached its target, achieving an emission rate of 0.48%. Total waste generated in 2012 amounted to 7,496 tons, slightly more than in 2011, while the 36 tons of waste undergoing final disposal by burial or incineration was exactly the same volume as in 2011. THK was once again able to meet its target thanks to improved techniques for separating waste materials, implementation of thermal recycling, and a reduction in the amount of plastic and rubber discarded.

Through efforts such as recycling discarded grinding materials and plastic and reducing the volume of non-industrial waste, THK will once again record an emission rate of less than 0.50% in 2013.

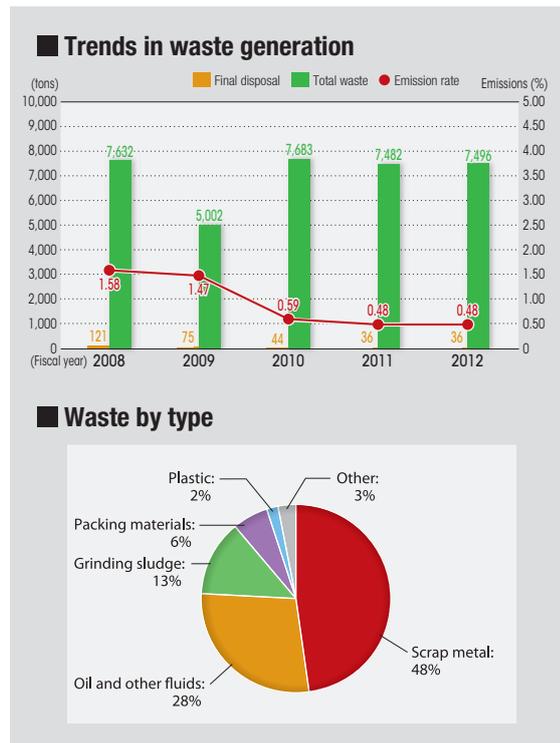
and, amid the continual upgrading of such devices, is expected to increase even more in the future.

TMA used to simply store old computers, printers, and the like in a warehouse, but the company now works with a recycling contractor in the state of Ohio to ensure that materials such as the substrates used in control panels, which used to be discarded as nonindustrial waste, are recovered and recycled.

In terms of energy savings, the volume of materials recycled to date is equivalent to 5,321 pounds (2,416 kilograms) of CO<sub>2</sub> emissions or 902 gallons (3,428 liters) of gasoline.



Sorting discarded devices in preparation for recycling.



## Recycling electronics

As a way of reducing waste, THK Manufacturing of America has begun recycling old computers, printers, production machinery control panels, and other devices. The volume of discarded electronic devices has more than doubled in the United States over the past decade

## THK LIAONING honored for waste management

THK LIAONING was honored by the city of Dalian in 2012 as a leader in solid-waste management. The company scored higher than any other business in Dalian's Jinzhou district in environmental inspections conducted by the city for the purpose of improving solid-waste management. The head of THK LIAONING's Materials Section was honored as well.

THK LIAONING's Environmental Safety Section and Corporate Planning Department routinely monitor the status of the company's waste emissions, promptly addressing any problems that arise in cooperation with the departments involved. The city-sponsored environmental inspection was unannounced, but the company's environmental management system nevertheless received a highly positive review.

The honor conferred on THK LIAONING has provided encouragement to its employees as well as a renewed awareness of environmental issues. THK LIAONING will live up to this honor by continuing its efforts to protect the environment.



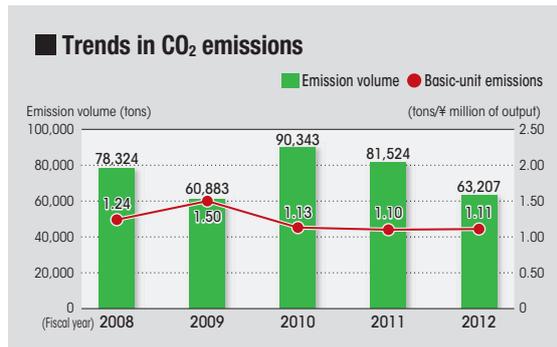
The staff of THK LIAONING's award-winning Materials Section.

