

Harmonic Drive Systems Inc.

Investors' Guide FY2021

Year ended March 31, 2022

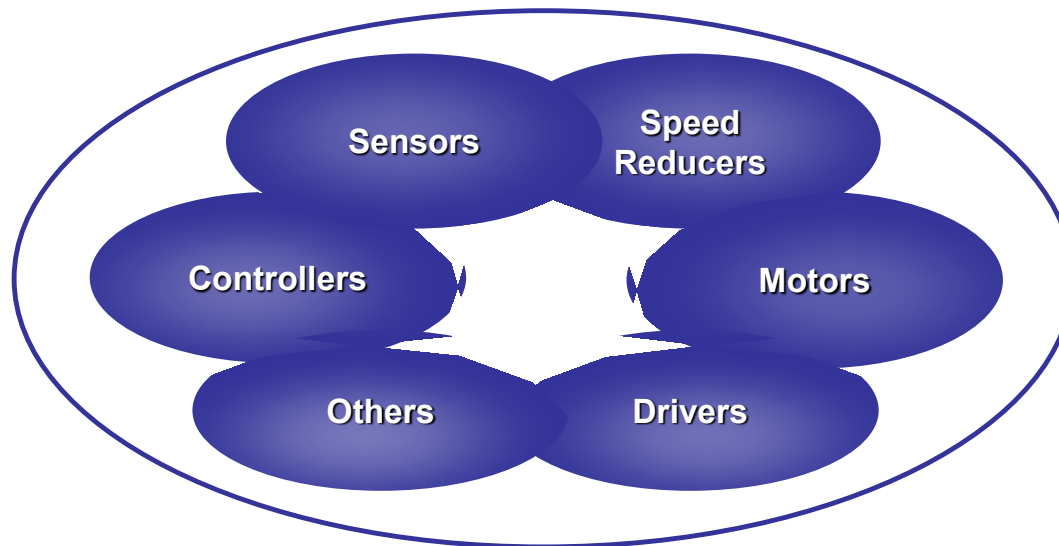
Leadership in Total Motion Control

May 13, 2022

Primary Objectives

HDSI focuses our expertise and management resources on “Total Motion Control”, developing and producing Precision Control Equipment and Components for a broad range of applications. HDSI aims to become a world industry leader, as a highly skilled precision engineering expert with pioneering spirit. HDSI will strengthen our management processes and our flexibility to become a winner in the dynamic business environment.

Schematic Concept of Total Motion Control



Management Philosophy

HDSI conducts management based on the following management philosophy.

1. Respect for the Individual

HDSI aspires to be a company where the rights of every individual employee are respected, and where individuals can pursue a meaningful, cultural, and worthwhile life.

We will make HDSI a company that believes in each employee's aspirations, supports independent activities, creates an environment where employees can maximize their abilities through work, and where abilities and performance are rewarded.

2. A Meaningful Company

HDSI wants to be recognized as a meaningful, superior company which manifests creativity, has personality and distinctive characteristics, and whose management foundation is based on ceaseless research and development activities and a constant emphasis on quality—a company where the entire organization finds meaning in making utmost efforts.

3. Coexistence and Co-prosperity

HDSI is supported by many different parties including our employees, customers, shareholders, materials and parts suppliers, affiliated companies and trading partners.

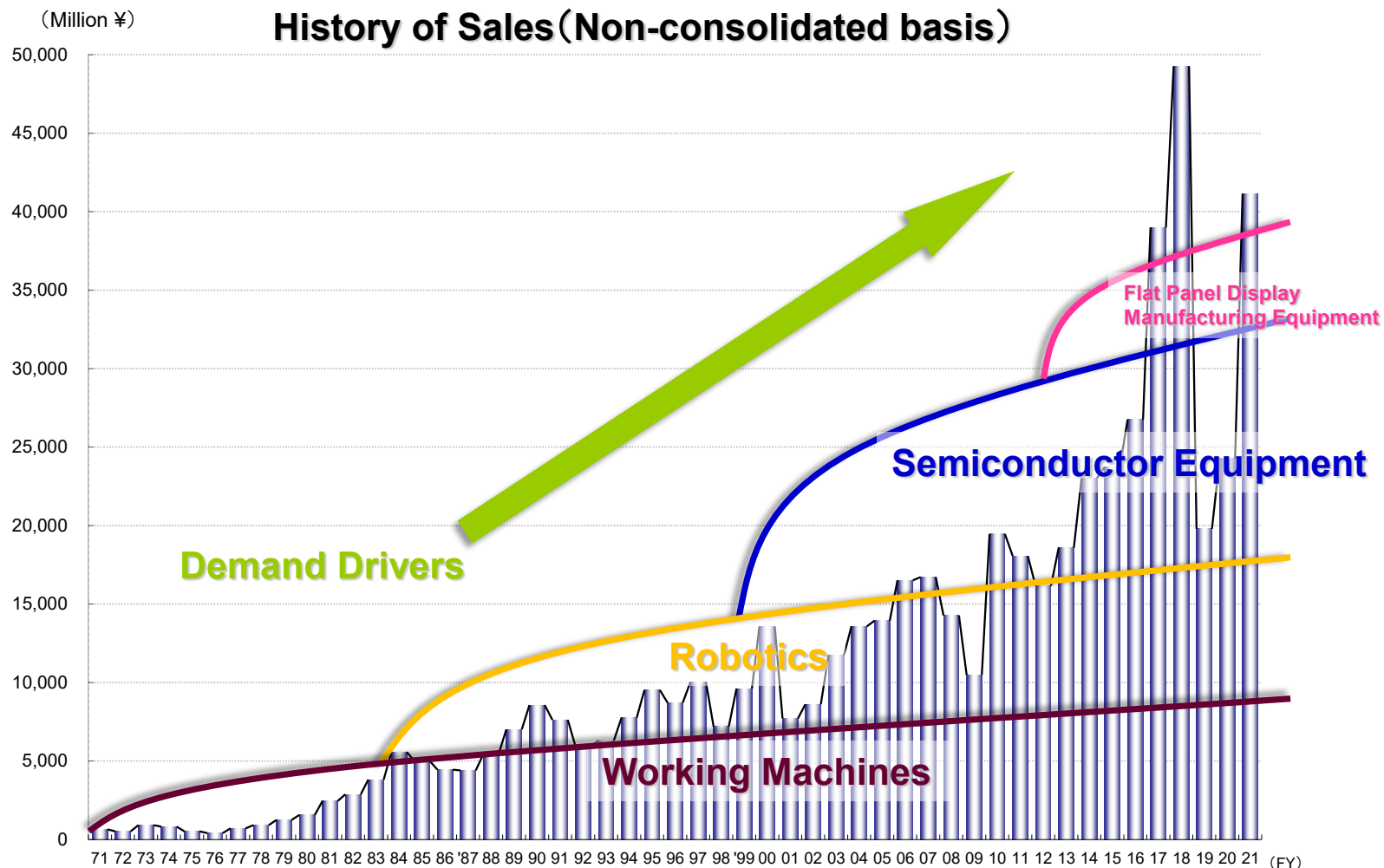
We make our best efforts to create attractive products, services, compensation, working environments, and trading relations to satisfy all these concerned parties.

4. Contribution to Society

HDSI broadly contributes to society and industry through our corporate activities as a good corporate citizen. The products and services we provide directly and indirectly contribute to the betterment of society.

We aspire to be a company that helps to improve the environment and the quality of the communities where we are located.

