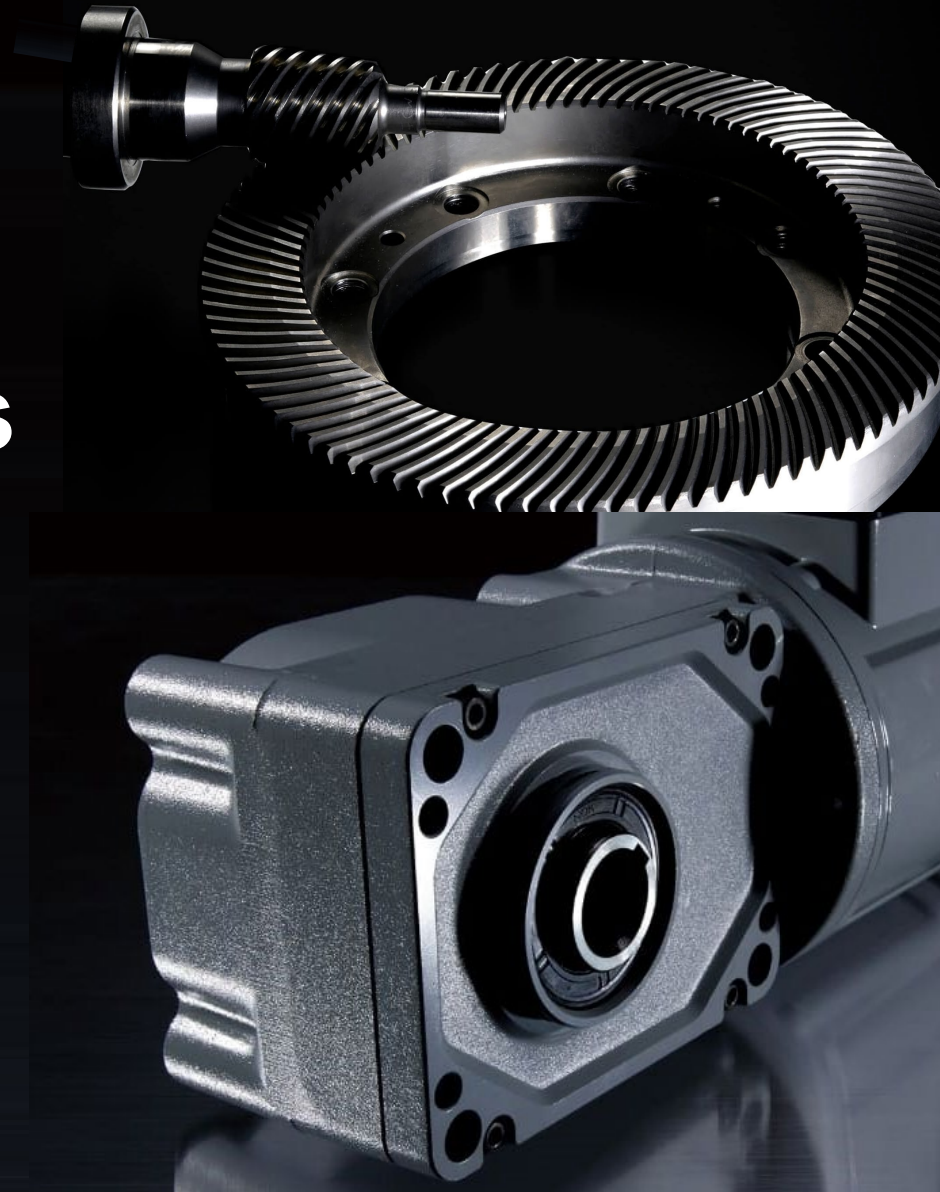


Nissei Business Briefing

October 5, 2023

Yoshihisa Nozaki
Representative Director President
Nissei Corporation



Company Overview

Corporate name	Nissei Corporation
Location	Anjo, Aichi
Representative	Representative Director President Yoshihisa Nozaki
Establishment	1942
Number of employees	892 (As of March 31, 2023/including subsidiaries)
Paid-in capital	3.4 billion yen
Sales revenue	23.5 billion yen (FY2022)

Nissei



Head Office

Nissei started as a supplier of sewing machine needles to Brother in 1942 and expanded its business to gears and reducers. It became a consolidated subsidiary of Brother Industries in 2013 and a wholly-owned subsidiary in 2022.

Founding period

1942 | Began supplying sewing machine needles to Nippon Sewing Machine Manufacturing Co. (present Brother Industries), then started supplying small gears for sewing machines



1965 | Began production of diecast products



Gear business

1955 | Began manufacturing and sale of small gears and machine parts



1974 | Began insourcing the heat treatment facility



1987 | Began production of high ratio hypoid gears



→ Focusing production on high precision gears for robotics and FA

Gearmotor business

1974 | Began production of parallel shaft reducers by combining gear machining and molding process technologies.



Parallel shaft reducer



Shift to the production of gearmotors with control motors, high precision reducers, and high stiffness reducers



IPM gearmotor



Low-voltage battery-powered gearmotor



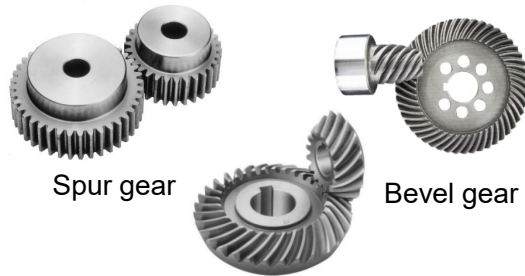
High precision reducer for servo motors



High stiffness reducer

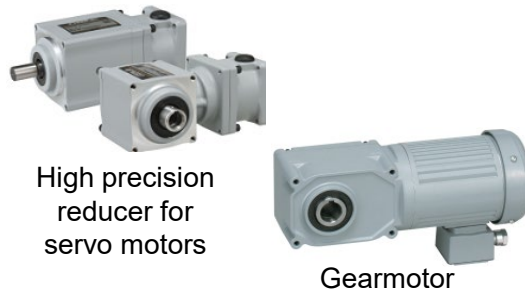
Gearmotors are used in all sorts of ways as a drive for equipment, and gears are responsible for transmitting a variety of drives

Gears



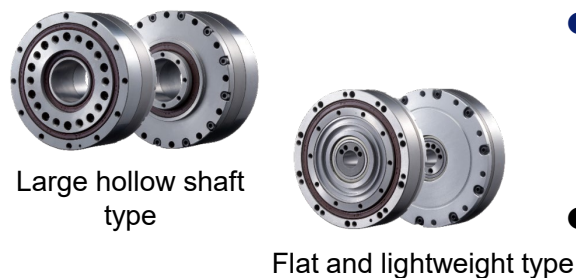
- A **gear** is a machine element part used in various machines to **transmit power, change the direction of transmission, and change the number of revolutions**
- Gears are categorized into spur gears, bevel gears, and gears with special shapes

