THK was the first company in the world to develop the Linear Motion (LM) Guide, which is based on an original concept and innovative technology. THK also develops, produces, and supplies to the world a range of other vital machine components, including ball screws and electric actuators, as well as automotive and transportation components, such as L&S (Linkage and Suspension) products.

All of THK’s technologies have gathered attention and are driving innovation around the world because of the smoother, more accurate movement they provide to every type of mechanism.

**Ball Screws**

Ball screws are machine components that function by causing a large number of balls to circulate between a screw shaft and a nut. This mechanism efficiently converts rotary motion into linear motion. With the Caged Ball Screw, THK has incorporated caged ball technology into its existing ball screw designs, thus helping to achieve longer life with reduced noise and provide an extended period of maintenance-free operation.

**Cross Roller Rings**

Cross roller rings are roller bearings that feature internal cylindrical rollers arranged orthogonally so as to facilitate load bearing in every direction. The incorporation of the spacer cages between rollers prevents roller skew and friction between the rollers. Possessing high rigidity while maintaining a compact structure, cross roller rings are used in the rotating parts of many different types of industrial machinery, including the joint areas and rotating parts of industrial robots, as well as machining center swivel tables. Other applications include rotating parts of medical equipment and semiconductor manufacturing equipment.

**Electric Actuators**

Electric actuators are hybrid products combining a guide component, such as an LM Guide with a ball screw, linear motor, or other drive component. In industries such as electronics, there is an increasing need to shorten development and manufacturing lead times. Modularization allows these electric actuators to meet such requirements by simplifying the design and reducing assembly time. THK offers a varied lineup of electric actuators ranging from basic, cost-effective units to high-end components designed to operate with high precision or perform to clean room specifications. Such advanced electric actuators have become indispensable parts in equipment used in the manufacture or inspection of semiconductors and liquid crystal displays.

**Ball Cages and Roller Cages**

The cages are resin parts that hold and guide the balls or rollers as they move. The use of cages reduces noise and friction by preventing direct contact between the balls or rollers. This allows for a longer service life, reduced noise, and an extended period of maintenance-free operation.
Renewable Energy
Due to their unique mechanisms, THK’s shaft units for wind turbines possess high strength and durability in addition to achieving dramatically lower torque and improved power generation efficiency. In 2017, THK began supplying these products to Challenger Energy, Inc., which developed the world’s first wind turbine capable of generating energy even during typhoons.

Automotive and Transportation Equipment-Related Products
THK RHYTHM and THK RHYTHM AUTOMOTIVE (TRA), which form the core of the automotive and transportation business, manufacture undercarriage LAS (linkage and Suspension) products. Because they are made of aluminum, THK’s link balls possess high corrosion and wear resistance, and they are extremely lightweight in comparison to conventional steel products. In addition to its cold-forged ball joints, THK RHYTHM has expanded the range of products it offers to include aluminum links that integrate ball joints with aluminum suspension links. These critical safety components are held to the highest standards of quality and performance and help to enhance the safety and comfort of automobiles.

Products Using Core Linear Motion System Technology
Seismic Isolation and Damping Systems
Seismic isolation and damping systems make use of THK’s core linear motion system technology. The THK Group supplies a broad range of products from seismic isolation and damping systems for high-rise buildings, low-rise residences, and other structures such as temples and shrines, to seismic isolation systems for servers and a variety of manufacturing equipment. In this manner, the Group is helping to minimize the damage caused by earthquakes.

Seismic Isolation System for Buildings
- Seismic Isolation Module Model TSD
- Seismic Isolation Table Model TSD
- Linear Re-Circulating Guide CLB
- Linear Re-Circulating Guide System RCT
- Server
- Recovery System with Laminated Rubber
- Recovery System with Laminated Rubber
- Support
- Recovery
- Works of Art

Seismic Isolation Platforms
- Shaft Unit for Wind Turbine

New Products
- Global Standard LM Guide Model HSR (Improved)
- This durable product is an improvement on its predecessors, featuring better movement, noise reduction, and high-speed performance.

- Roller Guide Model HRX
- This easy-to-use roller guide is suited for a wide range of users, and its full-roller design gives it high resistance. This product features a roller retaining function, making the rail and block easily interchangeable.

- Rotary Ball Spline Model LTR-AX/LTR-V
- This product combines a ball spline with an angular bearing. The internal Model LT-X ball spline provides smoother movement than previous models.

- LM Guide with Linear Encoder Model HLS-LE
- This product combines an LM Guide with a THK linear encoder (a linear position sensor), which enables compact machine designs that do not require as much time to assemble.

- High-Speed Ball Screw for Machine Tools Model BSM
- With its newly developed circulation structure, this product features improved high-speed performance and an optimized raceway design that extends service life by a factor of 1.7 when compared to current products.

- DIN-Standard Double Nut Ball Screw Model SDAN-V
- This ball screw conforms to DIN standards, which are widely used in emerging markets. As a continuation of the SDA design, it is capable of handling high-speed drives.

- Linear Motor Series Model UL
- This product’s fully enclosed design enables it to improve the ball time and productivity of transfer applications in clean environments such as those used in semiconductor and LCD manufacturing.

- Picking Robot Hand System Model PRS
- This robot hand, with multiple fingers, can grip a variety of items. It enables distribution centers to automate the process of picking items quickly and at low cost because the robot’s controls and image processing do not require programming.

- SEED Solutions BA-ST Ball Screw Actuator
- This product uses a hollow shaft stepper motor, cross roller ring, and ball screw to achieve high thrust with a compact design. The internal stepper motor makes it possible to run at low power.