History of Sales



Operational Risks

1.Plant and Equipment Investment Trends

Because the majority of HDS Group's products are sold as components for industrial machinery such as industrial robots, semiconductor manufacturing equipment, and flat-panel display manufacturing equipment, plant and equipment investment trends have an influence on the operating performance of the HDS Group.

In particular, for semiconductor and flat-panel display manufacturing equipment industries, while there is large growth from improved conditions in the semiconductor device and panel markets and from manufacturing technology innovations, an unexpected market contraction resulting from supply-demand adjustments or other developments could adversely affect the operating performance of the HDS Group.

2.Research and Development Results

The HDS Group develops and puts on the market distinctive, high-value-added products by intensively allocating resources to the research and development division as a technology and technical skills organization in the motion control field. A delay in the market release or market penetration of the resulting new products despite the continuous allocation of resources to research and development could adversely affect the operating performance of the HDS Group.

3.Product Quality

The HDS Group has received ISO9001 certification and otherwise strives to strengthen its quality assurance system to boost customer satisfaction and gain market advantages. Nevertheless, the emergence of unexpected product defects or other quality issues could adversely affect the operating performance of the HDS Group.

4.Fluctuations in Foreign Exchange Rates

The HDS Group has two consolidated subsidiaries in the US, one consolidated subsidiary in China, one consolidated subsidiary in South Korea, and one consolidated subsidiaries in Germany which has nine consolidated subsidiaries in Europe, and we are actively advancing internationalization in our businesses. Consequently, foreign exchange rate fluctuations sometimes have a negative effect on the business activities of the HDS Group. Foreign exchange rate fluctuations also affect the yen-equivalent value of the Group's assets and liabilities and revenues and expenses from transactions denominated in foreign currencies, and may have a negative effect on the HDS Group's operating results and financial conditions.

5.Retirement Benefits Obligations

Harmonic Drive Systems and some HDSI consolidated subsidiaries have defined benefit pension plans or lump-sum retirement benefit plans. Revisions of the assumptions for calculating retirement benefits obligations and retirement benefits expenses, changes in the investment environment for pension assets, and other financial developments could adversely affect the Group's operating performance and financial conditions.

6.Other Risks

Changes in the economic and political environment and the occurrence of natural disasters, wars, terrorism, and other unpredictable events that cannot be avoided by the HDS Group alone could adversely affect the Group's operating performance and financial conditions.

*The above is a summary version. For full details, please refer to the latest Annual Securities Report "Yukashouken Houkokusyo" (in Japanese).



Mid-term to Long-term Management Strategies and Management Targets

Mid-term to Long-term Management Strategies

The Group continues to pursue its unwavering mission of contributing to social and technological innovation through motion control technology, stated in our fiscal years 2021-2023 medium-term management plan. Market for mechatronics and precision speed reducers, in which we participate, is contributing greatly to the emerging social and technological innovation, including electrification of vehicles and surgical robots, and such demand will continue to expand. At the same time, as demand for collaborative robots increases amid the worldwide labor shortage, we see high growth potential in a mid-and-long term. With the whole group united, we aim for achieving sustainable society through our business, based on Basic Policy of Sustainability formulated in March 2022. In line with the policies outlined in our long-term vision and medium-term management plan, we aim to enhance corporate value over the medium to long term by maintaining a balance between defensive and offensive approaches in our management strategy.

The summaries of the Basic Policy of Sustainability, our Group's mission, long-term vision, and medium-term management plan are as follows.

Basic Policy of Sustainability

As a technology and skills-based organization in pursuit of Total Motion Control, the HDS Group aims to enhance corporate value and realize a sustainable society by contributing to technological innovation for the betterment of society. We intend to achieve these goals based on our management philosophy comprising four pillars: Respect for individuals, be a meaningful company, coexistence and co-prosperity, and contribution to society.

Our Group's Mission

To contribute to technological innovation in society through motion control technology

Long-term Vision

-In pursuit of total motion control-

- Take on the challenge of developing new technologies and skills that capture changes in the environment
- Achieve QCDS that goes beyond customer expectations
- Contribute to creating a sustainable society through corporate activities



Mid-term to Long-term Management Strategies and Management Targets

Mid-term Management Plan for fiscal years 2021–2023

-Toward the Next 50 Years: Moving to a Solid Growth Stage-

(Basic policies and strategies)

(a) Achieve QCDS that meets customer expectations

Q: Quality Control: Zero defects and zero claims

C: Improve productivity and further enhance Value Analysis / Value Engineering

D: Commit to delivery schedule requested by customers

S: Enhance ER activities by speeding up

(b) Expand RD, AD, and MT businesses by developing valuable products and enhancing services

[RD: HarmonicDrive®]

- Create and commercialize new technologies and skills to support next-generation applications

[AD: AccuDrive®, HarmonicPlanetary®]

- Expand product offerings tailored to regions and various applications through business restructuring

[MT: Mechatronics]

- Provide products that enable customers to bring their vision to life and further improve problem-solving capabilities

(c) Build a business foundation that meets the demands of the times

- Promote sustainable management (SDGs)

- Develop human resources capable of leading business expansion, and establish personnel systems and work styles that enhance diversity

- Execute IT enhancement strategy and implement our own IoT concept

- Establish a financial base to support growth and strengthen fundraising capabilities

(d) Strengthen coordination and maximize synergies with overseas group companies and institutions

- Maximize utilization of management resources at each site

- Maintain and promote proactive research activities with overseas research institutions

- Establish a global production system

(e) Create new standards that define the next 50 years through outside-the-box thinking

- Proactively take on the challenge of discovering new materials, new principles, new mechanisms, and new production methods

- Make strategic moves toward developing intelligent mechatronics

- Foster a culture that is sensitive to changes in society and accepts variant perspectives