Reducers/ Gearmotors



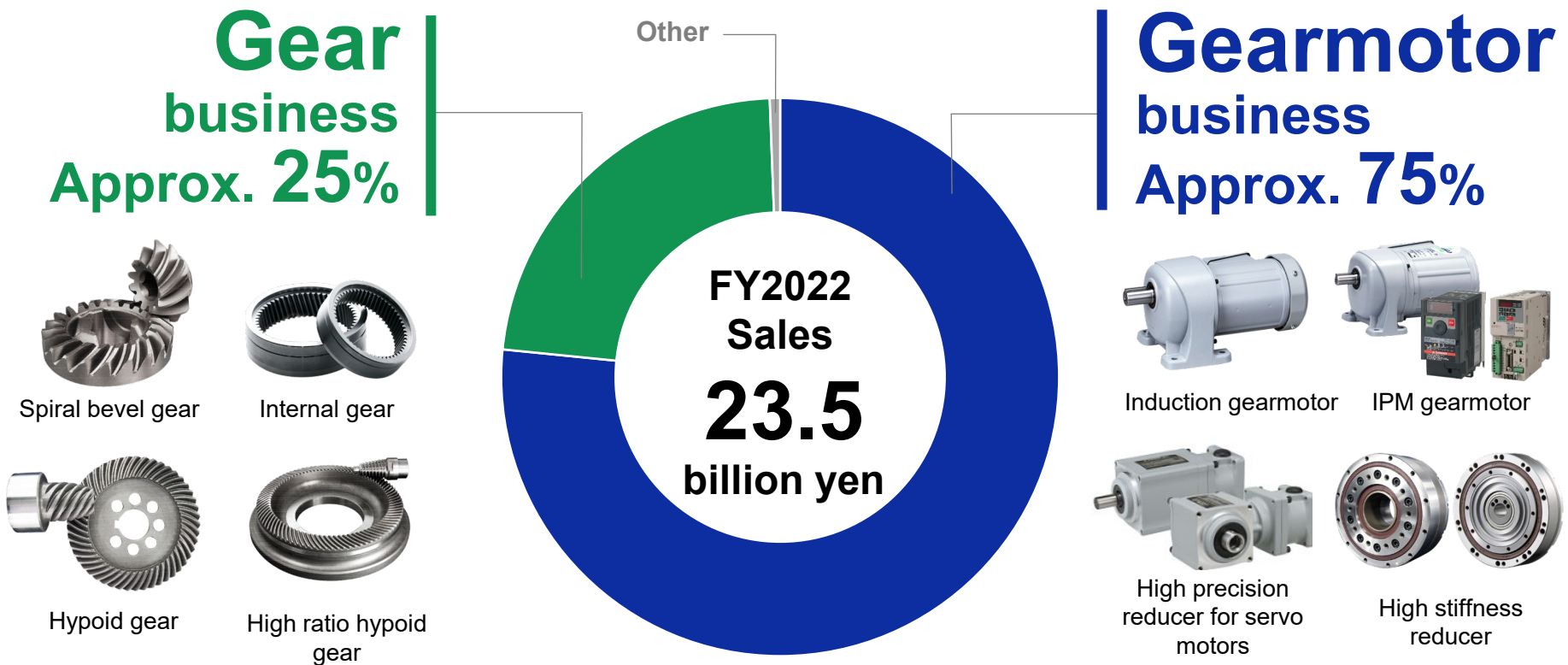
- A **reducer** is a device that outputs power with reduced rotational speed using gears or other components. **It produces torque proportional to the reduction ratio.**
- A **gearmotor** is a combination of a motor and a reducer.

High stiffness reducers



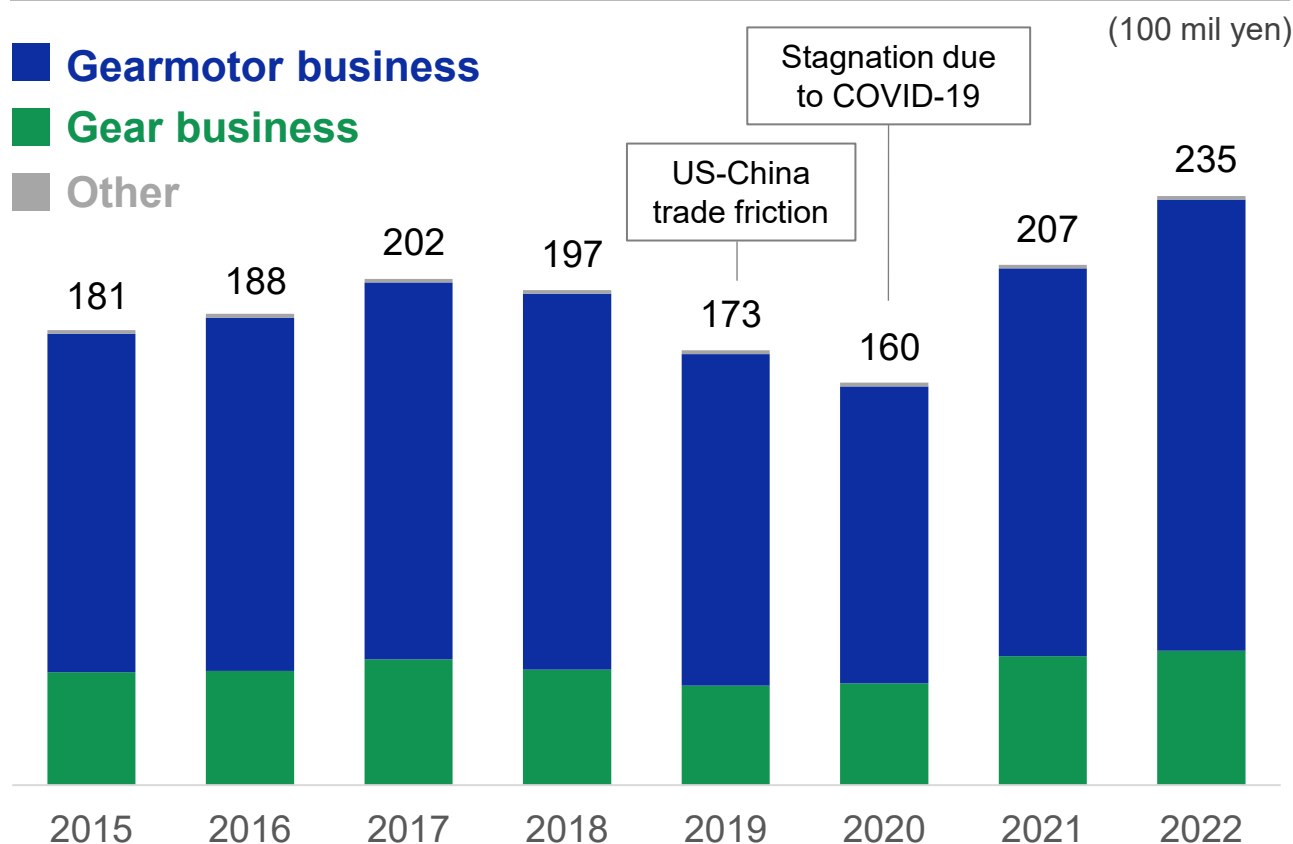
- A **high stiffness reducer** is a reducer used in applications that require **high stiffness and precise positioning**, such as joints of industrial robots and machine tools
- Reduction mechanisms are generally divided into two types: **wave gear type and eccentric oscillating type**

Approx. 75% of sales are from the Gearmotor business (reducers and gearmotors) and approx. 25% from the Gear business



Growth mainly in the Gearmotor business due to increased capital investment associated with the growing need for automation and labor-saving efforts

Sales Transition*



Profit in FY2022*



*IFRS

The two subsidiaries are a manufacturing subsidiary and a sales subsidiary in China
Products are sold to the U.S. and Korea via Brother's sales companies



Production capacity (annual)

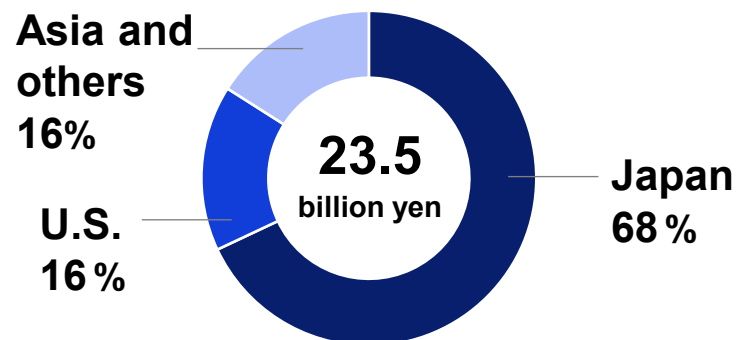
Gearmotors 800 thousand units



Gears 6 million units



Sales composition by region (FY2022)



Gearmotor Business (Reducers/Gearmotors)

Leading share in the domestic small gearmotor market with strength in flexibility for a wide variety of products and short delivery times

Strengths of the Gearmotor business

Abundant product variations meeting global standards

- ✓ **140,000** standard models/compliant with overseas standards

Quick delivery and custom orders

- ✓ Short delivery time of **5 business days** for standard products
- ✓ Custom specifications are also available to meet customer needs