# » Conserving energy and combating global warming

## CO<sub>2</sub> emissions

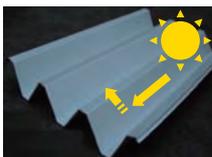
THK's targets for reducing CO<sub>2</sub> emissions are expressed in basic units (CO<sub>2</sub> emissions divided by the value of goods produced). The 2012 target was 1.09, but the actual figure was 1.11, which exceeded the target by roughly 2%. In terms of absolute quantities, however, THK reduced CO<sub>2</sub> emissions from 81,524 tons in 2011 to 63,207 tons in 2012, a decrease of roughly 22.5%.

In 2012 THK had inverters installed in its heating and cooling equipment, incorporated energy-efficient lighting fixtures and other equipment, and introduced compressors powered by waste heat. A variety of measures were enacted to curb energy consumption, including reducing standby power consumption by production machines and increasing the efficiency of heating and cooling systems through intermittent operation and careful management of indoor temperatures. Due to the impact of decreased production, however, these efforts were not sufficient to lower CO<sub>2</sub> emissions to the target level.



## Heat-resistant roof coating

In July and August a heat-resistant coating was applied to the 21,600-square-meter corrugated metal roof of Building 1 at THK's YAMAGATA Plant. The result was an 8.1°C decrease in the roof's surface temperature and a 3.5°C decrease below the roof. Reducing the amount of heat transmitted by the roof both improved the work environment inside the facility and reduced energy consumption by lessening the load on the building's air-conditioning system.



Heat-resistant coating.



Coating the roof. The white substance is an anticorrosive base coat.

The YAMAGATA Plant will continue to conserve energy and reduce both CO<sub>2</sub> emissions and the overall environmental impact of its operations.

## Inverter-equipped pumps

In the past, all 15 coolant pumps at the YAMAGUCHI Plant's Building 1 were kept running at full power regardless of the number of production machines that were actually in operation and being supplied with coolant, an arrangement that consumed 91,170 kilowatt-hours of electricity each month.

The amount of coolant required constantly varies with the number of machines in operation. To reduce power consumption by creating a system that activates only those pumps needed to provide the required volume of coolant, the pump motors were equipped with inverters. As a result, power consumption declined to 49,837 kilowatt-hours of electricity per month—a 45% decrease.



Coolant pump motors.



Inverter control panels.

## Acclaimed for energy management

In February 2013, as part of the Chugoku district's fiscal 2012 Energy Conservation Month, THK's YAMAGUCHI Plant was honored by the director of the Chugoku Bureau of Economy, Trade and Industry for excellence in the area of energy management.

The honor was based primarily on two significant achievements. The first was an energy-saving initiative involving the installation of timers on air-conditioning units, enabling their motors to run for only 10 minutes per hour. The second was the conversion of the plant's interior lighting system from reliance on 400-watt mercury-vapor lamps to high-efficiency 270-watt fixtures, which resulted in a 32% reduction in power consumption and a 20% increase in illumination.



YAMAGUCHI Plant Manager Katsunori Yamamura with the plant's commendation for excellence in energy management.

### Plant manager honored

In February 2013 the Japan Electric Association Chubu Branch's committee on efficient power usage awarded a commendation to THK RHYTHM executive and HAMAMATSU Plant Manager Yokota, as a person of merit in the area of energy management.

The award ceremony, held in conjunction with the Tokai district's fiscal 2012 Energy Conservation Month, took place in Nagoya. The annual event, sponsored by the Energy Conservation Center of Japan, is held to honor individuals and businesses for particularly notable contributions to the cause of energy conservation. The year before, THK RHYTHM's GOKYU Plant was recognized by the Kanto Bureau of Economy, Trade and Industry for its efforts in fiscal 2011. The 2012 award conferred on Yokota reflects THK RHYTHM's continuing long-term efforts to conserve energy.