Mid-term to Long-term Management Strategies and Management Targets

Management Indices Targets

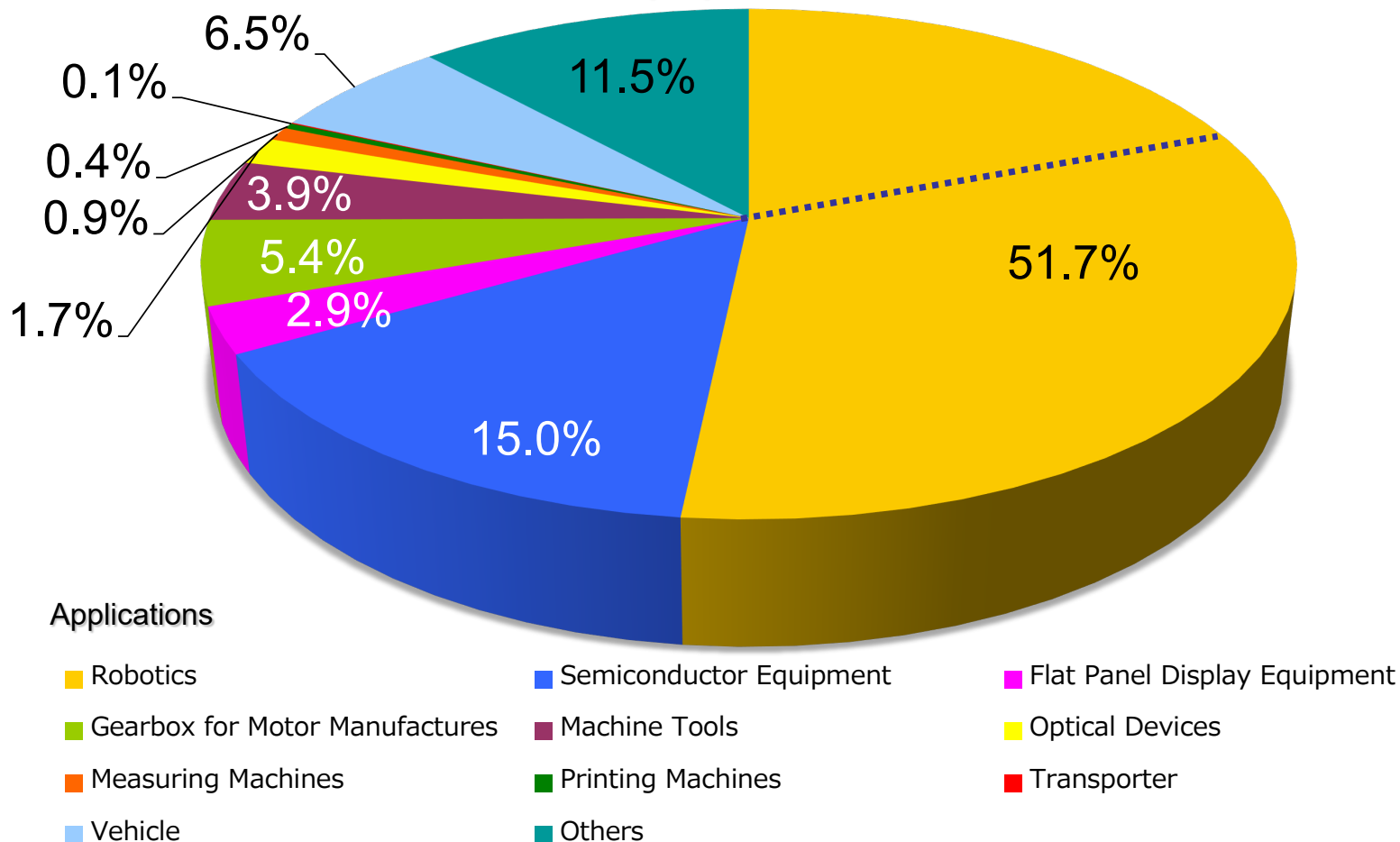
The HDS Group has established the following management indices targets.

- Profit Margin: At least 20%
- Return on Equity (ROE): At least 10%

Sales Composition by Application Fields

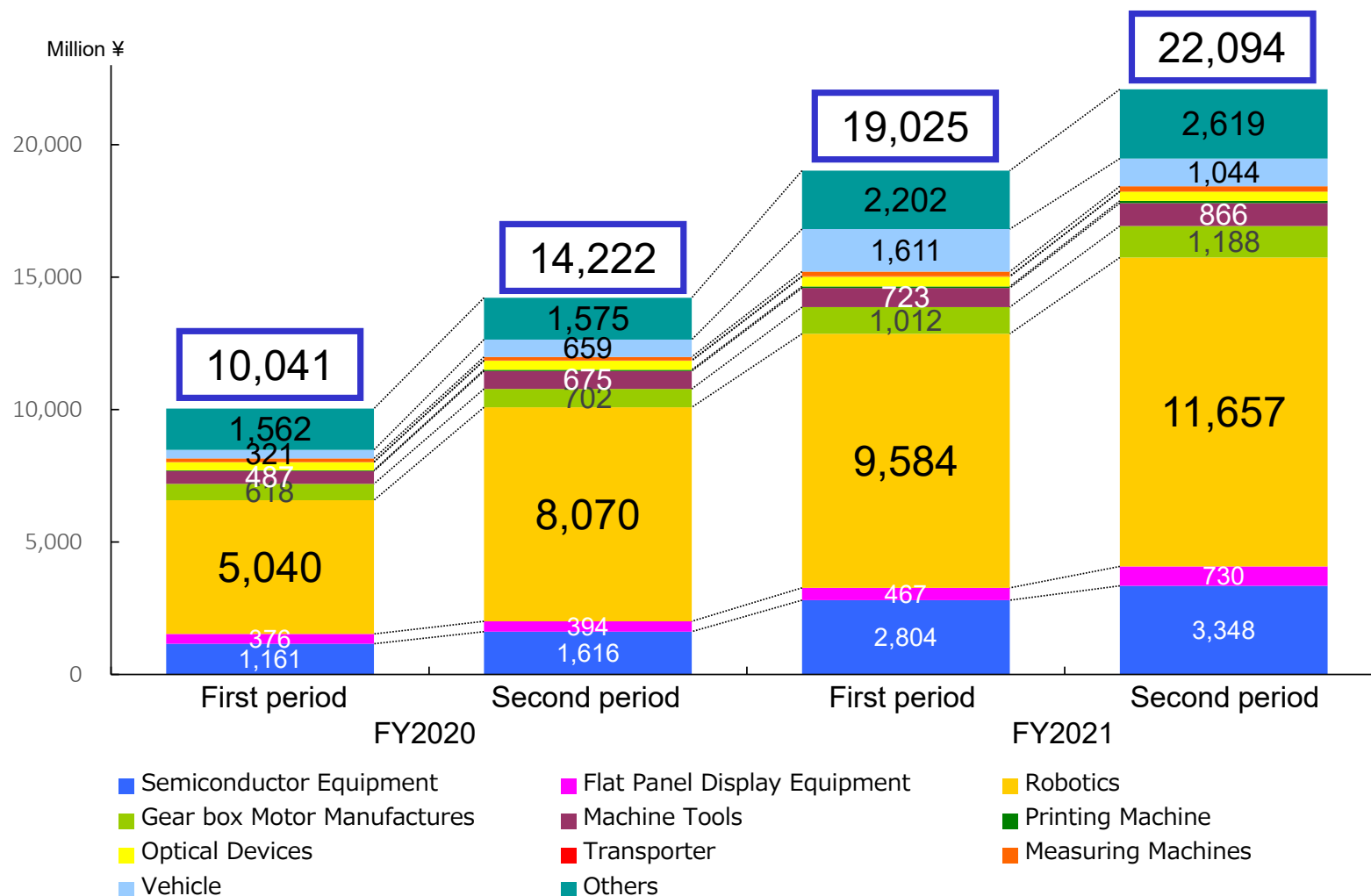
(Non-consolidated basis)

Turnover (%) in FY2021



Semiannual Sales Composition by Application Fields

(Non-consolidated basis)



Performance Summary Operating Results

During the fiscal year ended March 31, 2022

Future of the world economy remained uncertain during this fiscal year under review due to situations such as the spread of the COVID-19, the worldwide semiconductor shortage, and the Ukrainian situation that broke out at the end of the year. As for the situations concerning orders received by the Harmonic Drive Systems Group (hereinafter “the Group”), demand recovered notably in China in the second half of the previous fiscal year. In addition, orders remained high in Japan, the United States and Europe since the beginning of the fiscal year. This is because of the brisk investment for automation, such as industrial robots chiefly, and large-scale investment for manufacturing equipment which was prompted by vigorous demand for semiconductors. Though some of our customers were forced to adjust production because of the semiconductor shortage which became prevalent in the second half of this fiscal year, demand for primary applications expanded, and resulted in a record high ¥94,823 million of consolidated orders received, up 127.5% year on year.

Reflecting the sharp increase in demand, we enhanced production capacity in major production sites in Japan, Germany, and the United States, while minimizing the impact from the spread of the COVID-19. As a result, sales increased in all regions, with our consolidated net sales reaching ¥57,087 million, up 54.1% year on year.