High technological capability

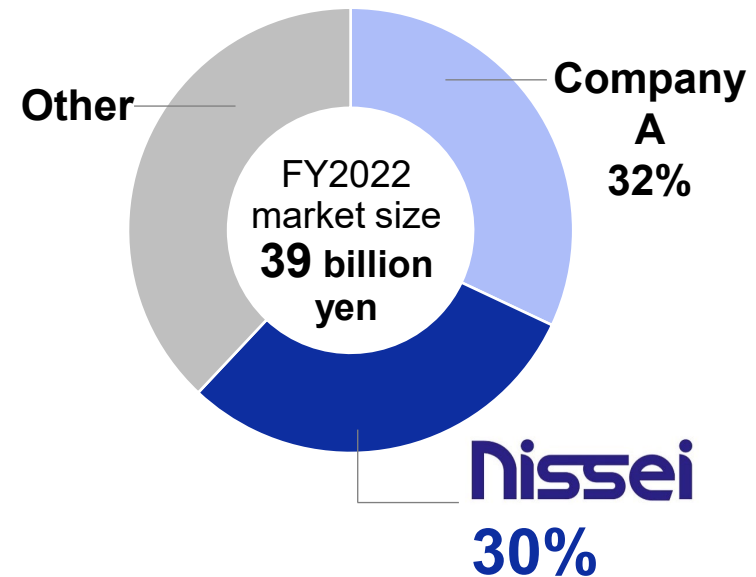
- ✓ Technological capabilities cultivated through more than half a century of gear machining history

Mounting dimensions unchanged since launch

- ✓ Easy to maintain and change motor categories

Domestic market share for small gearmotors

- ✓ Top two companies including Nissei account for 60% of the domestic market share



Source: The Japan Society of Industrial Machinery Manufacturers
In-house estimates based on data for motor capacities of 15W-2.2kW

Nissei's unique strengths have been well received and its reducers are used in a wide range of industries as a drive source for various equipment

Industries

Well-received strengths

Food machinery

- ✓ **The industry's only anionic electrodeposition coating** is used
 - High adhesion and hard to peel off
 - High environmental resistance to water, oil, acid, etc. due to acrylic coating
- ✓ **High dustproof and waterproof performance** compliant with **IP65***
- ✓ **High anti-corrosion performance** due to the use of stainless steel for the output shaft, screws, etc.

Machine tools

- ✓ Compliance with **overseas standards**
- ✓ **Compliance with domestic and overseas high-efficiency motor regulations** with standard products, offering **short delivery times**

Transport machine

- ✓ **Industry's leading hollow shaft variations** suitable for transport functions
- ✓ **A wide variety of low-voltage gearmotors** and **space saving** with orthogonal shafts

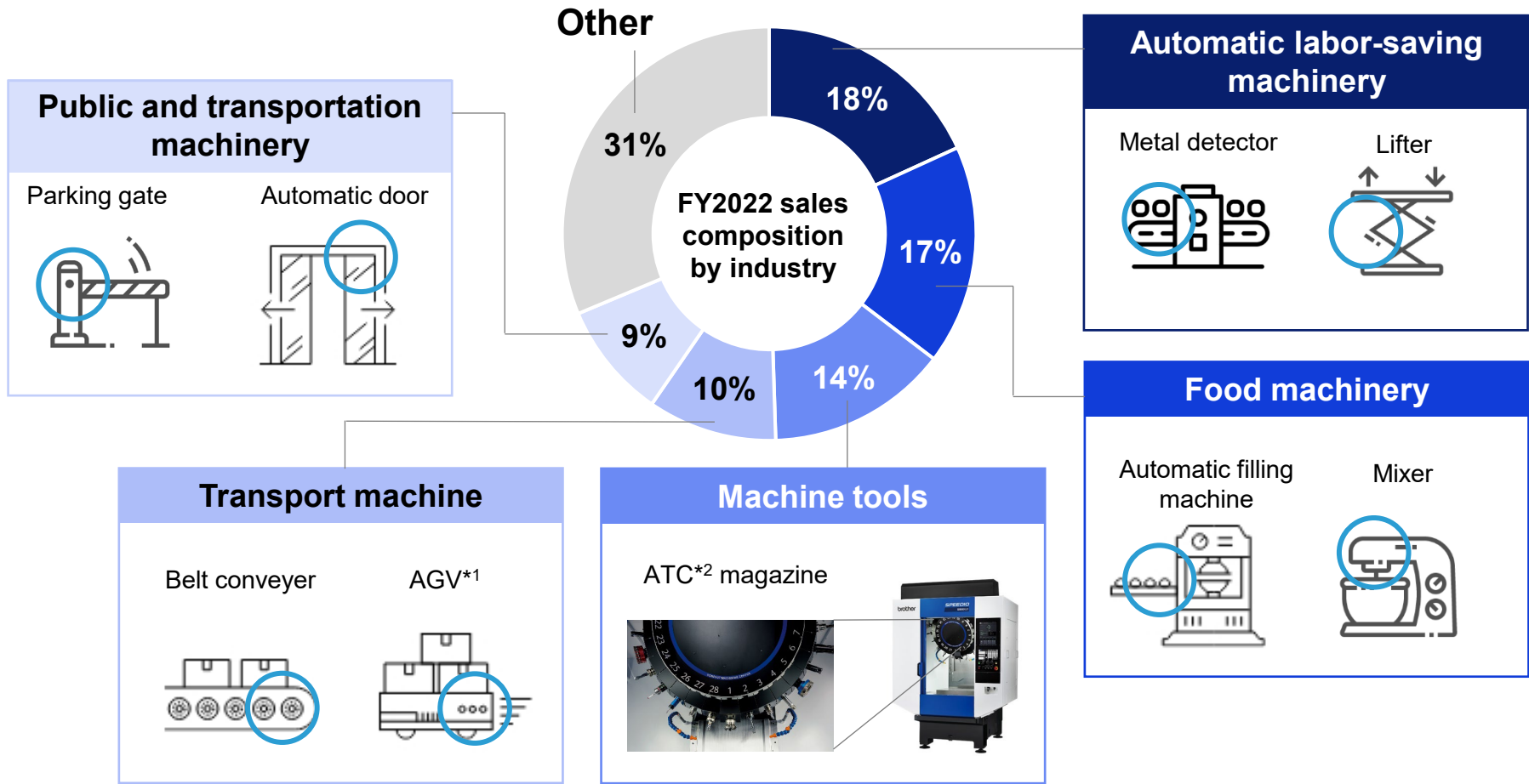
Public and transportation machinery

- ✓ **Space saving** by orthogonal shafts
- ✓ **Quiet/compact design** using hypoid gears

*IP65: Indicates the grade of resistance to dust and water. "6" refers to complete dustproof construction and "5" refers to protection against water jets from all directions.

Gearmotor Business | Sales Composition by Industry and Adoption Cases

Reduction of volatility from economic fluctuations through adoption in a wide range of industries



*1:Automated Guided Vehicle *2:Automatic Tool Changer

Gear Business

Strengths in flexibility and high technological capabilities through abundant production facilities and integrated production

Strengths of the Gear Business

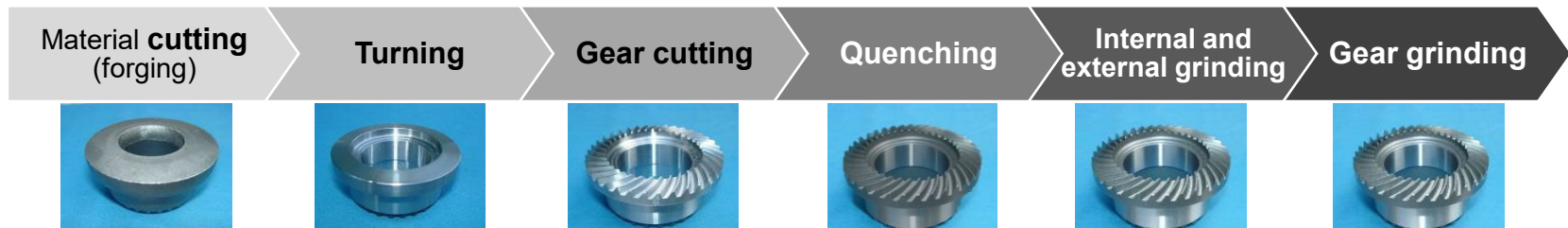
One of the best production facilities in Japan

