

RESEARCH AND DEVELOPMENT

Guided by the business philosophy of “providing innovative products to the world and generating new trends to contribute to the creation of an affluent society,” THK continually strives to create original products as a creative development-driven enterprise.

A Global R&D System for the Next Generation

The major task force of the Group’s R&D activities, primarily at the Technology Center (Tokyo) established as the R&D base for new products, is actively engaged in the research and development of products for use in the mechatronics, consumer goods, transportation equipment, and core LM systems markets. Drawing on its core linear motion system technologies and know-how, THK is ramping up its product development activities in fields that are close to consumer goods including seismic isolation and damping systems, medical equipment, aircraft, renewable energy, and robotics in a bid to expand into new fields.

Turning to activities outside Japan, THK established its first overseas R&D facility in China in 2010. Later, the Company opened a designated R&D Center in 2012. Together with the R&D Division of Germany-based THK RHYTHM AUTOMOTIVE, a subsidiary newly included in THK’s scope of consolidation in 2015, the THK Group is working to develop products that are tailored to increasingly diverse global needs.

Product Development in fiscal 2015: Realizing the “cubic E” Concept

Leveraging its creative ideas and proprietary technologies, THK is currently engaged in R&D activities that focus mainly on an E³ (Cubic E) Concept theme. Guided by this theme, which embraces the three keywords “Ecological,” “Economical” and “Endless,” we continued to speed up development with the aim of extending the range of

applications for our technologies and to pursue highly original and attractive products for launch 5-10 years in the future throughout fiscal 2015.

Major achievements in fiscal 2015 included the development of products for a number of original applications. In the industrial machinery field, beginning with LM guides and electric actuators, we developed a variety of new products that contribute to the automation of customers’ production lines. THK also focused its attention on product development aimed at increasing sales and entering new markets including seismic isolation and damping systems, renewable energy, aircraft, medical equipment, and robotics.

Policies and Initiatives for fiscal 2016

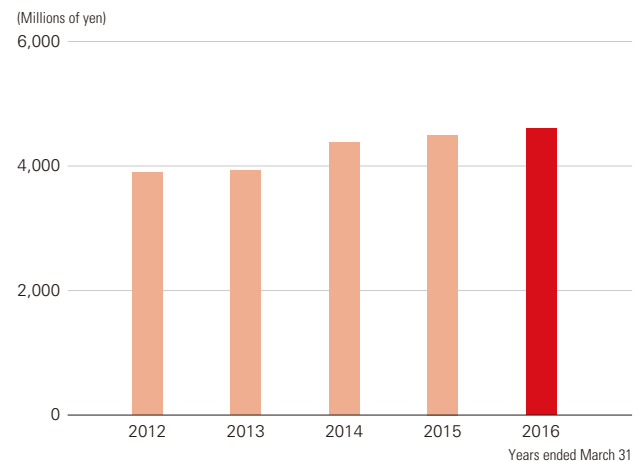
We plan to continuously focus our efforts in fiscal 2016 on the efficient development of new products with the aim of expanding applications for THK technology further. Specifically, we will pursue themes such as customer convenience while promoting designs that incorporate the potential for enhanced productivity and quality. Moreover, by conducting in tandem basic and applied development activities, we will focus on developing products that can quickly generate commercial returns.

Complementing these endeavors while strengthening our global development capabilities, we will actively promote technological interaction between Group companies in an effort to stimulate maximum synergies through the mutual rerouting of technologies thereby leading to new product development.



Technology Center (Tokyo)

R&D Expenses

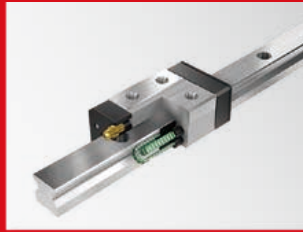


MAJOR NEW PRODUCTS



Caged Ball LM Guide
Model SPR/SPS 15LR and 20LR

THK upgraded and expanded its lineup of compact-type model SPR/SPS, which achieve ultra-high rigidity and super-low waving. It helps to reduce total costs by allowing the replacement of the more expensive air slider and other static pressure guides.



Caged Roller LM Guide
Model SRG 12

Model SRG 12 is the world's smallest caged roller LM Guide and also features ultra-super-high rigidity. The use of small diameter rollers helps achieve high precision and low waving.



Caged Ball Screw
Model SDA-V

Model SDA-V is a caged ball screw that complies with DIN specifications, an industry standard in Germany. This model is spearheading the Group's efforts to secure a firm foothold in Europe and such emerging markets as China. With the addition of a large-lead type product to the lineup, positive steps are being taken to realize higher speeds.



Compact Ball Spline
Model LT-X(XL)/LF-X(XL)

Model LT-X(XL)/LF-X(XL) is a compact nut dimension ball spline. It helps reduce size while increasing the speed of equipment.



Electric Actuator
Compact Series KSF

The KSF offers high-speed, high acceleration/deceleration features. By providing a large variation of sizes from compact to large, these steps to expand the product lineup are helping to better address a broad spectrum of market needs.



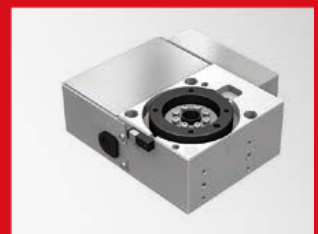
Electric Actuator
Clean Series CKSF

Retaining the KSF's basic configuration, the CKSF features a redesigned structure suitable for clean rooms. The strip seal keeps surface areas free from contamination.



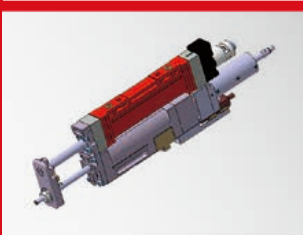
Electric Actuator
Economy Series EG

The EG is a gripper-type electric actuator that comes in three sizes. This particular model facilitates the continuous gripping of work even when the power source has been switched off.



Electric Actuator
Economy Series ET

The ET is a rotating table-type electric actuator. This particular model allows users to select rotating angle and reduction speed while maintaining high rigidity at any direction.



Electric Actuator
Linear Motor Series
CCM/CCR

The CCM/CCR is ideal for the pick-and-place of electronic components. As an addition, this particular model features an integrated braking mechanism making it easier to use.



Driver/Controller
TNU, TLC/THC, XD/MD

THK has developed a number of drivers and controllers that are easier to use by incorporating software with new function to each model number.



Element/Components for Robot Technology Systems
SEED Solutions

The SEED Solutions is a smart actuator that enables the use of kits to build frameworks with ease. Amid ongoing steps to upgrade and expand the lineup, positive steps are being taken to commercialize and commence sales of robotic hands that employ these technologies. Looking ahead, every effort will be made to develop products and put forward proposals that can be used in fields that are close to consumers.