Regarding net sales trend by application, net sales for industrial robots surged in Japan and in Europe, among other regions, reflecting the increase in demand to cover perpetual labor shortage with collaborative robots. In addition, expansion of EV-related capital investment mainly in China increased the sales. Net sales for semiconductor manufacturing equipment also climbed significantly following the strong demand forecast, which led to voracious appetite for capital investment. Net sales for advanced medical applications such as surgical robots rose reflecting demand recovery notably in the United States. In contrast, net sales for automotive applications, which rose in the first half of the fiscal year, turned sluggish in the second half due to production adjustment by customers caused by the semiconductor shortage.

In terms of profit and loss, depreciation cost increased due to the enhancement of production capacity, and manufacturing cost rose due mainly to personnel increase in the manufacturing sector. Selling, general and administrative expenses also increased reflecting the higher transportation cost for export and larger allocation for research and development expenses. However, the increase in profit due to increased net sales outweighed that of the cost, marking 909.3% year-on-year jump in operating profit to ¥8,739 million. In addition, the increase in operating profit resulted in 902.9% jump in profit attributable to the owners of parent to ¥6,643 million.

In terms of net sales by product group, speed reducers totaled ¥47,235 million, up 61.1% year on year and mechatronics products reached ¥9,852 million, up 27.7% year on year. They accounted for 82.7% and 17.3% of the total net sales, respectively.

The fiscal year ended March 31, 2022 marked the first year of the new mid-term management plan (FY03/22–FY03/24). During the period, we pursued measures set out in the plan.

On the sales front, taking advantage of online sales approaches that took root under the COVID-19 pandemic, we sought to capture orders by enhancing communication with customers, focusing on ways of solving their individual issues, with a particular stress on speeding up our response time. To meet a rapid upswing in orders, we also focused on close information-sharing with each customer, with a commitment to meeting desired delivery dates. In the exhibition area, we rolled out new initiatives such as SDG-themed booths, uniforms, and novelty gifts.

Performance Summary Operating Results

In terms of quality, we reaffirmed our definition of quality as "satisfying customer expectations" and have been working to improve product and operational quality. In line with increased automation of production lines, we reinforced our quality control framework by digitizing process data. In addition, we expanded the technical support functions of the customer satisfaction department, striving to raise product quality and enhance our problem-solving capabilities. Although the pandemic restricted movements of personnel, we made use of IT tools, endeavoring under our Common Global Quality initiative to maintain and raise quality at all Group production sites (Japan, Germany, the US, and South Korea).

In terms of R&D, we strengthened coordination between R&D divisions based in Japan and Germany to further develop our Harmonic Drive® strain wave gearing. At the same time, we focused on joint research with external research institutes, working to develop and commercialize elements that are potentially essential to next-generation motion control technology. We expanded the size variations of products in our Ultra-Light Weight (ULW) series and released new products capable of meeting growing demand for weight reduction. Furthermore, we have been involved in the development of all new robots by major robot manufacturers (more than 20 companies), and are focusing on commercialization that meets the needs of individual customers.

On the production front, anticipating growing demand for our products, we moved forward with the Group production capacity expansion plan set out in the previous mid-term management plan. To this end, we decided to invest a total of 6.5 billion yen to boost capacity at the Ariake Factory (Azumino City, Nagano Prefecture), and initiated preparations. We are targeting a 40% increase in monthly production capacity in Japan from the second half of 2022, with a goal of producing 130,000 units for industrial machinery and 90,000 units for automotive applications. With aggressive investment into automation, these new production lines will allow us to promote labor saving and will also digitize a range of data to enable the visualization of production. Through this, we seek to enhance both productivity and quality.

Positioning the Hotaka Plant as the "mother factory" of our production activities, we will continue to respond flexibly to demand for high-mix, low-volume production there while pursuing the transfer of advanced skills. We are also taking steps to grow the business going forward. To achieve efficient distribution of production sites, make effective use of assets, and diversify risks across the Group, we will relocate production of our mechatronics products to Komagane City, Nagano Prefecture (on the premises of Winbel Co., Ltd.). We have started to expand floor space and take other preparations, aiming to finish relocating by June 2022.

Performance of reportable segments is stated below:

<Japan>

Demand for semiconductor manufacturing equipment grew due to increase in demand for industrial robots induced by robust investment for automation, chiefly in China, and overall high level of capital investment demand for semiconductors. As a result, net sales increased 68.6% year on year to ¥37,273 million. Segment profit (ordinary profit) rose 147.2% year on year to ¥11,889 million due to increased sales.

<North America>

As normalization from the COVID-19 proceeded, demand for advanced medical applications (surgical robot-related) and semiconductor manufacturing equipment recovered. As a result, net sales rose 29.1% year on year to ¥6,643 million. Segment profit (ordinary profit) increased 126.3% year on year to ¥701 million.

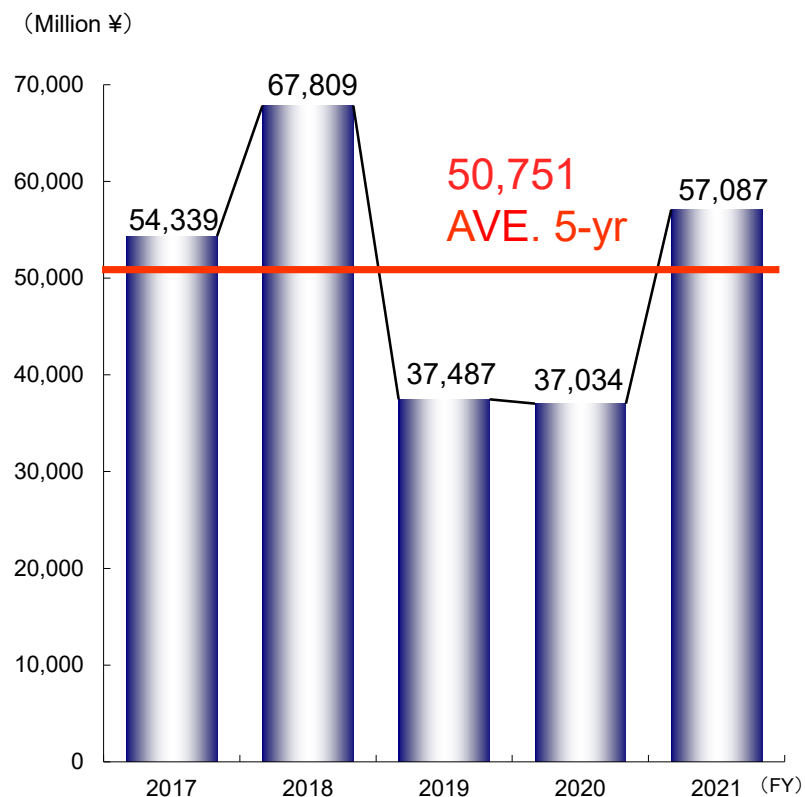
<Europe>

Normalization of economic activities as noted in the North America segment pushed up demand for industrial robots, among others. Net sales marked 34.7% year-on-year increase to ¥13,170 million. Segment profit (ordinary profit) totaled ¥171 million, up from the segment loss of ¥920 million a year earlier. This is due to the increase in sales, which absorbed the amortization cost of ¥1,580 million on intangible assets posted at the time of the acquisition of shares in Harmonic Drive SE.