- ✓ Possessing more than 150 gear cutting and grinding machines for both spur and bevel gears
- ✓ Capable of JIS standard 0 class accuracy

Integrated production

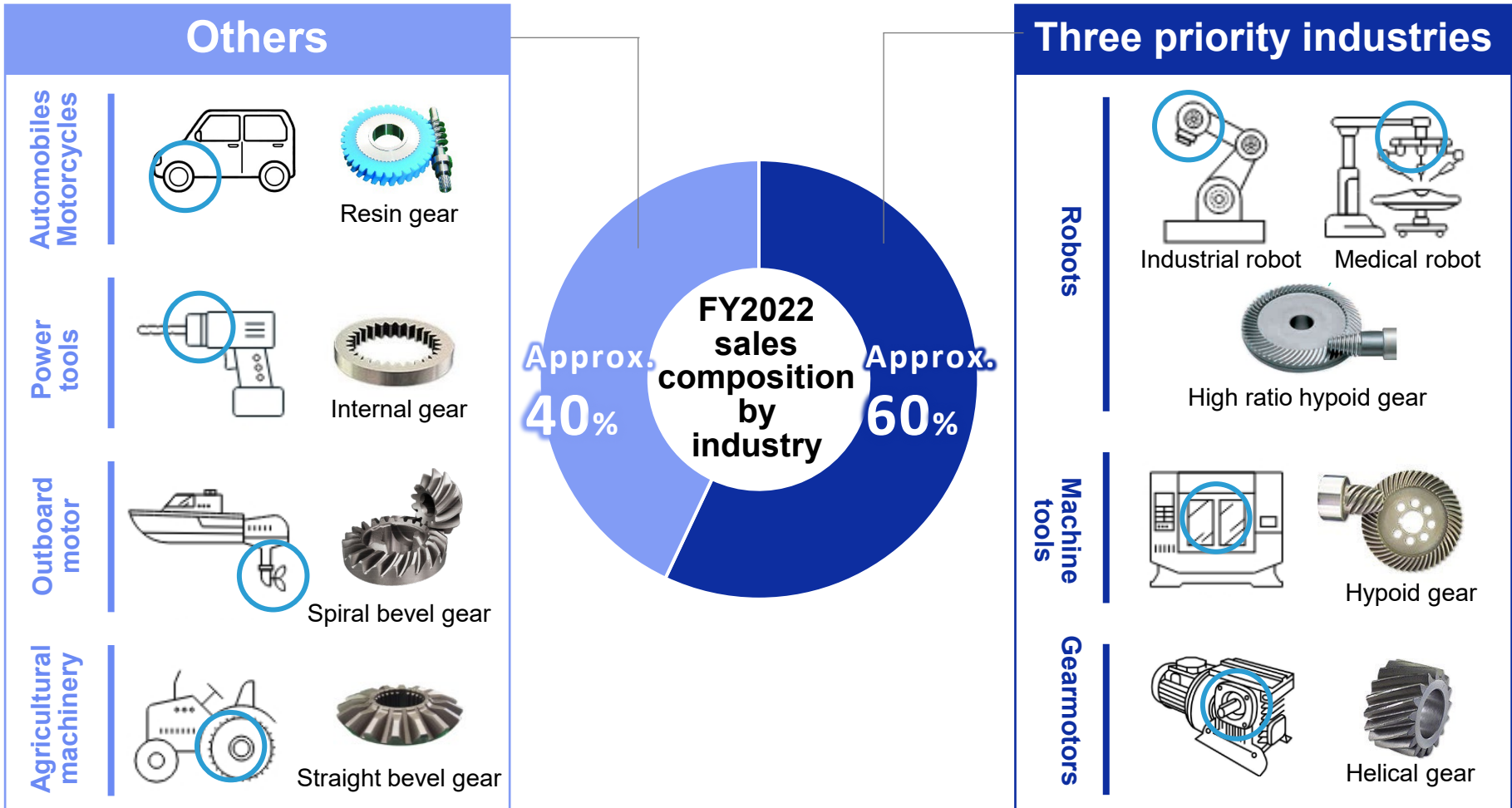
(from order receipt, design, machining, heat treatment to completion)

- ✓ Flexible response capability (delivery date, cost, and quantity)
- ✓ High processing technology for gear cutting and grinding, including heat treatment technology



High precision and high quality are achieved through these features

Sales to the three priority industries requiring high precision gears account for more than half of total sales

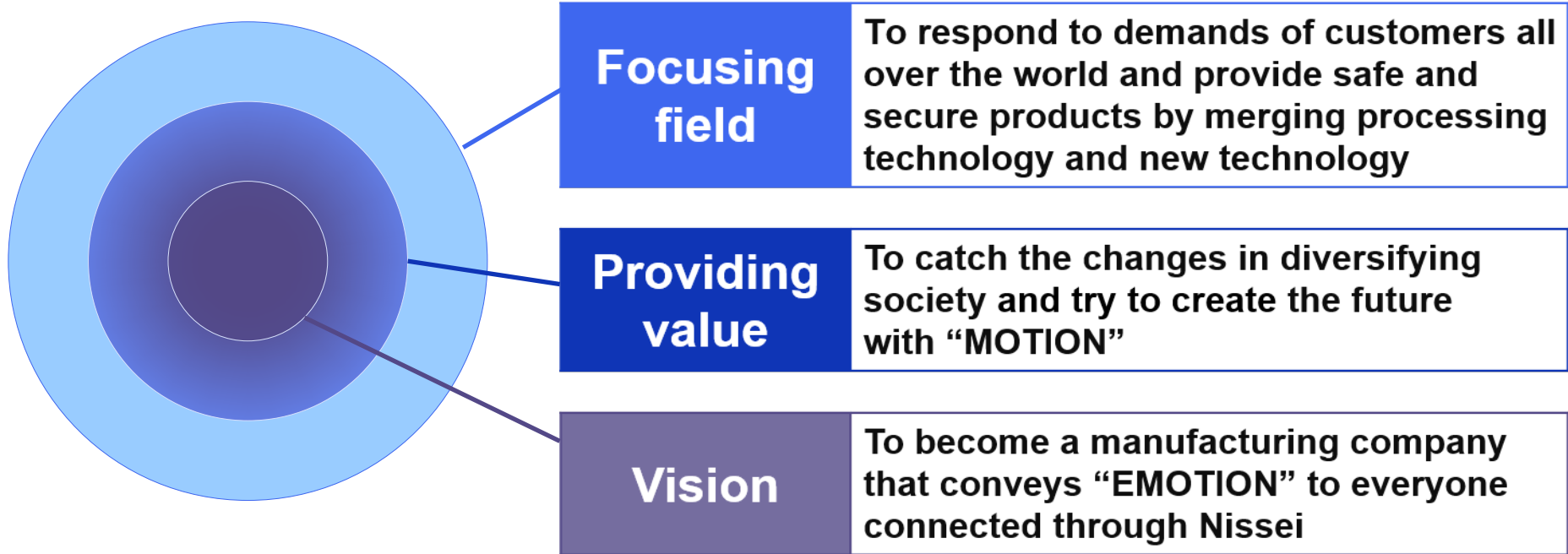


Vision for 2030 and Medium-Term Business Strategy CS B2024

Vision2030

MOTION for EMOTION

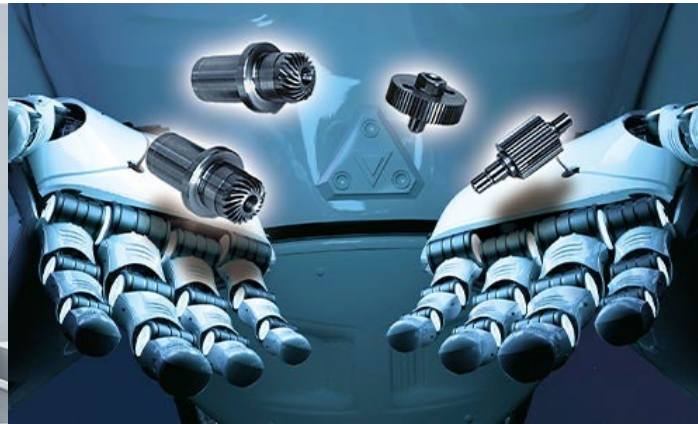
Manufacturing that inspires emotion to everyone



