

## Steering Business



JTEKT applies technologies cultivated in electric power steering (EPS) to contribute to the realization of a safer and more comfortable car society and autonomous driving.

Solutions for social issues  
(from the perspective of the SDGs)



### Business Overview

Contributes to safety, the environment and improved convenience through the provision of steering systems, which assume the basic vehicle function of "turning." With a main product lineup including column assist-type EPS<sup>\*1</sup> and rack assist-type EPS<sup>\*2</sup> able to provide EPS for a variety of automobiles, from passenger cars to large commercial vehicles, this is one of JTEKT's flagship businesses with No. 1 global share.

\*1 EPS where the motor responsible for the assist is attached to the column  
\*2 EPS where the motor responsible for the assist is attached around the steering rack

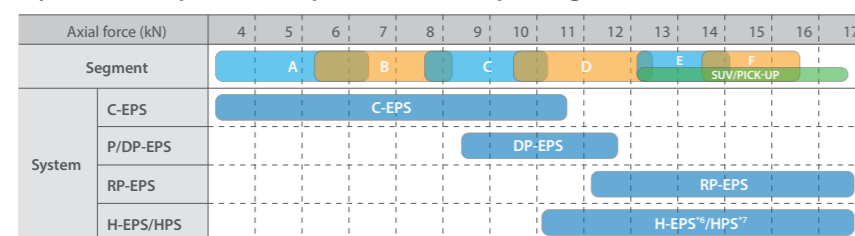
### Business Environment

- Rapid progress of technological innovations represented by CASE<sup>\*3</sup>, including autonomous driving and vehicle electrification
- Global-scale projects and increasingly sophisticated customer demands
- Sluggish growth in automobile market due to sudden economic slowdown
- Intensifying price competition

\*3 Acronym that stands for Connected, Autonomous, Shared, and Electric. This implies the importance of mobility services across industries as well as physical changes to automobiles in terms of components.

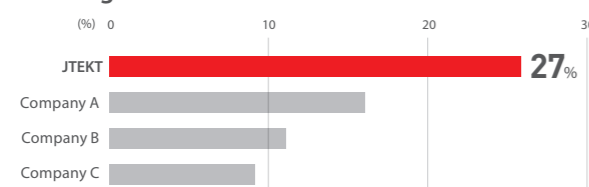
### Steering Business Strengths

- One out of every four cars in the world is equipped with JTEKT steering
- Developing global business for Japanese customers as well as European customers
- Column assist-type EPS (C-EPS), dual pinion-type EPS (DP-EPS)<sup>\*4</sup>, and rack parallel-type EPS (RP-EPS)<sup>\*5</sup> in the main product lineup, which can provide EPS to all passenger cars

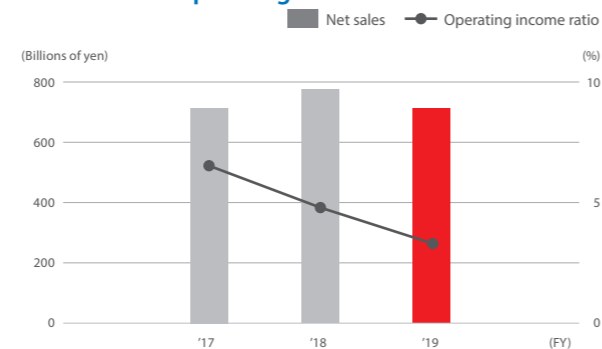


\*4 EPS with two pinion shafts and assist motor mounted around the rack bar  
\*5 EPS with assist motor attached parallel to the rack bar  
\*6 Electro-hydraulic power steering: Steering mechanism using a motor to drive a pump that assists hydraulically  
\*7 Hydraulic power steering: Steering mechanism that uses the engine to operate a pump that assists hydraulically