Results i Net Sales, EBIT

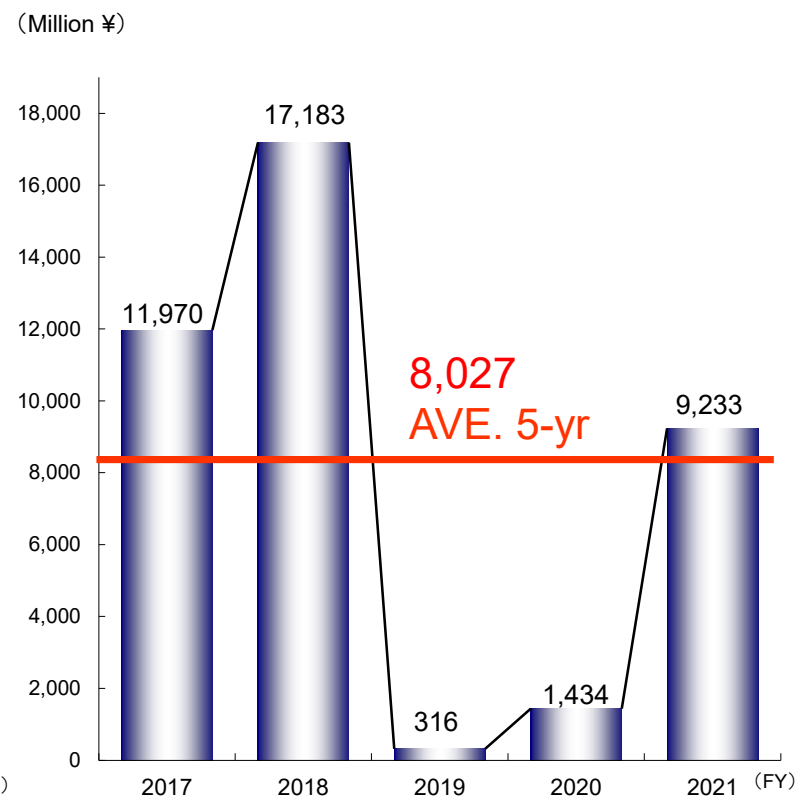
(Consolidated basis)

Net Sales



EBIT

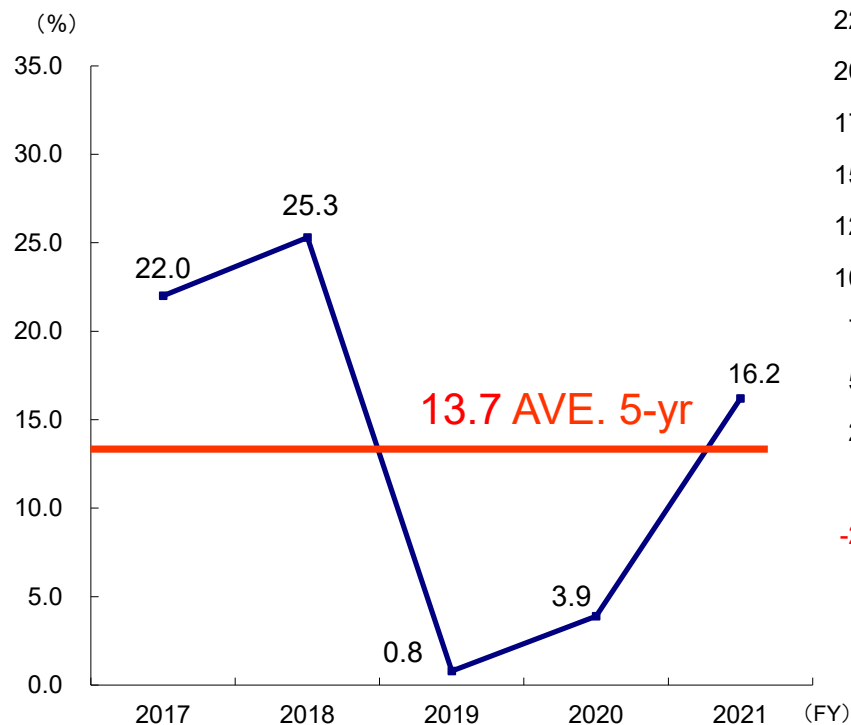
EBIT=Ordinary income + Interest paid — Interest income



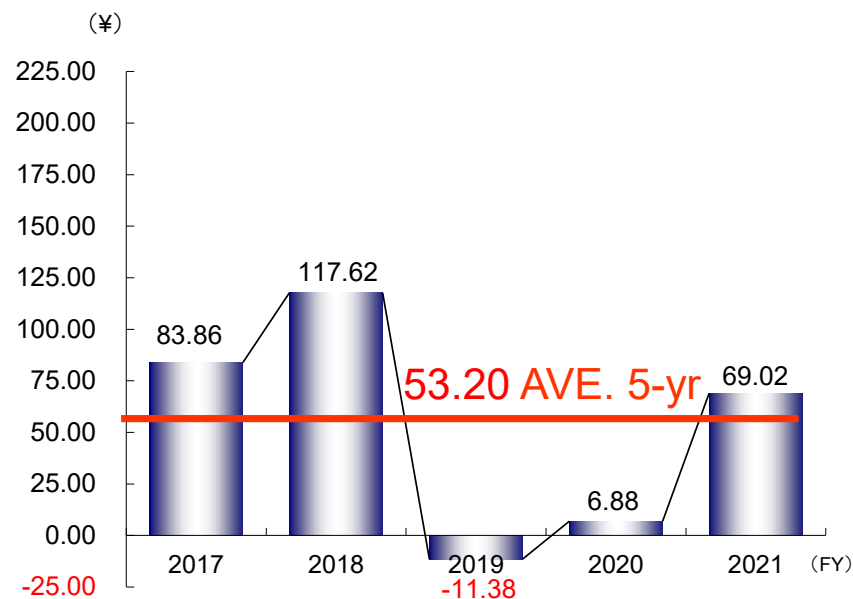
Results ii EBIT to Net Sales Ratio, EPS

(Consolidated basis)