“MOTION” is motion we create, “EMOTION” is emotion sprung from the heart

Mission for 2030

To become a leading company of gearmotors and a supplier of parts for FA/robots (high precision gears/high stiffness reducers) in 2030



Aims in CS B2024

- To be able to achieve **profitable growth** as one of the growth businesses that are responsible for “expansion in the industrial area”
- To possess **production capacity** that enables sales growth after 2025
- To make it possible that **existing main products** of the Gearmotor business maintain **the market position**

Main strategies

Gearmotor Business

- Strengthen high stiffness reducers
- Secure profits from existing products
- Establish a manufacturing system that can flexibly respond to demand fluctuations
- Expand overseas sales

Gear Business

- Expand sales in three priority industries
- Establish a manufacturing system that can flexibly respond to fluctuations in orders
- Increase production capacity to enable sales growth
- Strengthen processing technology

[Reference] Performance targets at the time of CS B2024 announcement*

FY2024 sales revenue: 25 billion yen

*: Exchange rate assumed: 1USD=108 yen (assumed rate at the time of CS B2024 release)

Gearmotor Business Strategy

In addition to strengthening high stiffness reducers, the most important theme, ensure profits from existing products and expand sales overseas

Existing

■ Secure profits from existing products



- Cost reduction through productivity improvement
- Sales expansion through differentiated products
 - Low-voltage gearmotors for AGV*1/AMR*2
 - High-efficiency motors and IPM gearmotors with high energy-saving performance

■ Expand overseas sales

- **US:** Low-voltage gearmotors for AGV/AMR
- **China/Korea:** Gearmotors for EV Li battery production lines

New

■ Strengthen high stiffness reducers for FA and robotics markets



High stiffness reducer

UXiMO



AGV drive



Vertically articulated robot

*1: Automated Guided Vehicle *2: Autonomous Mobile Robot

Developing products based on the concept of “providing the value required for future robots” for the high stiffness reducer market, which is expected to grow

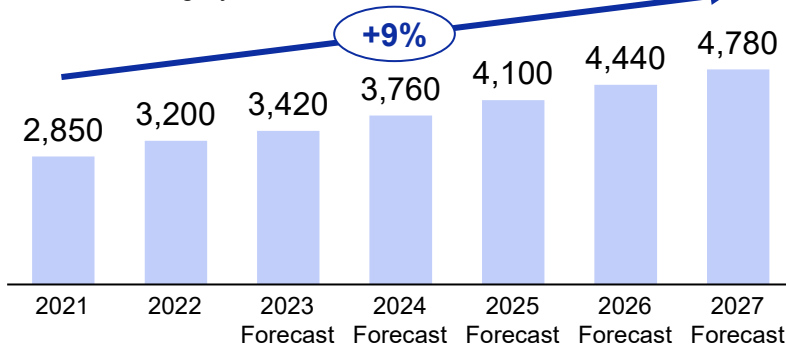
■ High stiffness reducer market expected to grow

Automation and FA drive demand for small robots to grow

The market for high stiffness reducers used in them is also growing greatly

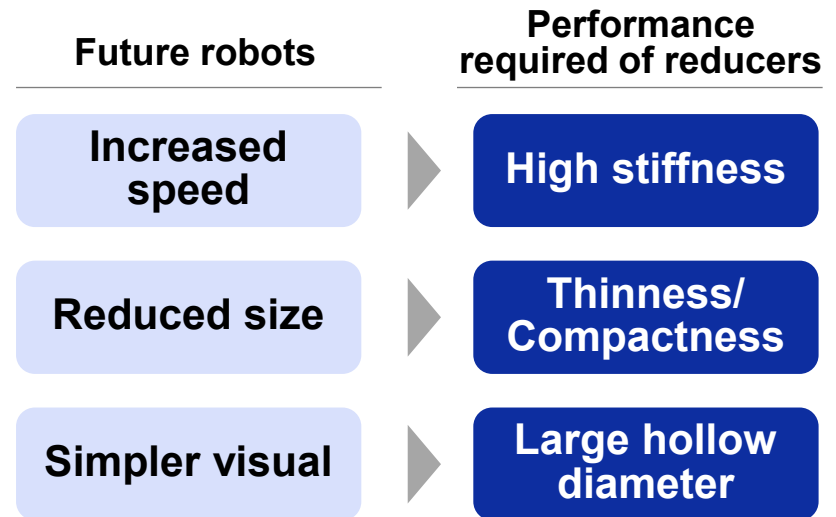
Market size forecast for precision reducers*

*: For Nissei, high stiffness reducers fall into this category (100 million yen)



Source : Fuji Keizai, 2023 Current status and future prospects of the worldwide robot related market

■ Desired value from robot manufacturers



- Making the high stiffness eccentric oscillation type reducers more compact and lightweight to increase user choice in the market for compact high stiffness reducers, where wave gear reducers dominate the market

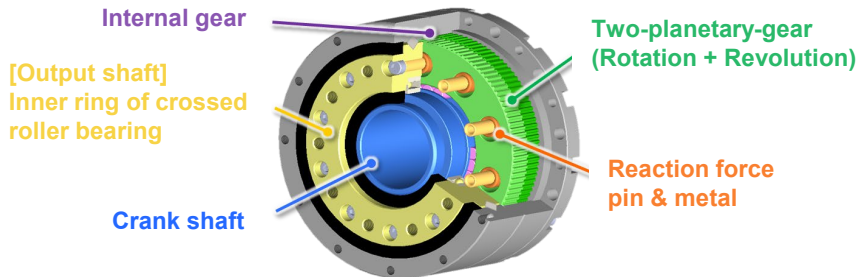
Nissei began production of eccentric oscillation type high stiffness reducers in 2021. Aiming to expand sales for small robots with a lineup of “large hollow shaft type” and “flat, lightweight type”

High stiffness reducer

UXiMO

- ✓ Eccentric oscillating reduction mechanism for high torsional stiffness and torque limit
- ✓ Ideal for applications that repeatedly drive and stop with high precision

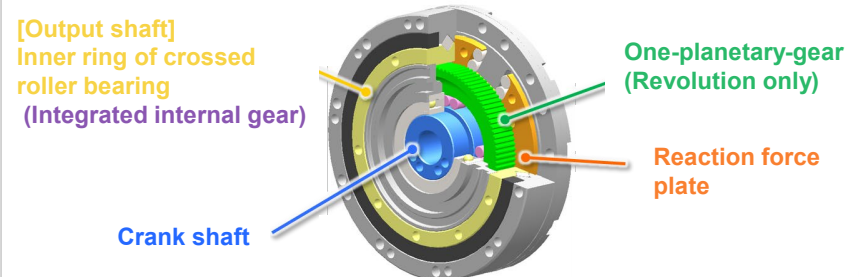
Large hollow shaft type



- ✓ Realizes high stiffness and high torque
- ✓ Large hollow shaft allows greater design freedom for wiring, piping, etc.