THK RHYTHM executive and HAMAMATSU Plant Manager Yokota receives his award.

### Green curtains

In an effort to reduce summertime power consumption, in 2011 the office building at THK's MIE Plant was equipped with "green curtains" consisting of shade plants and vines. The result was a 16% decrease in power usage compared to the previous year. In 2012 the project was extended to the plant's production facilities, where green curtains totaling about 100 meters in combined length were created in five locations. Morning glory vines, bitter melon and cucumber plants, and other types of vegetation planted by employees in March 2012 grew to two or three meters in length by midsummer, yielding a 9.5% reduction in power consumption compared to 2011. The MIE Plant's green curtains were featured in a contest sponsored by the city of Matsuzaka, where the plant is located, and received coverage in the local newspaper.



MIE Plant office building's green curtain.



Bitter melon seedlings.

### Reducing stand-by and peak power usage

At THK NIIGATA, concern arose over the fact that coolant pumps and other peripheral equipment stayed on even when production machines were in stand-by mode. To reduce power consumption to the minimum possible level, the system was reconfigured so that peripheral equipment is switched off by a timer after production machines stop running. This innovation has greatly reduced power consumption, especially at night and on off days, providing energy savings of 82,600 kilowatt-hours per year.

In addition, THK NIIGATA has begun reducing its power demand through measures such as using its own generators during the summer months. This effort has cut the company's peak power usage by 15%.



Electric power generator used at THK NIIGATA.

### Energy-saving lighting

At THK Manufacturing of Ireland, 30 incandescent light fixtures inside the plant were replaced with 180 T5 fluorescent lights. The result was a 30% decrease in power consumption and a major increase in illumination, significantly improving the work environment.

In addition, motion-sensor-activated lighting was installed in seven locations, including the reception area, corridors, and bathrooms. This enables lighting to be activated only when it's needed and ensures that no energy is wasted when someone forgets to turn off the lights.



Energy-efficient lighting at TMI.

### Individually timed air-conditioners

At THK's GIFU Plant, a separate timer was installed on each of the plant's air-conditioning units, enabling plant officials to individually manage the air-conditioning hours for each area of the plant. In the past, all the air-conditioning units for various areas were operated under a centralized control scheme. The use of individual timers makes it possible to automatically have each unit switched on or off as needed.

As a result, overall air-conditioning time has been reduced by 42 hours per day. The ability to switch units on or off automatically has led to monthly energy savings of about 43,000 kilowatt-hours, or approximately 240 tons of CO<sub>2</sub> emissions.

# » Management of hazardous substances

## Green purchasing training

In 2011 THK conducted green purchasing training sessions at 11 business locations in Japan, including its plants and head office. The duties of each division and department were explained and instruction was provided in the use of software for managing chemical substances. In 2012 green purchasing training was begun at THK's overseas production facilities.

As laws and regulations concerning chemical substances become increasingly strict in Japan and elsewhere and the task of managing required data becomes increasingly diverse and complex, THK is faced with the need for a uniform worldwide green purchasing system. The overseas training sessions provide opportunities for both local employees and those from Japan to learn about operations and conditions in each respective country, understand the significance of green purchasing, and ask questions and offer suggestions.



Green purchasing seminar at THK LIAONING.

## Poster campaign

To raise awareness of environmental issues at THK LIAONING, employees were invited to submit posters aimed at boosting efforts to reduce waste emissions, protect the environment, and observe environmental rules and regulations. Out of 41 posters submitted, 5 were selected as the best entries. The employees who created the winning posters were presented with awards.

Virtually every entry revealed a distinctive personal touch. Many posters featured endearing mascots calling for action on environmental issues, and some of them could easily have passed for the work of professionals.