### Steering share Fiscal 2019

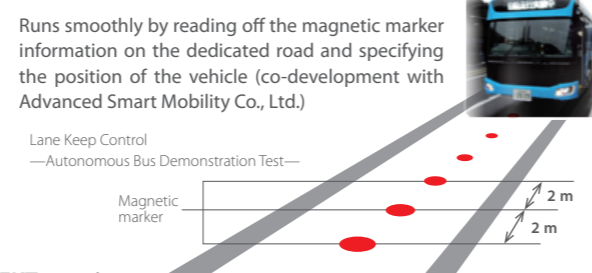


### Net sales and operating income ratio



### Customer Demands

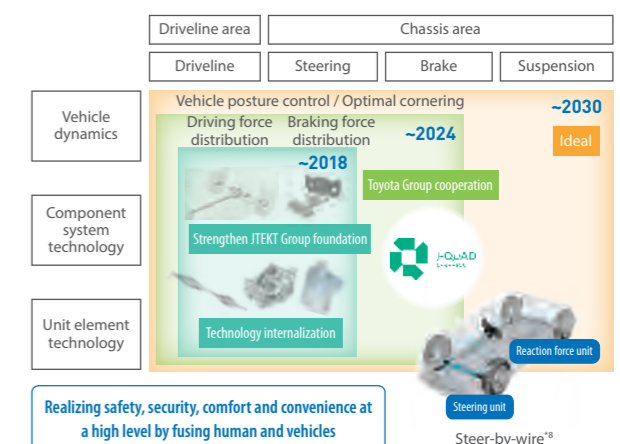
- High quality, high performance, low cost (service maximization)
- System proposals from vehicle perspective
- Provision of advanced systems (technologies and products realizing autonomous driving)



## Fiscal 2019 Review and Business Strategy for Fiscal 2020

In fiscal 2019, sales and profit declined compared to the previous fiscal year because of sluggish growth in the automobile market caused by the sudden economic slowdown and intensifying market competition. At the same time, R&D expenses increased due to expanded investment in the switch to rack assist-type EPS, development efforts in new areas and CASE compliance.

In fiscal 2020, we will focus on profit and work to build a robust structure that can withstand changes in the market and operating environment. Additionally, as the No. 1 steering system supplier, we will further enhance our competitiveness and make the leap from steering system supplier to a supplier able to contribute to chassis functionality, striving to evolve from a business that provides products to a provider of value.



\*8 A mechanism that transmits the rotation of the steering wheel to the tire electronically rather than mechanically

## Issues and Responses

### 1. Improving profitability by strengthening project planning and management.

We promoted the development of each project by dividing roles for each function, from planning to mass production, which limited the collaboration across functional boundaries. In response to this issue, we will build a system that allows us to manage projects, from initial planning to order receipt and mass production in a single process, to improve both the quality of service we provide our customers and profitability.

### 2. Building an optimal business structure to improve competitiveness

Amid drastic changes that happen once in a century, JTEKT's ability to deepen the global collaboration required to maintain our competitive advantage as the No. 1 supplier in steering has been an issue. In response, we will respond swiftly to market demands, rethink our new business structure, leverage the strengths of each Group company and build optimal production systems in competitive areas and manufacturing sites to improve our competitiveness.



### Making the Leap from Steering System Supplier to a Supplier Able to Contribute to Chassis Functionality

To succeed in the automobile industry, which is said to be undergoing a once-in-a-century period of changes, JTEKT believes that it will not survive by simply providing steering systems as in the past. Leveraging the strengths and experience that earned us a No. 1 global market share, we will expand our approach to focus on the chassis domain, transforming from a business that provides products to one that provides value, evolving into a business that customers need more than ever before.



Hirofumi Matsuoka  
Chief of Steering Systems Business Unit

## Driveline Business



Through the energy-saving, improved travelling safety, and other benefits provided by our driveline parts, we will contribute to the creation of a safer and more secure society. We will also contribute to the enjoyment of driving through vehicle torque control.

Solutions for social issues (from the perspective of the SDGs)

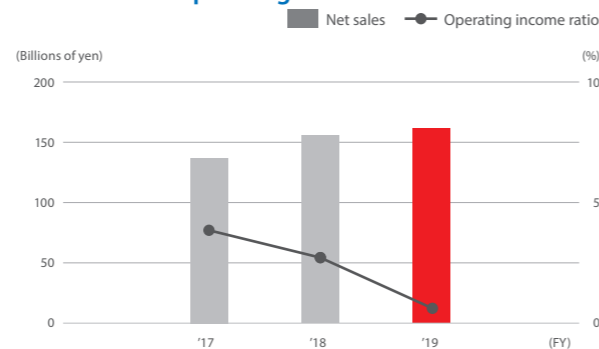


### Business Overview

Providing driveline products<sup>\*1</sup> for vehicles, torque control devices (TCDs)<sup>\*2</sup>, hydraulic systems<sup>\*3</sup> and valve units for fuel cell vehicles (FCVs), etc., related to the basic vehicle function of “driving.”