Flat and lightweight type



- ✓ Width and weight reduced by approximately 50% from the Large hollow shaft type
- ✓ Equipment size can be downsized due to the built-in input bearing

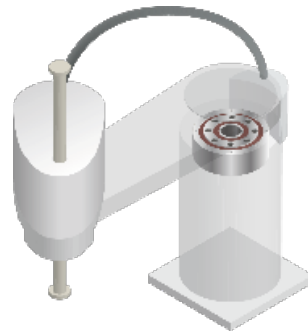


Applications for high stiffness reducers are expanding in applications requiring advanced positioning, such as robots and FA equipment

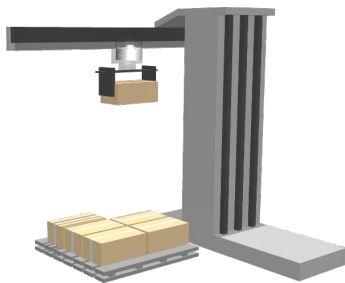
Industrial robots



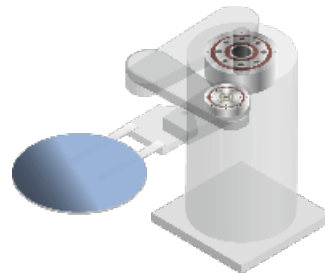
Vertically articulated robot



SCARA robot

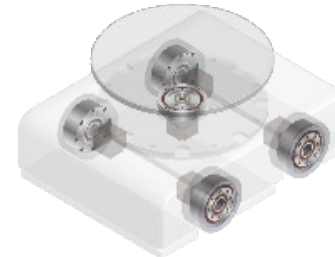


Palletizing robot

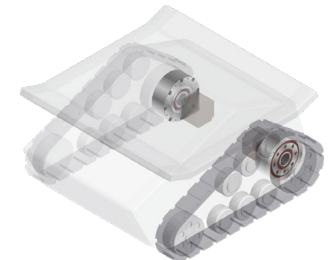


Wafer handling robot

AGV/UGV*

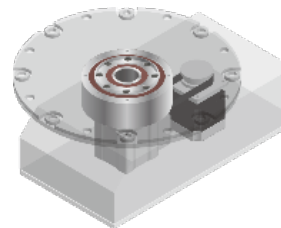


AGV

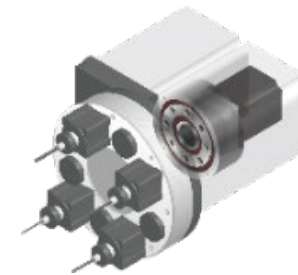


UGV

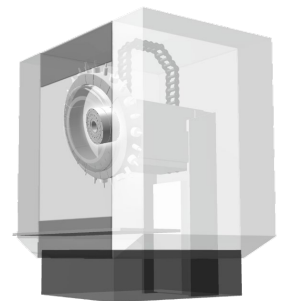
FA equipment/Machine tool



Positioner



Turret indexing system



Machine tool

*: Unmanned Ground Vehicle

Based on the current sales facilities, expand sales to overseas markets by targeting the transportation market in North America and the EV market in China, which are expected to grow in the future, to strengthen sales capabilities

■ Focus on industries with growth potential

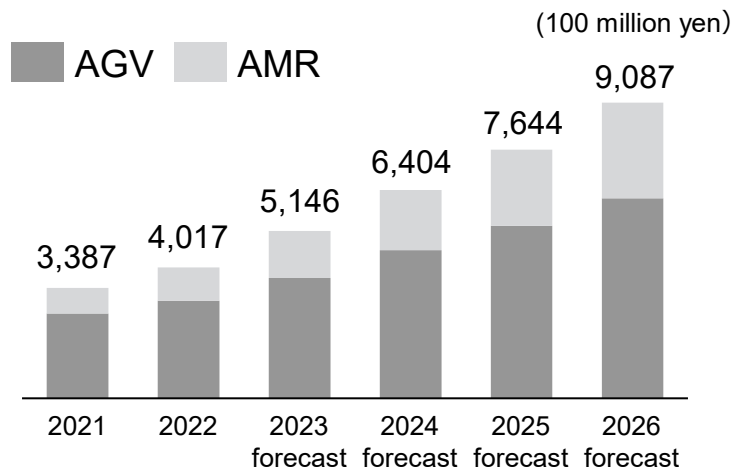
North America

- Expand sales in the **transportation industry (AGV/AMR)**
- Maintain and expand sales to existing customers (food industry)

China/Korea

- Expand sales for **EV Li battery production lines**
- Expand sales in the **transportation industry (AGV/AMR)**
- Strengthen sales capabilities in market expansion areas (coastal areas of China)

Global AGV/AMR market size trends and forecasts



AGV



AMR



Li battery production line



Frozen dispenser

Source: Yano Research Institute, "Global AGV and AMR Market 2023"

Gear Business Strategy

Gear Business | Further Sales Expansion in 3 Priority Industries

The percentage of sales to the three priority industries (robots, machine tools, and reducers), which require high precision, is increasing year by year. Aiming to expand sales in the future

Gear business 3 priority industries

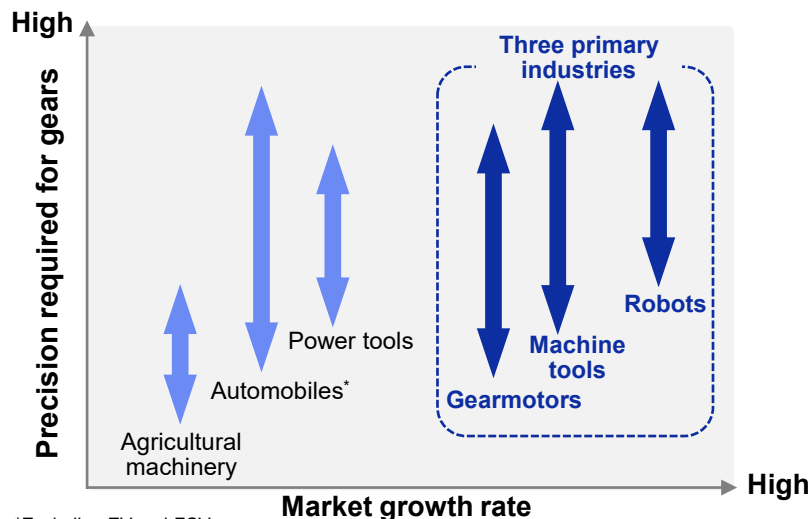
Robots

Machine tools

**Gearmotors
(competitors)**

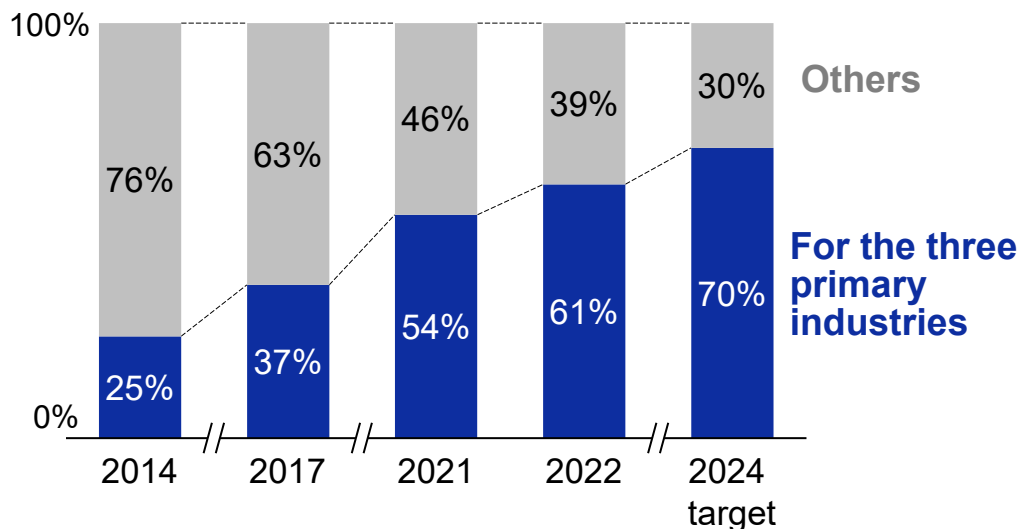
- ✓ High precision gears are in demand, and Nissei's strengths in advanced processing technology can be utilized
- ✓ Market growth is expected