THK LIAONING had previously held poster campaigns concerned with product quality and safety. This campaign appealed to the company's many younger employees, in particular, and succeeded in focusing their attention on environmental issues. It will pave the way for further efforts to raise environmental awareness.



Employee-made environmental posters on display.



The award-winning employees.

## Reducing PRTR emissions

At the GIFU Plant, materials used in THK products undergo a cleaning process. In the past the cleaning liquid was discarded after use, but each year the plant now recycles and reuses 4.6 kiloliters of used cleaning liquid, which is half the amount of fresh liquid used.

The Pollutant Release and Transfer Register system is a legal regimen established to enable control over and reporting of emissions of designated chemical substances. To reduce emissions of PRTR-designated substances, the GIFU Plant switched from petroleum-based fuels to propane gas to power the plant's two forklifts, resulting in a 12% reduction in xylene emissions—which account for 38% of total PRTR-designated emissions—compared to the previous year.

The GIFU Plant will continue to introduce new measures, including the use of water-soluble coating materials, to reduce its emissions of PRTR-designated substances.



Propane-powered forklift.

## PRTR-designated substances

In order to reduce the use of hazardous substances—substances that can adversely affect human health and damage ecosystems—THK is steadily decreasing its use of chemical substances subject to the PRTR Law (formally known as the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture), with the goal of lowering the volume of these substances by 3% annually. This target was achieved and surpassed in 2012: total volume for the year was 51,506 kilograms, 2,748 kilograms less than the 2011 total of 54,254 kilograms, for a decrease of approximately 5%. The reduction is attributable to an all-out drive to cut back on the use of fuel oil in co-generation systems, part of an overall effort to reduce electric power consumption.

### ■ Substances subject to the PRTR Law (kg)

Substance	Amount used	Airborne emissions
Xylene	2,753	26
Toluene	6,336	2,479
Ethyl benzene	917	13
Benzene	227	28
Methyl naphthalene	37,492	169
Other	3,781	-
<b>Total</b>	<b>51,506</b>	<b>2,715</b>

# » Green distribution

## Overview

THK's Distribution Division, which operates facilities in various locations, continues to practice green distribution in an effort to reduce environmental impact throughout the distribution process. THK is implementing modal shifts, consolidating truck shipments, and pursuing a variety of other initiatives in accordance with two key principles of green distribution: reducing CO<sub>2</sub> emissions and making transport operations more efficient.



Meeting to discuss green distribution.

### Reducing transport emissions

THK's KOFU Plant has collaborated with its distribution facility to ensure that the facility is informed of the plant's production schedule well in advance, which permits more precise and accurate shipping schedules. This arrangement has enabled large trucks to be replaced with mid-size trucks on regular transport routes, resulting in a 6% reduction in basic-unit CO<sub>2</sub> emissions in 2012, compared to the previous year.

### Consolidating deliveries

The CHUBU Distribution Center used to dispatch delivery trucks to customers within its delivery area on a daily basis. In an effort to make its shipping system more efficient, the facility negotiated with customers and obtained approval to limit deliveries to Mondays, Wednesdays, and Fridays. This resulted in an approximately 40% reduction in transport-generated CO<sub>2</sub> emissions.

### Shortening shipping distances

THK has arranged for finished goods from all THK production facilities in China to be shipped to a single destination, the port of Nagoya, eliminating shipments to Osaka. This has decreased the overland shipping distance to the CHUBU Distribution Center, resulting in an approximately 30% reduction in transport-generated CO<sub>2</sub> emissions.

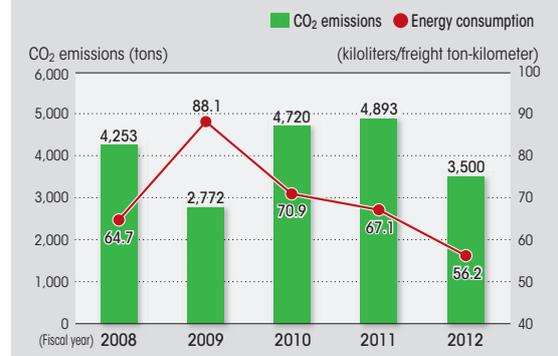


Truck carrying cargo from the port of Nagoya.