\*1 Drive shafts, propeller shafts and other products that deliver driving force  
\*2 TORSEN, ITCC and other mechanisms that distribute front, rear, left and right driving force  
\*3 Electric oil pumps, mechanical oil pumps, FC valves and other products

### Net sales and operating income ratio



### Business Environment

- Changes in product composition due to acceleration of vehicle electrification and autonomous driving
- Slowdown of growth in emerging markets and intensifying market competition
- Competitor mergers, accelerating alliance revisions

### Customer Demands

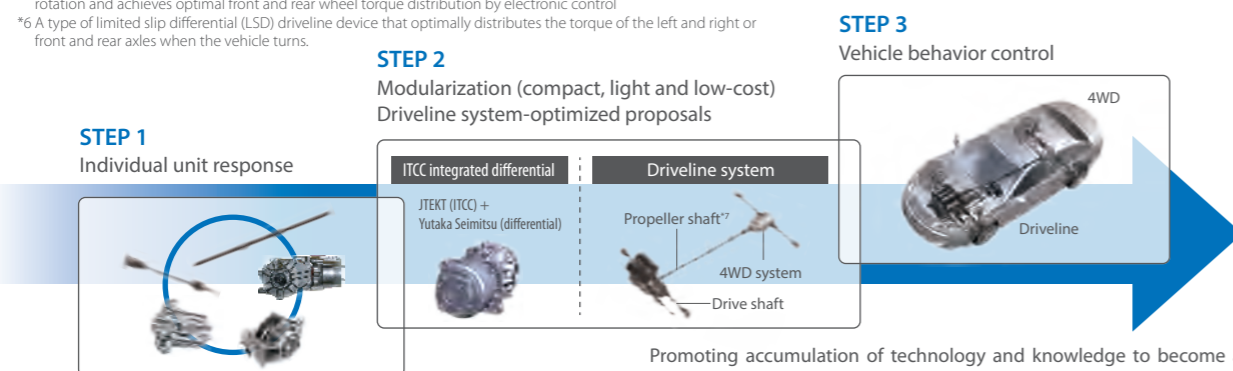
- Provision of high-quality, low-cost products
- Driveline system through product proposals (especially in conventional areas) for customers shifting resources to CASE<sup>\*4</sup>

\*4 Acronym that stands for Connected, Autonomous, Shared, and Electric. This implies the importance of mobility services across industries as well as physical changes to automobiles in terms of components.

### Driveline Business Strengths

- Wide lineup: Product lineup includes driveline, hydraulic systems and TCD
- 4WD control technology: 4WD control making full use of “No. 1” product ITCC<sup>\*5</sup> and “Only One” product TORSEN<sup>\*6</sup>
- Provides comprehensive vehicle driveline system solutions

\*5 Intelligent Torque Controlled Coupling: A mechanism that detects the difference between front and rear wheel rotation and achieves optimal front and rear wheel torque distribution by electronic control  
\*6 A type of limited slip differential (LSD) driveline device that optimally distributes the torque of the left and right or front and rear axles when the vehicle turns.



\*7 Shaft that transmits the driving force of the engine to the rear axle in 4WD vehicles and FR vehicles

Promoting accumulation of technology and knowledge to become a supplier able to propose units or modules based on an understanding the behavior of the entire vehicle

#### Development of New TORSEN “Type D”

**Development Concept**  
Providing compact, low-priced LSD<sup>\*8</sup> for EVs and FF passenger cars, contributing to improved safety, security, and driving performance



\*8 Limited Slip Differential: A driveline device that optimally distributes the torque of the left and right or front and rear axles when the vehicle turns

#### ITCC and Differential<sup>\*9</sup> Modularization Development

**Development Concept**  
Compact, lightweight and low-cost modularized 4WD unit meeting customer expectations.



\*9 Mechanism that absorbs the rotational difference between the left and right wheels to make smooth turns

## Fiscal 2019 Review and Business Strategy for Fiscal 2020

In fiscal 2019, sales increased but profits declined compared to the previous fiscal year due to a slowdown in emerging markets, the impact of the COVID-19 pandemic, intensifying market competition and higher expenses associated with the development of next-generation products.

In fiscal 2020, we will establish solid traction, placing a higher priority than ever on profits. At the same time, we will bolster our business foundation to make the leap forward as a system supplier.