Position image for each industry



*Excluding EV and FCV

Trends in sales ratios to the three priority industries

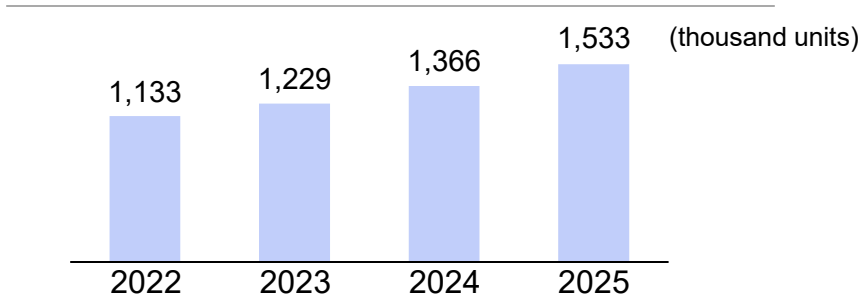


Aiming to expand sales through targeted sales activities to key customers and cross-selling of high stiffness reducers, especially in the robotics industry with its strong growth potential

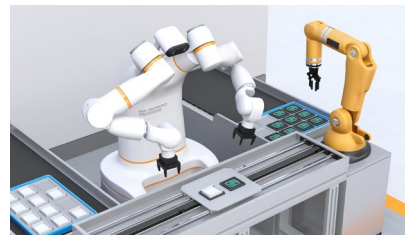
■ Expand sales of high precision gears for robots

- Targeted sales activities to priority customers
- Improve accuracy and increase production facilities by building a new heat treatment plant
- Strengthen processing technology/cost reduction

Global market size forecast for industrial robots



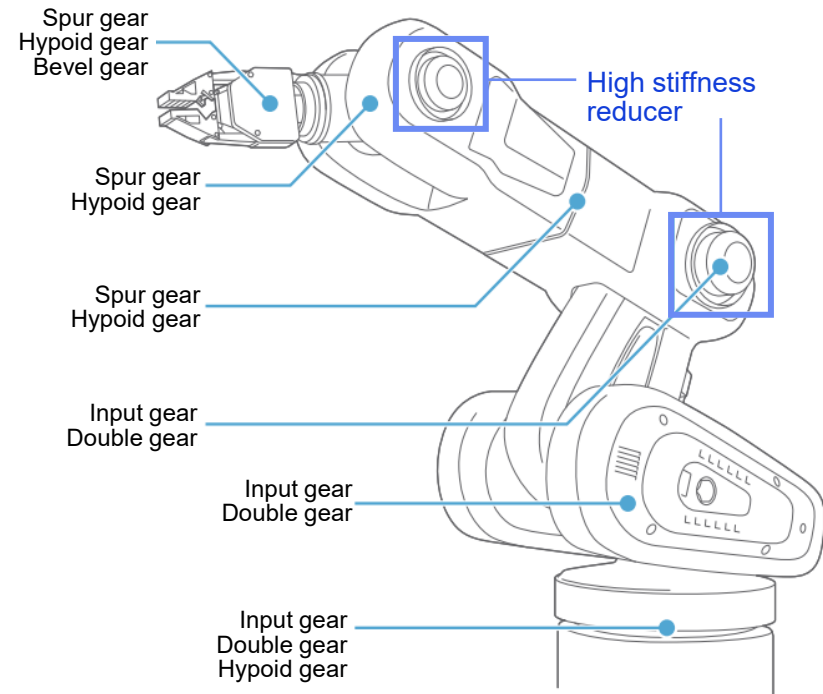
Industrial robot



Cooperative/small handling robot

■ Cross-selling with high stiffness reducers

- Demonstrate Nissei's strength as a manufacturer of both gears and reducers for robots



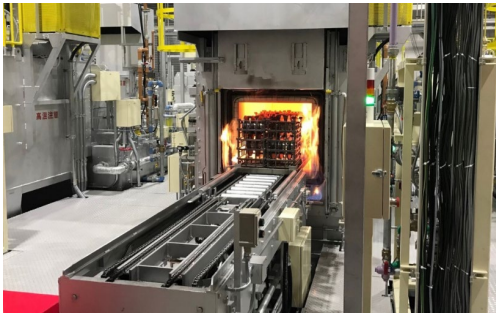
Source: Fuji Keizai, 2023 Current status and future prospects of the worldwide robot related market

Manufacturing Strategy (Both Gearmotor and Gear Businesses)

Capital investment of approx. 10 billion yen over the 3 years of CS B2024 to increase production capacity to expand sales for use in FA and robot, and to respond flexibly to fluctuations in demand and orders by consolidating gear machining, a core technology, and improving productivity

FY2021

- Construction of a fully-automated heat treatment plant building for gears



Investment amount: 1.7 billion yen

- Enables production of **high precision gears** with less distortion
- Reduces environmental impact

CS B2024 period (FY2022-2024): approx. 10 billion yen

- Construction of a new plant building for gears and high stiffness reducers



Investment amount: 1.7 billion yen

- Reduces environmental impact by installing solar panels

- Expansion of production facilities for gears and reducers



Productivity improvement initiatives

- **Production efficiency and automation** using IoT and robots, and **unmanned inter-process transfer** using AGVs
- **Consolidation of machining processes** by utilizing Brother's SPEEDIO machine tools
- **Rectification of processes** from material to finished product in a single process

Toward Further Growth

Establish a presence as a supplier of components for FA and robots

■ Summary

Aims in CS B2024

- Achieve **profitable growth**
- Possess **production capacity** to enable sales growth after 2025
- Maintain **market position of existing core products** in reducer business

Gearmotor Business

- ✓ Leading manufacturer of small reducers in the Japanese market, with strength in diversified products and short delivery times
- ➔ **Strengthening high stiffness reducers for FA and robot applications**

Gear Business

- ✓ Strengths in advanced technology and flexibility
- ➔ **Further expansion of applications in three priority industries, including robotics, which requires high precision**

[Topics] Exhibiting at the 2023 International Robot Exhibition!