## Transport-related CO<sub>2</sub> emissions

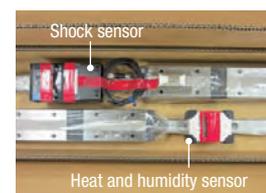
Due to a decrease in transport volume, transport-related CO<sub>2</sub> emissions declined from 4,893 tons in 2011 to 3,500 tons in 2012, a major decrease of 1,393 tons, or approximately 28%. In addition, the implementation of modal shifts and introduction of returnable shipping containers, along with improved load ratios, resulted in a decrease in basic-unit energy consumption (energy consumption divided by freight ton-kilometers) from 67.1 to 56.2, an approximately 16% reduction—and a major improvement.

### Transport-related CO<sub>2</sub> emissions and basic-unit energy consumption (THK only)



## Post-shipment quality and safety

THK has improved its product packing procedures to ensure that its energy-saving linear motion systems and other products reach customers safely and securely. As part of this effort, sample products en route between distribution facilities are monitored by means of shock sensors and heat and humidity sensors to determine whether products incur damage due to the method of transport or while in transit. The findings have prompted improvements, including the use of rust-preventing lubricants and shock-absorbent packing and packaging materials. Because THK has selected recyclable materials that protect products from damage while exerting little environmental impact, this effort has also helped reduce waste.



Sensors used to monitor sample products.

## Third-party opinion

The THK Group's corporate philosophy is "providing innovative products to the world and generating new trends to contribute to creation of an affluent society." From the time of its establishment, THK has supplied customers in Japan and elsewhere with the linear motion system known to the world as the LM Guide.

After I was asked to write a third-party opinion for this year's *CSR Report*, I read through the reports for the past five years and explored the THK website. I once chaired a Japan Machine Tool Builders' Association committee that studied the European machine manufacturing industry, and I was also in charge of research planning officer for the Tokyo Institute of Technology Research Strategy Office. In both positions I had occasion to read many CSR reports from Japan and other countries. Judging from experience, it seems to me that THK's CSR reports are designed to be read by an unusually broad range of stakeholders.

In this report, business pursuits derived from THK's corporate philosophy are organized into three major categories, covered in sections entitled "Management system", "Involvement in society", and "Harmony with the environment". To begin with, I'll discuss some positive impressions of the CSR efforts examined in the report.

The THK Group has a firmly rooted corporate culture dedicated to coexistence and mutual prosperity, and this is reflected in its specific initiatives. This is the source of the group's ability to compete in international markets, and it's unquestionably the driving force behind THK's success in establishing a unified worldwide production and sales system, as part of its global expansion initiative.

In keeping with the philosophy of providing innovative products to the world, THK has succeeded in developing new products and new areas of business while pursuing a strategic campaign to advance into new fields. Some of these successful efforts are covered in this report's two-part feature section, under the headings "Creating the fu-

ture with THK technology" and "Leading safer lives with THK technology."

THK attaches great importance to risk management, having formulated business continuity plans early on, along with systems to put its plans into action. I admire THK's determination to honor its responsibility to keep supplying the world with its products.

Finally, in the interest of "harmony with the environment," THK practices environmental management and provides quantitative data to back up its efforts. When I visited THK's YAMAGUCHI Plant in 2010, I observed firsthand that not only do the products help conserve resources and energy, the production process itself is designed to minimize the environmental impact. THK is to be commended for its strong sense of responsibility regarding environmental conservation.

