

### THK product development as a contributor to industrial development

THK's business philosophy is based on the idea of "providing innovative products to the world and generating new trends to contribute to the creation of an affluent society." This thinking has guided our drive to be a creative development-driven enterprise, enabling us to develop a varied stream of products since our establishment in 1971. Besides contributing to industrial development, these efforts have also resulted in THK steadily accumulating technical expertise that has been a primary source of growth.

THK developed the world's first linear motion (LM) guide. For the first ten years after we started production and sale of these products in 1972, LM guides were primarily used in machine tools. During this period we developed a series of new products to fulfill our customers' needs for increased precision and lower cost. In the 1990s, other industries such as manufacturers of semiconductor production equipment and industrial robots began to adopt THK products. We responded by developing various new products that were optimized for customer-specific applications and operating environments in these sectors.

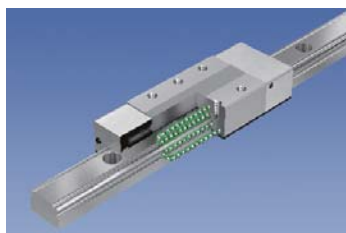
In 1996, we pioneered the development of the world's first-ever LM guide using caged ball technology, an advance

that enabled LM guides to operate without maintenance for much longer periods. Although such technology was already common in rotary bearings at the time, the problem was the need to cope with both linear and circular movements. This made it extremely difficult to develop ball cages with sufficient durability to move along straight lines or curves. THK successfully took steps to overcome this issue. LM guides based on caged ball technology not only provide the benefit of long-term maintenance-free use, but have also made a significant contribution to the development of high-speed, low-noise industrial machinery with longer productive lives, particularly in the machine tool and semiconductor production equipment sectors. The advance also paved the way for the development of LM guides for additional applications. Today, we continue to develop products that use caged ball technology. Besides LM guides, this range has expanded to include ball screws, ball splines and hybrid units.

### Product development in fiscal 2009: realizing the "cubic E" concept

Leveraging creative ideas and its proprietary technologies, the main theme of THK's current R&D activities is the "cubic E" concept, which embraces the three keywords Ecological, Economical and Endless. Based on this theme, we continued

## MAJOR NEW PRODUCTS DEVELOPED IN FISCAL 2009



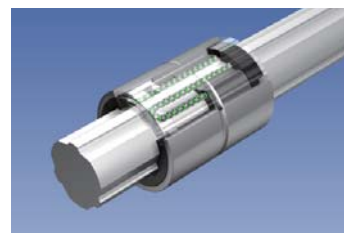
#### Ultra-Heavy Load/High Rigidity LM Guides: SVR/SVS

Extending THK's range of LM guides based on caged ball technology, we developed the ultra-heavy load/high strength SVR/SVS-type guide models. In addition to the benefits of an ultra-heavy load and high strength, the mounting of a newly developed protector helps to improve dust resistance capabilities therefore boosting the long-term performance of LM guides.



#### Miniature Ball Splines: LT-X

With the same dimensions as the conventional linear bush, this product significantly simplifies the replacement process. Distinguished by their single shaft characteristics, ball splines contribute to substantial equipment space savings (80% cubic capacity of conventional products) as well as a long operating life. Furthermore, in utilizing highly corrosion-resistant stainless steel, this product is suitable for use in clean environments.



#### Caged Ball Splines: SLS/SLF

THK has developed the world's first ball splines that incorporate caged ball technologies. In addition to further enhancing smooth linear motion, these models help to extend operating life, reduce noise and realize longer maintenance free periods.

throughout fiscal 2009 to speed up development with the aim of extending the range of applications for our technologies while at the same time seeking to develop highly original and attractive products for launch five or ten years in the future.

Major achievements in fiscal 2009 included the development of products for a number of original applications.

### Building an R&D system for the next generation

Organization changes were implemented within the Engineering Division in June 2009 to boost development efficiency and further promote development of new applications for THK technology. A new unit, the Business Development Department, was established to target the development of new business areas. This department works alongside the Engineering and Development Department, which has traditionally overseen all development related to vital machinery components and hybrid units. With a particular focus on auto parts, by separating the Company's development structure on an individual automobile structure and mechanism basis, THK has established a framework that enables efficient development. In a separate move, the Application Engineering Development Department was also added to the Engineering Division to provide timely technical support in line with the needs of customers.

The Technology Center, the Tokyo-based facility that

oversees all of THK's R&D activities, currently employs approximately 200 staff (including the IMT Division, which was newly established to expand the hybrid unit business).

### Fiscal 2010 policies and programs

Based on the revamped R&D system, we plan to focus our efforts in fiscal 2010 on the efficient development of new products with the aim of expanding applications for THK technology further. Specifically, we will pursue themes such as customer convenience while promoting designs that incorporate the potential for enhanced productivity and quality. Moreover, by conducting basic and applied development programs in parallel, we will focus on developing products that can quickly generate commercial returns. Complementing these endeavors, and while strengthening our global development capabilities, we set up the Group's first overseas R&D division within THK (CHINA) CO., LTD. As we move forward, we will actively develop new products that address local customer needs.



#### High Load/High Speed Caged Ball Screws: SBKH

The SBKH ball screw is a high-load model that offers approximately twice the dynamic load rating of conventional products. In enabling application at speeds as high as 92 meters per minute, this ball screw is suitable as a replacement for oil hydraulic cylinders. As an alternative to hydraulically powered products, the SBKH model, including ball screws that use electric power, is both environmentally friendly and energy efficient.



#### Actuators for Clean Room: CTH

The CTH model is an actuator that realizes superior motion performance while facilitating extended maintenance-free periods. In utilizing a tool mechanism developed by the Company together with full cover, this actuator has achieved ISO 14644-1 class 4 cleanliness during high-speed drive of two meters per second. Looking ahead, plans are in place to increase use in semiconductor production equipment as well as other applications including rechargeable battery production lines, where substantial market expansion is expected.



#### Linear Motor Actuators: KLM12

With a height of only 13.5 millimeters, the KLM12 model is a highly compact actuator. Despite its compact size, when used with linear motors the KLM12 model offers a maximum stroke of 300 millimeters. Enabling loads of up to one kilogram, expectations are high for wide ranging applications including assembly and transportation equipment.