In-person exhibition

Dates: November 29-December 2, 2023

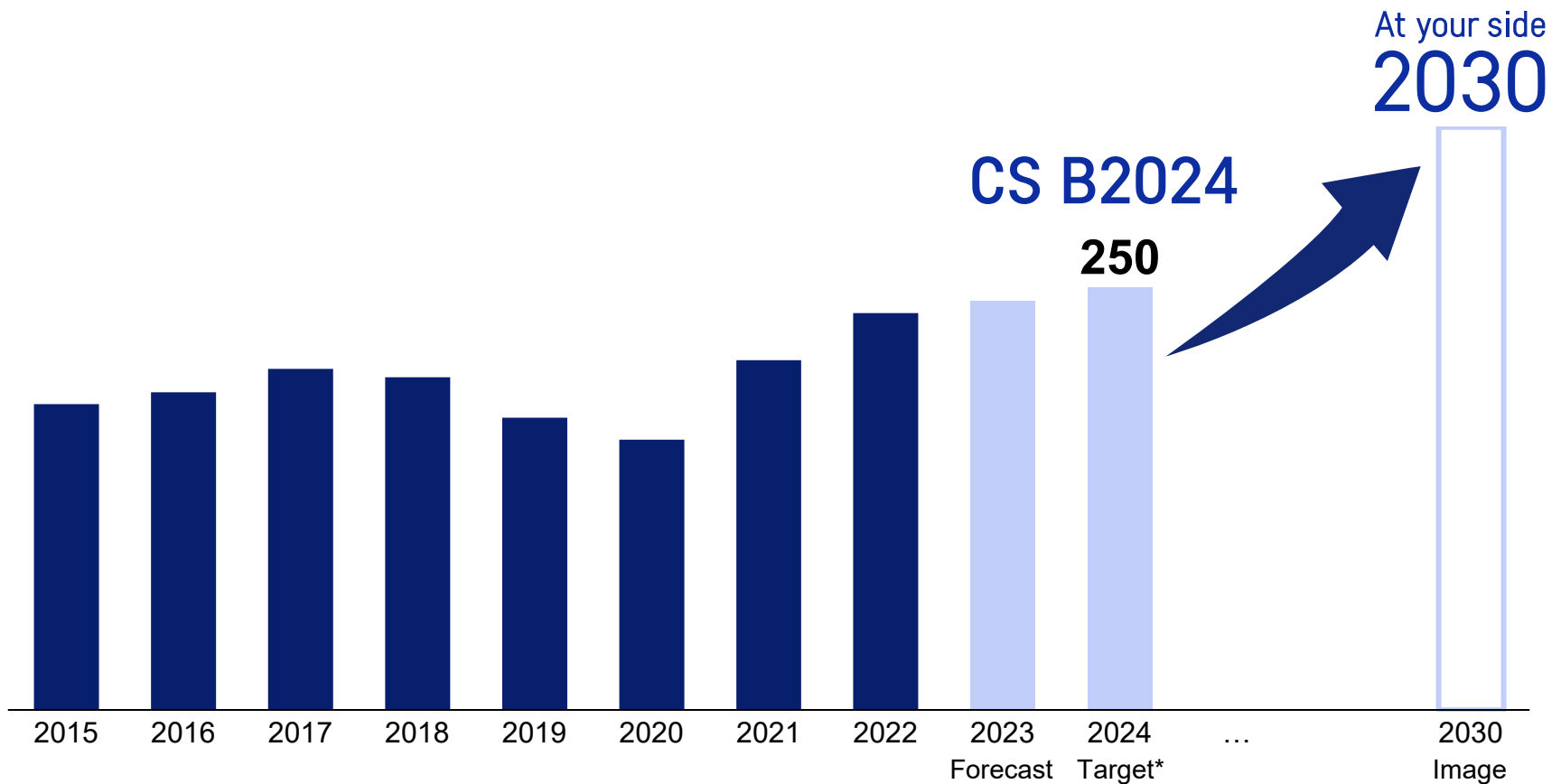
Venue: Tokyo Big Sight, Japan

Online Exhibition

Dates: November 22 - December 15, 2023

To become a leading company of gearmotors and a supplier of FA and robot parts (high precision gears and high stiffness reducers) by 2030

Net sales of Nissei business (100 million yen)



*CS B2024 target at the time of publication

Vision2030

MOTION for EMOTION

Manufacturing that inspires emotion to everyone

Gearmotors



High Stiffness Reducers



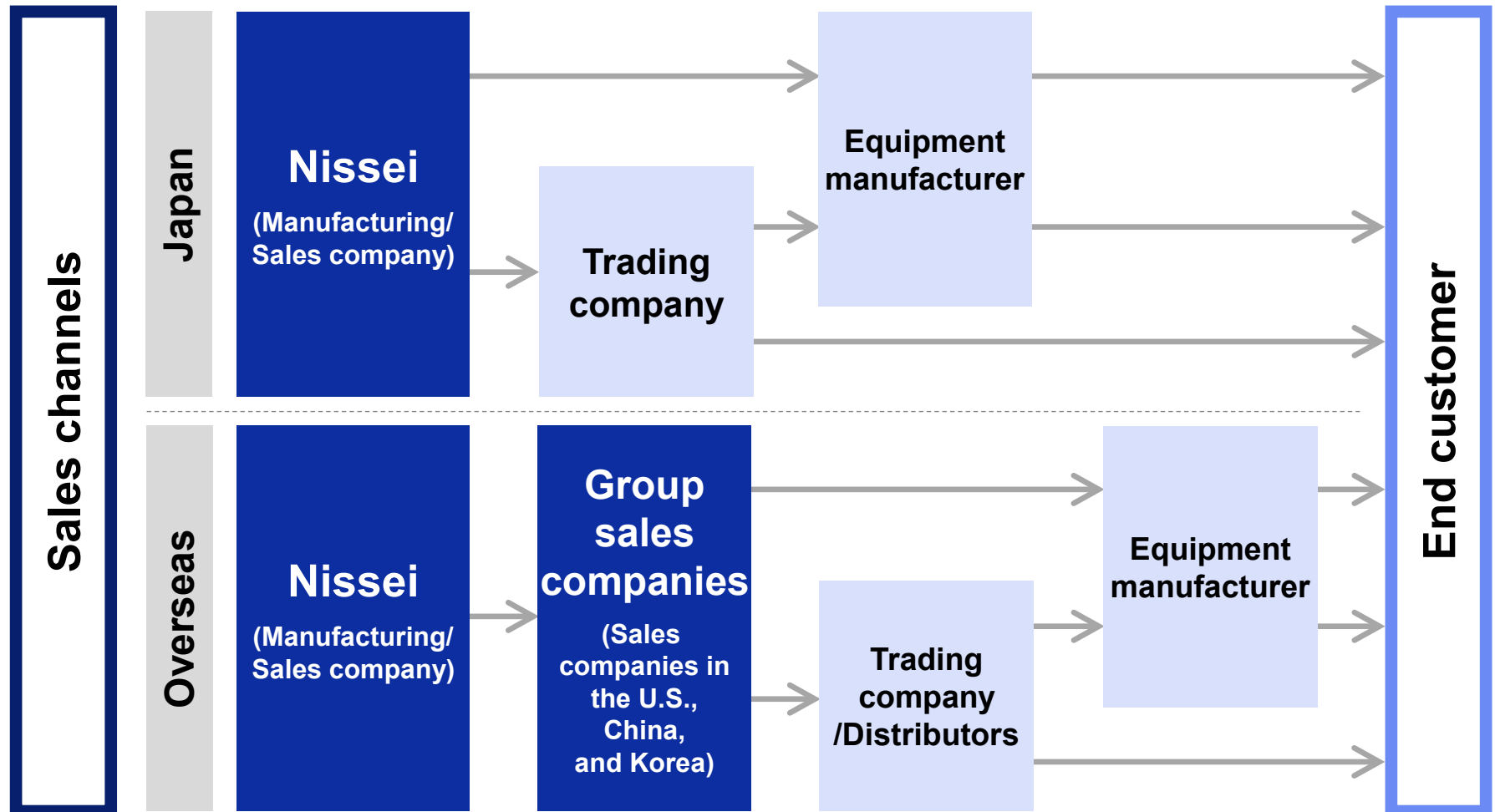
High Precision Gears



Appendix

Sales Structure (Gearmotors)

Sales to trading companies and equipment manufacturers both in Japan and overseas



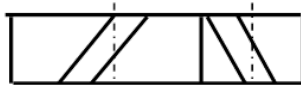
Three roles: “transmitting power,” “changing the direction of transmission,” and “changing the number of revolutions.”

Used as early as 350 B.C.

- Similar products to gears: belts/chains

Flat gears

Parallel meshing gears (parallel shaft gears)



Spur gear



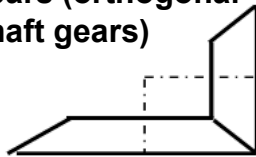
Helical gear



Internal gear

Bevel gears

Orthogonally meshing gears (orthogonal shaft gears)



Straight bevel gear



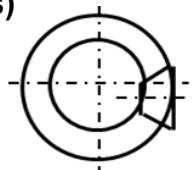
Spiral bevel gear



Zerol bevel gear

Special gears

Gears with off-center meshing (off-center shaft gears)



Hypoid gear



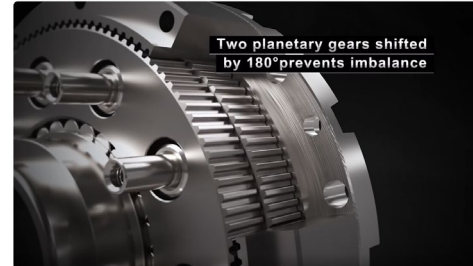
High ratio hypoid gear



Worm gear & wheel

- **High stiffness reducer
Large hollow shaft type**

<[\[High Stiffness Reducer\] Structure and Features - YouTube](#)>



- **High stiffness reducer
Flat and lightweight type**

<[High Stiffness Reducer Flat & Lightweight type - YouTube](#)>



- **Gear tooth cutting**

<[\[Wisdom of Gears\] Gear tooth cutting of straight bevel gear - YouTube](#)>



The links will take you to an external site (YouTube)

brother
at your side