### Issues and Responses

#### Improving Competitiveness with Thorough Cost-Reductions and a Stronger Business Foundation

Amid a rapidly changing competitive environment characterized by competition with mega suppliers, market entry by companies in different industries and corporate restructuring driven by competition, JTEKT must thoroughly increase its competitive advantage. To meet this expectation,

realizing increased efficiency and a stronger structure are challenges. In response, we will promote thorough improvements in efficiency utilizing the TPS<sup>\*10</sup> and aim to become a professional driveline organization.

\*10 Toyota Production System



In an aim to improve vehicle performance, JTEKT will provide optimal driveline system proposals to facilitate solutions for safe, secure and comfortable automobiles.

At present, we are experiencing what is said to be a once-in-a-century period of transformation, with the automobile manufacturers comprising our customer base allocating a massive amount of resources to CASE compliance. Given these conditions, JTEKT believes we can contribute to society through automobile advances enabling us to meet expectations as a true partner to our customers through proposals for products involved with automobile driving functions responsible for total systems.



Takumi Matsumoto  
Chief of Driveline Systems Business Unit

## Bearing Business



Bearings play a role in supporting rotating parts in all types of machinery. JTEKT bearings contribute to society by providing a wide range of bearings for everything from all types of automobile to various industrial machines.

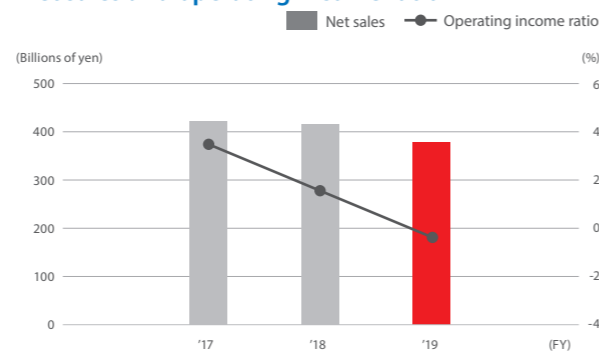
Solutions for social issues  
(from the perspective of the SDGs)



### Business Overview

From vehicles to industrial machinery JTEKT bearing products are used in rotating parts for all industries, supporting the revolution of society in unseen places. In the automotive field, we support vehicle electrification and autonomous driving, while in the industrial machinery field, we develop business based on proposals supporting various usage environments, such as semiconductors, robotics and aerospace, in an effort to provide value and service. Through these activities, we will contribute to the realization of a better society from the perspectives of environmental preservation and the creation of social infrastructure.

### Net sales and operating income ratio



### Business Environment

- Automotive bearings: Acceleration of vehicle electrification and autonomous driving
- Industrial machinery bearings: Diversification of operating environment
- Intensification of global competition

### Customer Demands

- Timely provision of products that support energy saving and electrification (high-speed rotation/quietness/low-torque<sup>\*1</sup>/compact)
- Products and services that respond to changes in the social environment
- Stable supply and cost competitiveness in line with globalization

<sup>\*1</sup> To reduce force to move objects (equivalent to low friction)

### Bearing Business Strengths

- As the JTEKT Group operates automobile parts and industrial machinery businesses, we are able to provide comprehensive development support from the customers' perspective.
- Unmatched low-torque technology represented by the Low Friction Torque (LFT) series
- Broad product lineup enabling support for a wide-variety of industrial machine applications

### Main Products

<p><b>1</b> Fifth-generation super low friction torque tapered roller bearings (LFT-V)</p> <p>Bearings used in automobile transmissions and differential units</p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Lowest torque in the LFT series</li> <li>• Low fuel consumption and long automobile life</li> <li>• Contributes to space saving and weight reduction</li> </ul>	<p><b>2</b> "PRECILENCE" super high precision bearings</p> <p>"P2" bearings that realize the "highest precision" rotatability applicable for the sophisticated machining precision required for machine tools</p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Rotation accuracy (four times more accurate than conventional bearings)</li> <li>• Quietness (about one-half the vibration of conventional bearings)</li> <li>• Low torque (30% lower than conventional bearings)</li> <li>• Long life (two times longer than conventional bearings)</li> </ul>	<p><b>3</b> Controlled magnetic bearings</p> <p>Bearings used in turbo rotating machines such as compressors, blowers, expansion turbines and turbine generators</p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Support for high-speed rotation</li> <li>• Maintenance-free</li> <li>• Oil-free</li> </ul>
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<sup>\*2</sup> Indicates the highest level of bearing accuracy precision

## Fiscal 2019 Review and Business Strategy for Fiscal 2020

In fiscal 2019, we engaged in structural reforms focused on Japan, North America and Europe. Despite improvements to our earnings structure resulting from these efforts, sales declined significantly, causing sales and profits to decline compared to the previous fiscal year.