EBIT to Net Sales Ratio



EPS



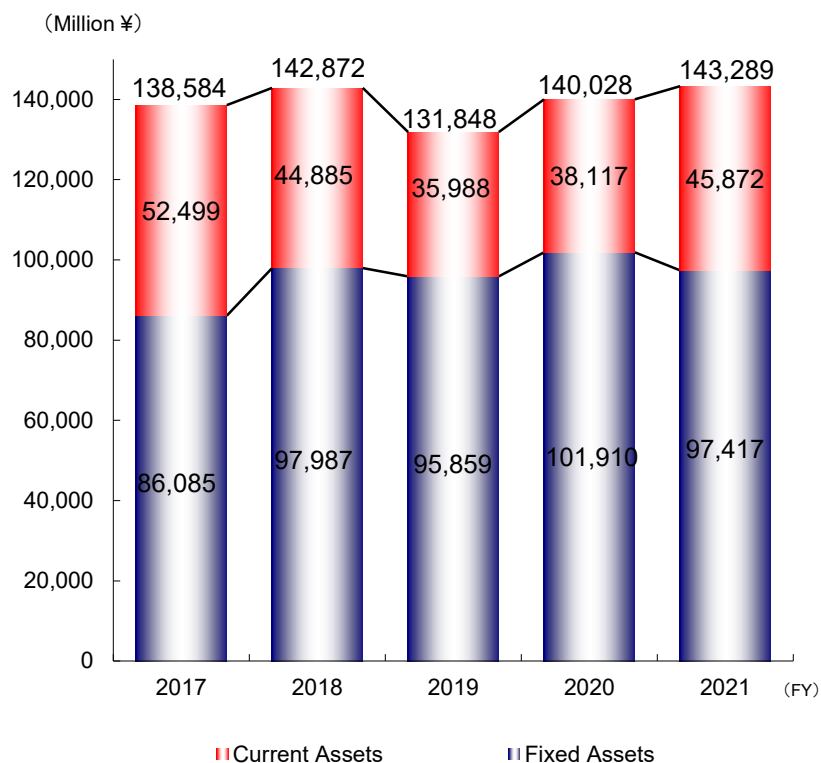
Dividends paid per share

FY	2017	2018	2019	2020	2021
Dividends(¥)	26	38	20	20	21

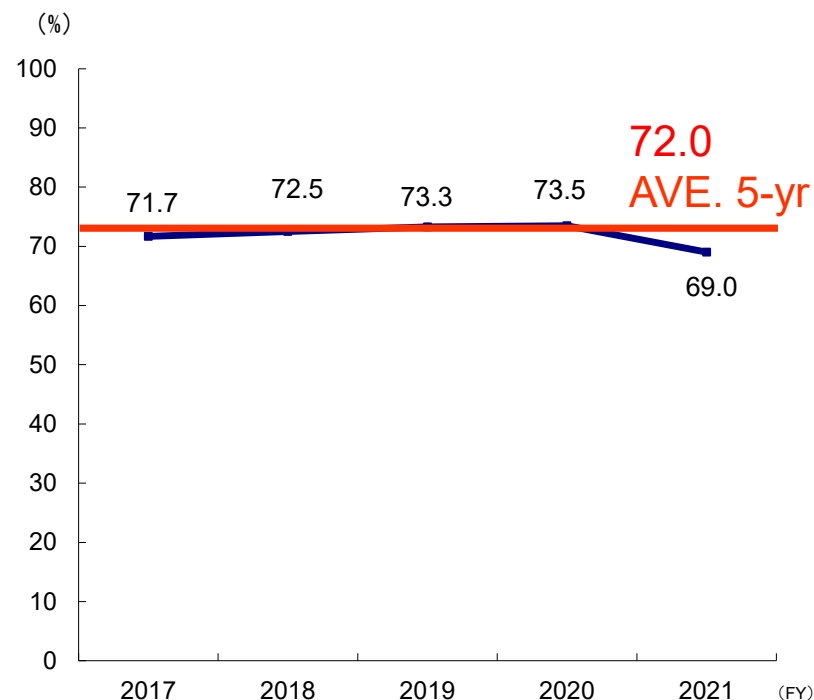
Results iii Total Assets, Equity Ratio

(Consolidated basis)

Total Assets



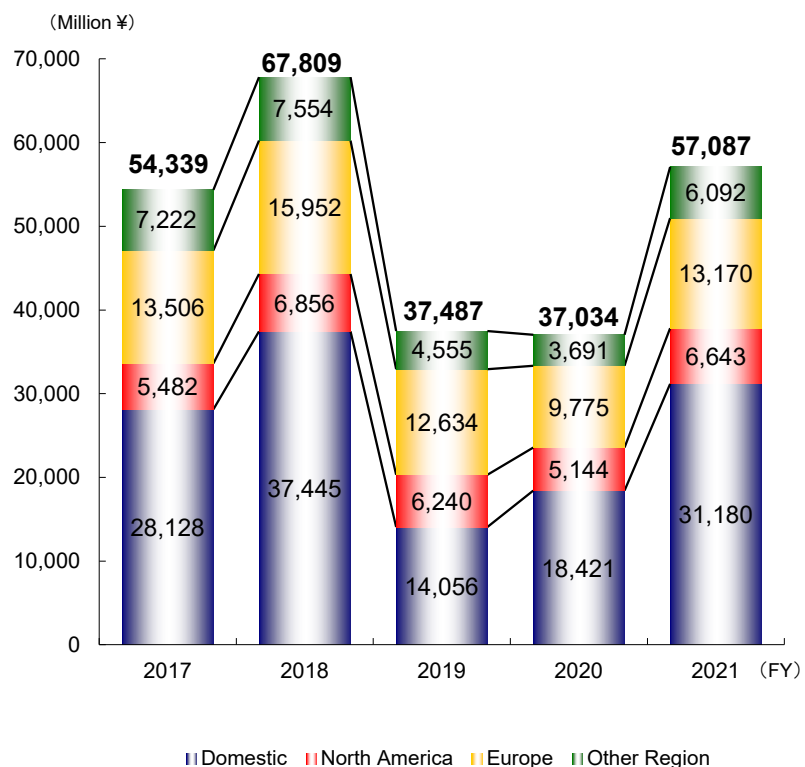
Equity Ratio



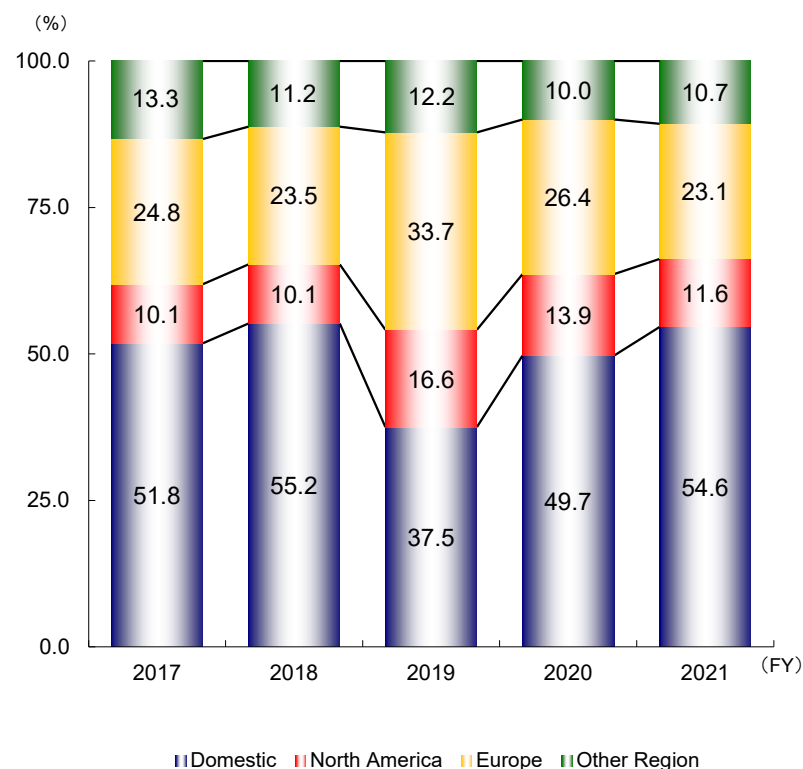
Sales Structure by Regions

(Consolidated basis)

