Providing Environmentally Friendly and Safe Automotive Components

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1 Automotive & Transportation Headquarters Business Overview

The Automotive & Transportation Headquarters is largely split into three business areas. The first is our L&S (Linkage and Suspension) business. The Group companies THK RHYTHM and TRA (THK RHYTHM AUTOMOTIVE) cover the development, manufacture, and sale of these components for our primary customers: automotive and truck manufacturers in Japan, China, other parts of Asia, North America, and Europe. Our products support tire systems and include critical safety parts[1] such as steering arms and joints.

Our second line of business is our AMC (Automotive Mechanical Components) division, which develops, manufactures, and sells ball screws for automatic brakes and electric parking brakes. Demand has increased for these products, since they serve as essential brake components for self-driving vehicles, and they help reduce accidents.

Our third pillar of business is the development of electric actuators incorporated directly into automobiles to further improve the ride experience and safety performance as self-driving cars become more prevalent.

One thing that all our divisions share is our intent to provide a variety of products and refine our technology to meet the various requirements demanded by the market.

2 Requirements for Automotive Components to Achieve a Sustainable Society

Nowadays, automobiles are required to be environmentally friendly and safer to ride in than ever before. It is our job to propose and consistently provide products that meet this requirement. We design our L&S components to be lightweight and long-lasting so they are environmentally friendly. In addition, we believe we can make cars even safer by offering products with high added value, such as our ball screws that are used in automatic brakes and our electric actuators that adapt other types of THK's core technology. We firmly believe that the knowledge we have accumulated since our founding as a company focused on creation and development, and the things we develop with that technology, are in alignment with future societal needs such as self-driving cars and reducing traffic accidents involving elderly drivers, and our expertise and products will lead to the creation of a sustainable society.

3 The Future of the Automotive Industry and THK's Direction

The automotive industry is undergoing a major revolution that is being labeled as a paradigm shift. It is difficult to predict how things will change for automotive makers, the supply chain, and even car buyers, so the situation right now is one of repeated trial and error. While the direction things go will certainly be in alignment with the aforementioned push for environmentally friendly and safer automobiles, the reality is that there are many methodologies that can lead us there. Nevertheless, it is clear that our L&S products, which have long been used as automotive components, will need to demonstrate even greater safety and quality. To soundly respond to these requirements, we will continue to refine our fundamental designs and bring even higher quality craftsmanship to our production processes.

Furthermore, the transition to CASE[2] is currently our main concern alongside environmental and fuel efficiency regulations. In particular, the lightweight advantage of our products will be used to improve mileage through electric-style vehicles. The ball screws that we started developing, producing, and selling as new products have become essential components for the automatic and air over hydraulic brake systems used in CASE self-driving technology. As the Japanese Minister of Land, Infrastructure, Transport and Tourism has announced that all new cars manufactured in Japan must have automatic brakes beginning in November 2021, we will set up a stable mass production framework. Much of the linear motion technology we have developed over many years, such as for automatic steering, vehicle height control, and active suspension, can be utilized for self-driving technology. By working on unit products and other future efforts, we will strive to expand our business to further improve the value of automobiles.

[1] Critical safety part: Component of a unit connected to the basic car functions of driving, turning, and stopping, the obstruction of which can lead to major accidents.
[2] CASE stands for Connected, Autonomous, Shared & Services, and Electric.

Our Products for Automotive and Transportation Equipment

As the main pillar of our vehicle business, we design, propose, manufacture, and sell original linkage and suspension components (mainly suspension links, ball joints, tie rod ends, and stabilizer links) to many automotive and component manufacturers. These products support the basic functions of cars: going, turning, and stopping. Because of this role they play in driving, our suspension links, ball joints, and tie rod ends are also classified as critical safety parts. The specific function of each component is outlined below.

Suspension links/Ball joints

Similar to joints in a human body, these products handle the vertical and horizontal movements of the car.

Tie rod ends

These products transfer power to the tires to rotate properly in the direction the driver turns the wheel.

Stabilizer links

These products are connected between the stabilizer bar and suspension arm to reduce force and keep the car from tilting when it turns a corner.

Ball screws

These products attach to motors and help enable electric and self-driving cars because they can very efficiently convert rotary motion to linear motion with low torque.

As recent years have seen cars with reduced fuel consumption and a switch to electric motors, these products are required to be lightweight. To respond to this need, we propose solutions to customers with the new aluminum forging and casting technologies we have adopted. Covering not just general passenger vehicles, but commercial vehicles like trucks and buses, agricultural and construction equipment, railways, motorcycles, dune buggies, golf carts, and more, we offer a lineup of products ranging from the size of a little finger to a size too large to be held in a human hand, all based on the customer's application and needs.

Promoting the development of an integrated production and sales structure with facilities and operations close to centers of demand, we have established production facilities[1] in Japan, China and Asia, North and Central America, and Europe to meet customer needs. Furthermore, we have development facilities in Japan, Europe, and North America, where we propose and provide solutions to customer requirements in every region.

In the future, the automotive industry will demand product compatibility with new technologies related to self-driving cars and CASE. Accordingly, in addition to our linkage and suspension lineup, we will propose and supply linear motion components such as the LM Guide and ball screws.

[1] Production facilities:
Japan: THK RHYTHM (3)
China and Asia: THK RHYTHM (2 in China, 1 in Malaysia, and 1 in Thailand)
North and Central America: THK (1 in USA)
THK RHYTHM (2 in USA, 2 in Canada, 1 in Mexico)
Europe: THK RHYTHM (1 in Germany, 1 in Czech Republic)