In fiscal 2020, we will promote global developments, including existing and new technological developments accumulated up to now over the past 100 years of the Koyo brand, while overcoming the trend toward commoditization by strengthening cost competitiveness through stringent cost-reduction efforts driven by manufacturing technology innovations.

### Issues and Responses

#### 1. Improving profitability through structural reforms

To survive market commoditization, we believe it necessary to strengthen cost competitiveness through cost reduction activities in accordance with the realization of innovative manufacturing reforms. To this end, we will promote structural reforms through selection and concentration from a global perspective, including manufacturing base integration, along with the robust promotion of productivity improvements through expanded automation, unmanned operations and increased speed.

#### 2. Aiming to become the niche leader in growing markets

In the Bearing business, we believe that it is necessary to respond to changes in the social environment, such as the shift from internal combustion engines to electrification in the automobile industry, declining birthrates and aging populations and information technology innovations. To achieve this, we will concentrate resources on the development of new areas, new products and high added value products that anticipate customer needs in an aim to grow and develop by becoming the leader in the niche field.



### A Business that Continuously Creates Value and Provides Customers with Safety, Security, and Excitement —Koyo, the World's Top Brand—

In the Bearing Business, we want to contribute to automotive bearing technology innovations by advancing the elemental technologies we have cultivated over our 100-year history and by developing new automotive technologies to further promote electrification and autonomous driving.

We also aim to contribute to robotics, semiconductors, medical equipment and a wide range of other industries expected to grow robustly in the future with our industrial machinery bearings.



Katsumi Yamamoto  
Chief of Bearing Business Unit

## Machine Tools & Mechatronics Business



We are transforming machine tools TOYODA into a *monozukuri* (building excellent products) innovation company. Providing value in all phases of *monozukuri* and contributing to customer value enhancement with "Only One" technologies.

Solutions for social issues (from the perspective of the SDGs)



### Business Overview

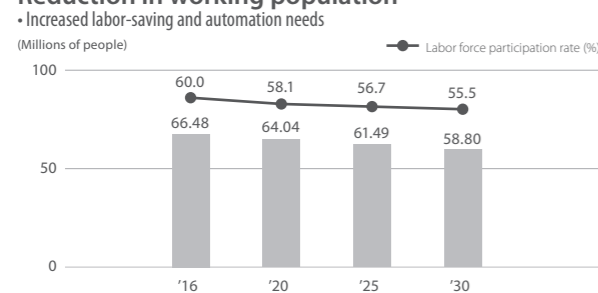
This business provides cam and crankshaft grinders<sup>\*1</sup>, general-purpose cylindrical grinders and other cutting machines<sup>\*2</sup>, machining centers<sup>\*3</sup>, gear skiving centers<sup>\*4</sup> and other machine tools meeting customer needs, as well as IoT<sup>\*5</sup> Solution. Machine tool element components and system devices are proprietary and manufactured by the JTEKT Group. In recent years, this business has expanded into growth areas such as semiconductor equipment, vehicle battery equipment.

\*1 Machine that grinds the surface of a workpiece using a rotating grinding wheel  
 \*2 Machine that cuts the surface and shape of a workpiece using a rotating tool  
 \*3 A numerically controlled machine tool with an automatic tool change function that performs different types of machining such as milling, boring, drilling, and tapping using the same machine  
 \*4 Machine for gear skiving processing using relative speeds generated by tilting and rotating tools and workpieces  
 \*5 Internet of Everything: Refers to the connecting of everything to the Internet of Things (IoT)

### Business Environment

- Rapid conversion of automobiles to EVs
- Declining workforce, highly skilled workers not passing on technical knowledge
- Growing semiconductor demand in line with acceleration of 5G and artificial intelligence (AI)
- Intensifying global competition

### Reduction in working population

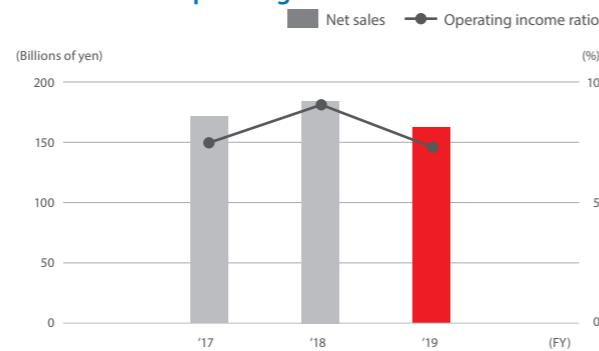


### Machine Tools & Mechatronics Business Strengths

Our strengths include, technological capabilities cultivated in automobile engine lines, "No. 1 & Only One" high precision grinding and gear skiving technologies, with the technologies used to control these realized through in-house development and manufacturing utilizing integrated machinery.