By Regions



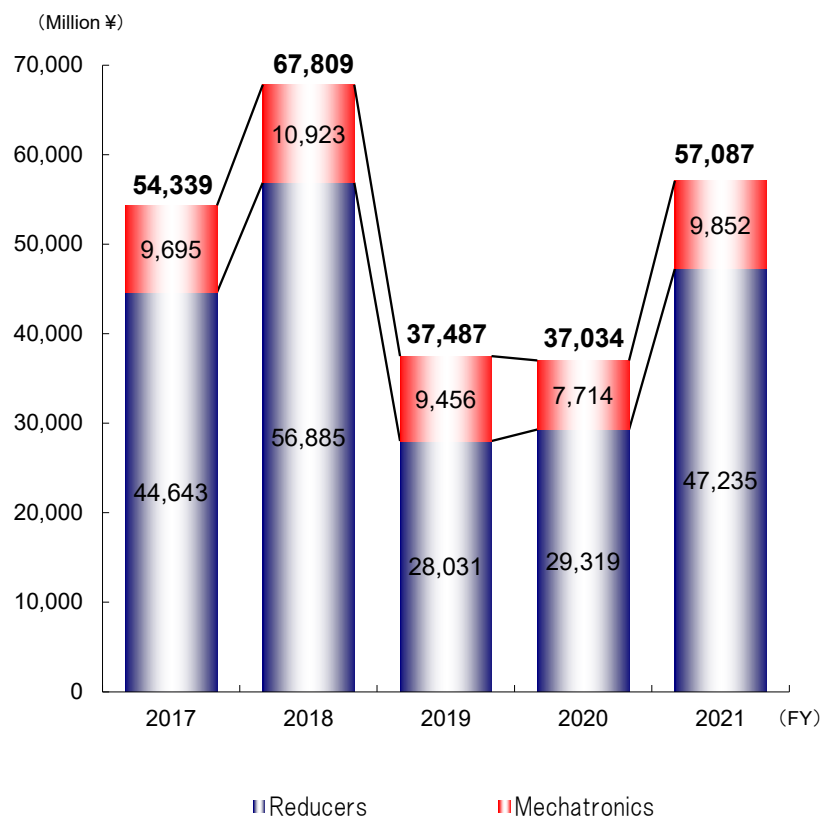
By Regions



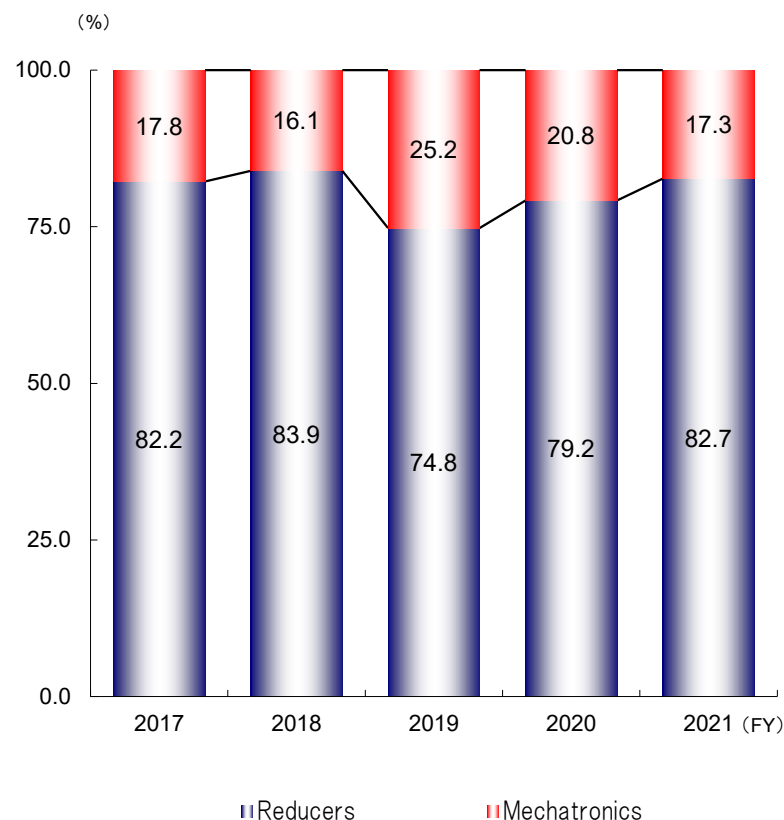
Sales Structure by Product Types

(Consolidated basis)

By Product Types



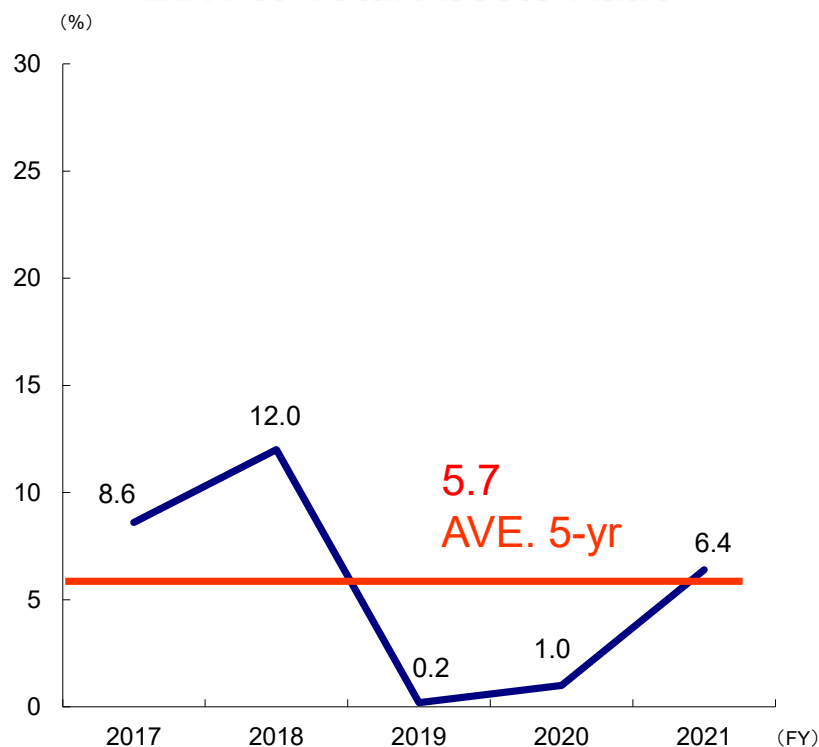
By Product Types



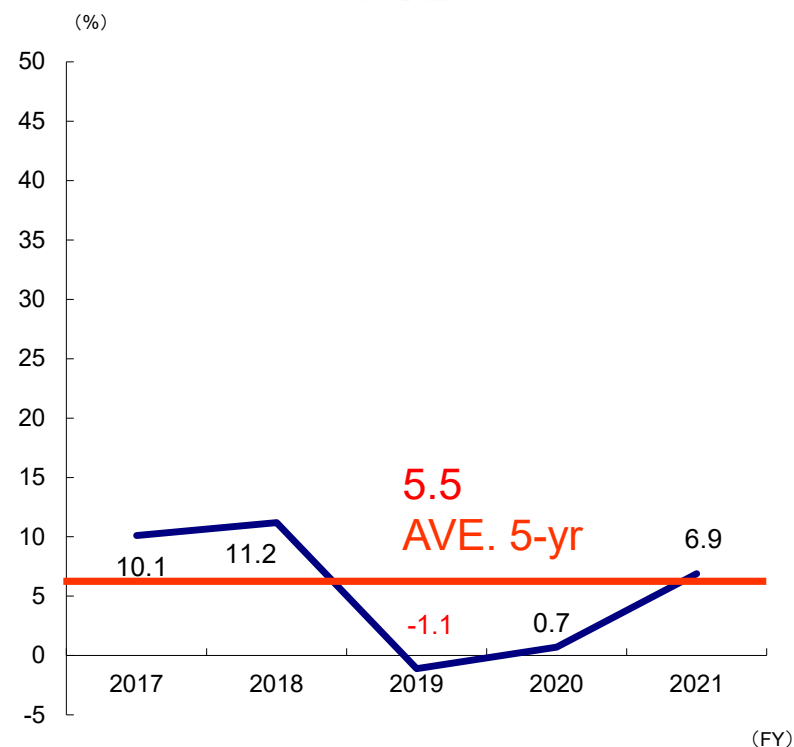
Profitability EBIT to Total Assets Ratio, ROE

(Consolidated basis)