As a third-party commentator, I would also like to point out something that should be addressed in the future. Generally speaking, CSR-related efforts should be conducted in a systematic manner, based on the plan-do-check-act method. This report devotes varying levels of coverage to different efforts and topics, such as compliance and corporate governance, and it does discuss planning, in the form of setting specific targets, as well as doing, in the creation of systems and the implementation of specific initiatives. There is, however, no explicit discussion of checking—evaluations of these initiatives—or acting, which could take the form of follow-up improvements. Coverage of these aspects would help THK's stakeholders to better understand the strategies and tactics it uses to meet its targets, as well as the results of its efforts. I hope to see these topics included in the future.

In closing, I hope that the THK Group continues to work together to create innovative new products and make them available in a timely manner. I truly hope THK succeeds in contributing to creation of an affluent society.

### Hidenori Shinno

Professor Dr.-Eng. and Deputy Director, Precision and Intelligence Laboratory  
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#### Curriculum Vitae:

1979: Bachelor of Eng., Department of Mechanical Engineering for Production, Tokyo Institute of Technology  
1984: Dr.-Eng., Doctorial Course, Graduate School of Science and Engineering, Tokyo Institute of Technology  
1984: Research Scientist, Mechanical Engineering Laboratory, Agency of Industrial Science and Technology, Ministry of International Trade and Industry  
1987: Associate Professor, Department of Mechanical Engineering for Production, Tokyo Institute of Technology  
1997: Associate Professor, Ultra-fine Machining Division, Department of Precision Machine Devices Precision and Intelligence Laboratory, Tokyo Institute of Technology  
1999-Present: Professor, Ultra-fine Machining Division, Department of Precision Machine Devices Precision and Intelligence Laboratory, Tokyo Institute of Technology  
2001-2003: Research Planning Officer, Research Strategy Office, Tokyo Institute of Technology  
2001-2004: Senior Researcher, National Institute of Advanced Industrial Science and Technology  
2004-2005, 2009-2010: Chair, Department of Mechano-Micro Engineering, Interdisciplinary Graduate School of Science and Technology, Tokyo Institute of Technology  
2012 -Present: Deputy Director, Precision and Intelligence Laboratory, Tokyo Institute of Technology

**Research Field:** Research & Development of Ultra-precision Machine Tools and Ultra-precision Measuring Systems, Design Methodology of Machine Tools, Ultra-precision Machining

**Present Activities in Academic Societies:** Member, Science Council of Japan, Chairperson of Organizing Committee of the 16th International Machine Tool Engineers' Conference (The 16th IMEC), JMTBA, Chair of JSME RC257 Research Committee on Innovative Machine Tool Engineering, Journal of Engineering Design (UK) Editorial Board Member, The Board of Executive Directors, The Board of Executive Directors of FA Foundation, etc.

#### Past Activities in Academic Societies:

Chair of JSME Manufacturing & Machine Tool Division, The Board of JSME Executive Directors, Japan Society of Mechanical Engineers, Chair of JMTBA Committee on Strategies of European Machine Industry, etc.



## Postscript

It has been our pleasure to present this, the seventh annual *THK CSR Report*.

To illustrate ways in which THK products play a vital role in our immediate surroundings, the feature section once again presents comments by customers who are utilizing seismic isolation systems for protection against potential earthquake damage, highlighting the importance of being prepared for a major earthquake. This year's feature section also offers a look at ways in which our products are used in the field of robotics, revealing another aspect of THK's attitude toward its social responsibilities.

As in other years, the report also includes sections covering THK's corporate governance and compliance systems, positive relationships with employees and local communities, and efforts to alleviate global warming.

Wherever possible we have included remarks by people who are, in one way or another, involved with THK.

The THK Group, working together, will continue to take positive action to honor its corporate social responsibilities and will take pride in presenting the results to you, the reader. We're very interested in your views and impressions of this report. Your comments will provide valuable feedback that will guide our future CSR efforts and help us in preparing our next report. Please take the time to fill out the enclosed questionnaire.

Thank you.

**CSR Report Project Secretariat**

P.S. Our next report is scheduled for September 2014.

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