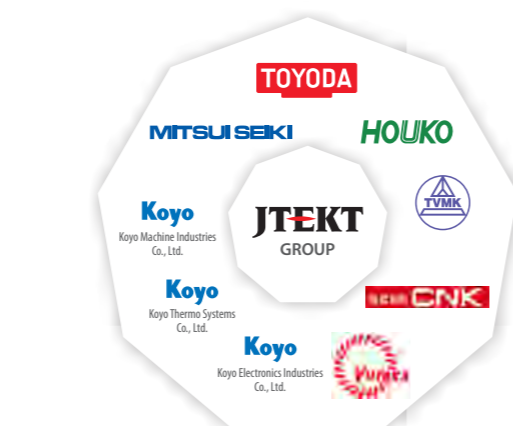
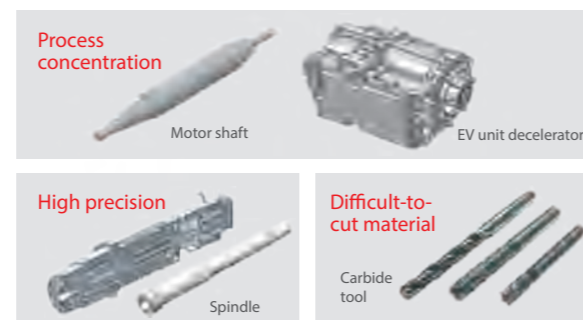
The overall strength of the JTEKT Group lies in the ability to propose the entire systems that improve the value of customer products through cost reductions, advanced functionality and other enhancements.

### Net sales and operating income ratio



### Customer Demands

- Product innovation through miniaturization, weight reduction and noise reduction
- Labor saving and automated equipment that improve factory productivity
- Equipment able to facilitate detailed and homogeneous processing
- Shorten delivery times and lower equipment costs through local production



### Fiscal 2019 Review and Business Strategy for Fiscal 2020

In fiscal 2019, in response to social changes such as a declining workforce, the shift to EVs and the development of 5G and AI technologies, we released an autonomous grinding system with a built-in transport and measurement system, an advanced gear skiving center and JTEKT IoT Solution supporting human growth. Furthermore, in response to the customer need to use products over the long term, we pursued lifecycle value and made efforts to accelerate support for recovery utilizing customer data and dispatching personnel as soon as possible in the event of a disaster. However, the impact of the market slowdown was substantial, resulting lower sales and profit compared to

the previous fiscal year.

The economic downturn is expected to continue in fiscal 2020, thus we will strive to strengthen our structure by streamlining manufacturing processes and further pursuing lifecycle value through the utilization of IoT technologies as a means of establishing our management foundation. Additionally, we will promote the evolution of "Only One" technologies for next generation high-precision cylindrical grinding machines and gear skiving centers.

We will also make an effort to strengthen machine tool group cooperation and expand business in growth areas.

### Issues and Responses

#### Accelerating Digital Transformation

To maintain and further advance our position as Japan's top provider of high-precision cylindrical grinders and the leading company in gear skiving with "Only One" technology, we must accelerate product development and create greater value than ever before. To this end, we are making

an effort to speed up production development with the establishment of a digital design center and a modular evaluation center with the aim of accelerating the digital transformation to create new business value.



Grinding system integrating in-line measurement that maintains the production of quality products



Cooperative robot and gear skiving center that realize highly efficient combined machining of all kinds of gears



Appropriate support realizing improved productivity and quality

### Pursuing the Speedy Creation of New Value

Our mission is to provide tools that enhance the value of customer manufacturing by helping them realize their goals.

Social changes and technological innovations create new demand and new competition. We want to be sensitive to changes and demand to pursue and provide new value in a timely manner.



Shinji Kato  
Chief of Machine Tools & Mechatronics Business Unit