EBIT to Total Assets Ratio



ROE

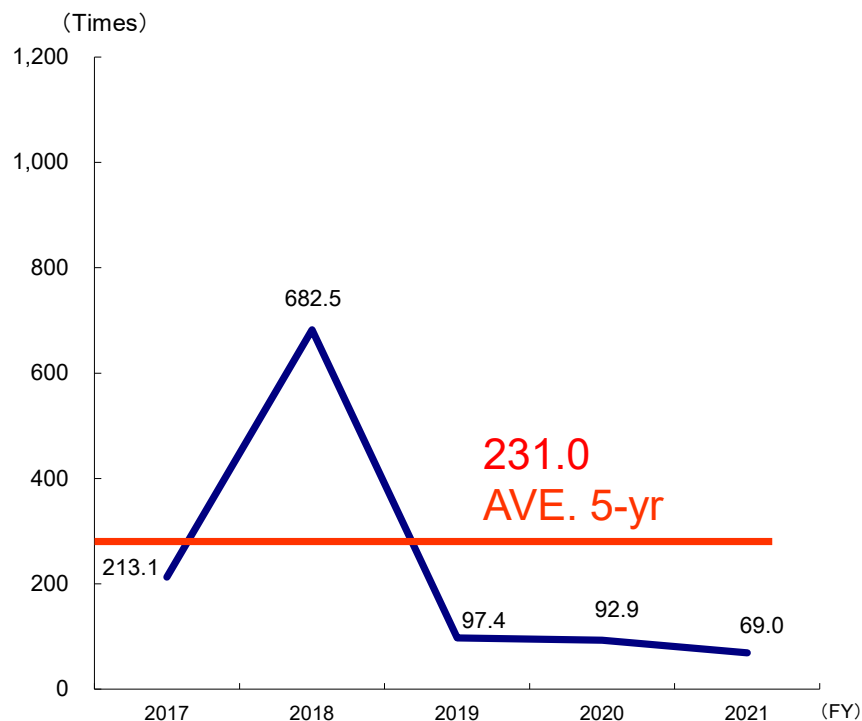


Stability Interest Coverage Ratio, Debt / Equity Ratio

(Consolidated basis)

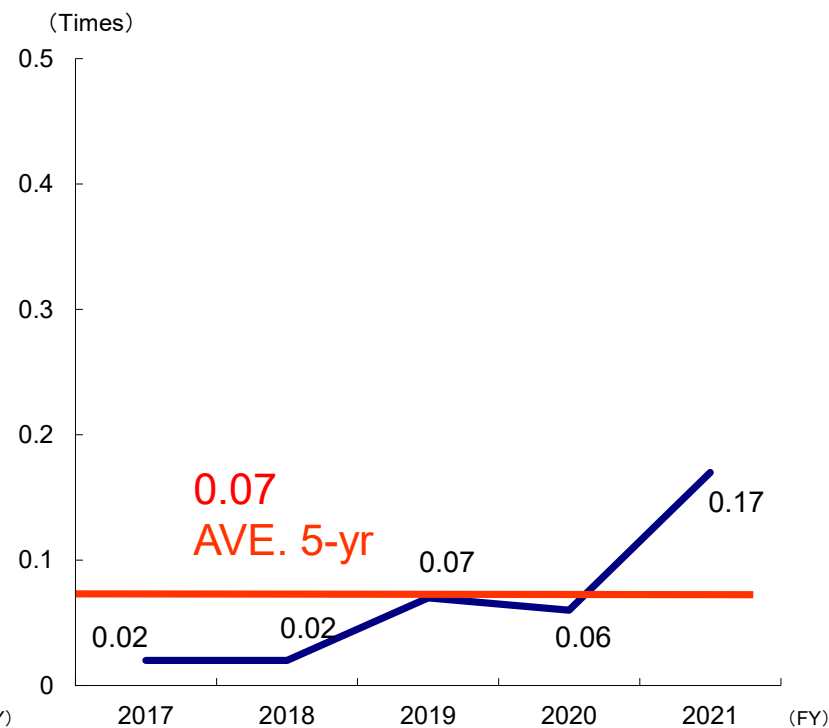
Interest Coverage Ratio

Interest Coverage Ratio = Net Cash provided by operating activities / Interest paid-net



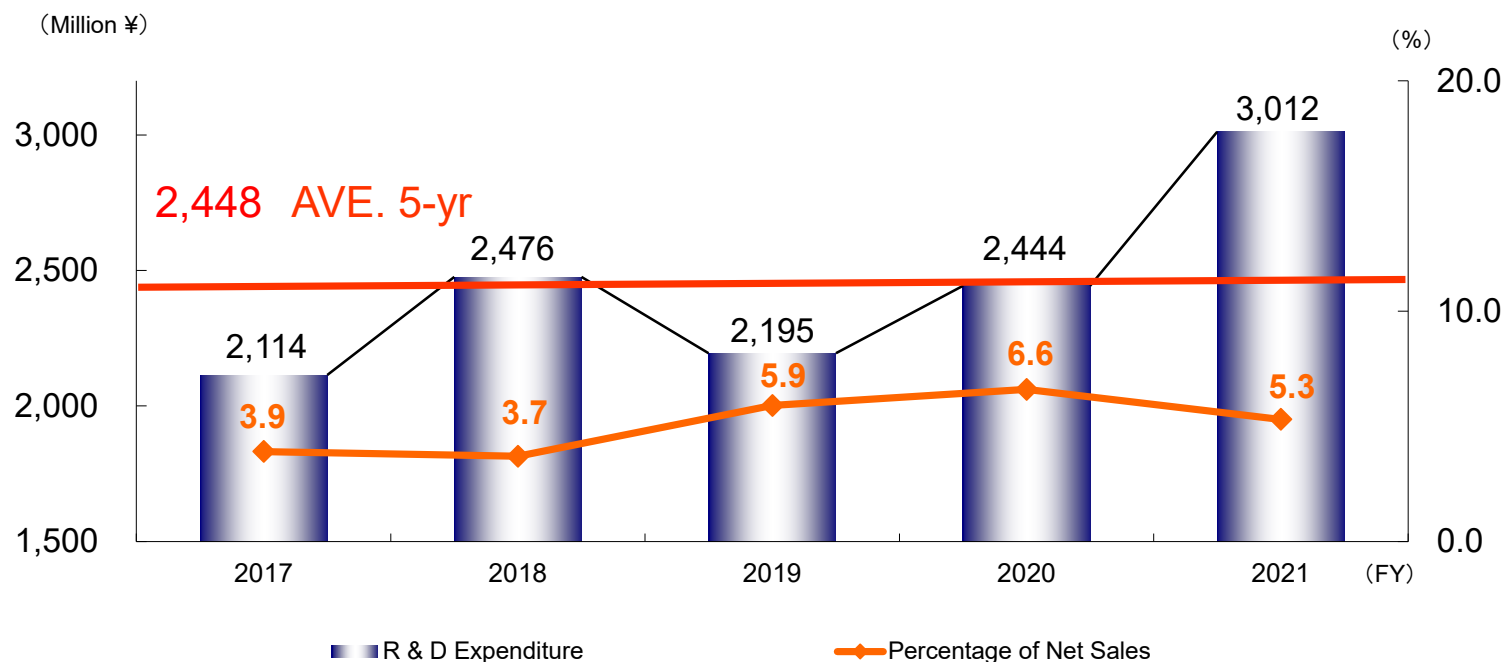
Debt / Equity Ratio

Debt / Equity Ratio = interest-bearing debt / total shareholders' equity



R&D Investments

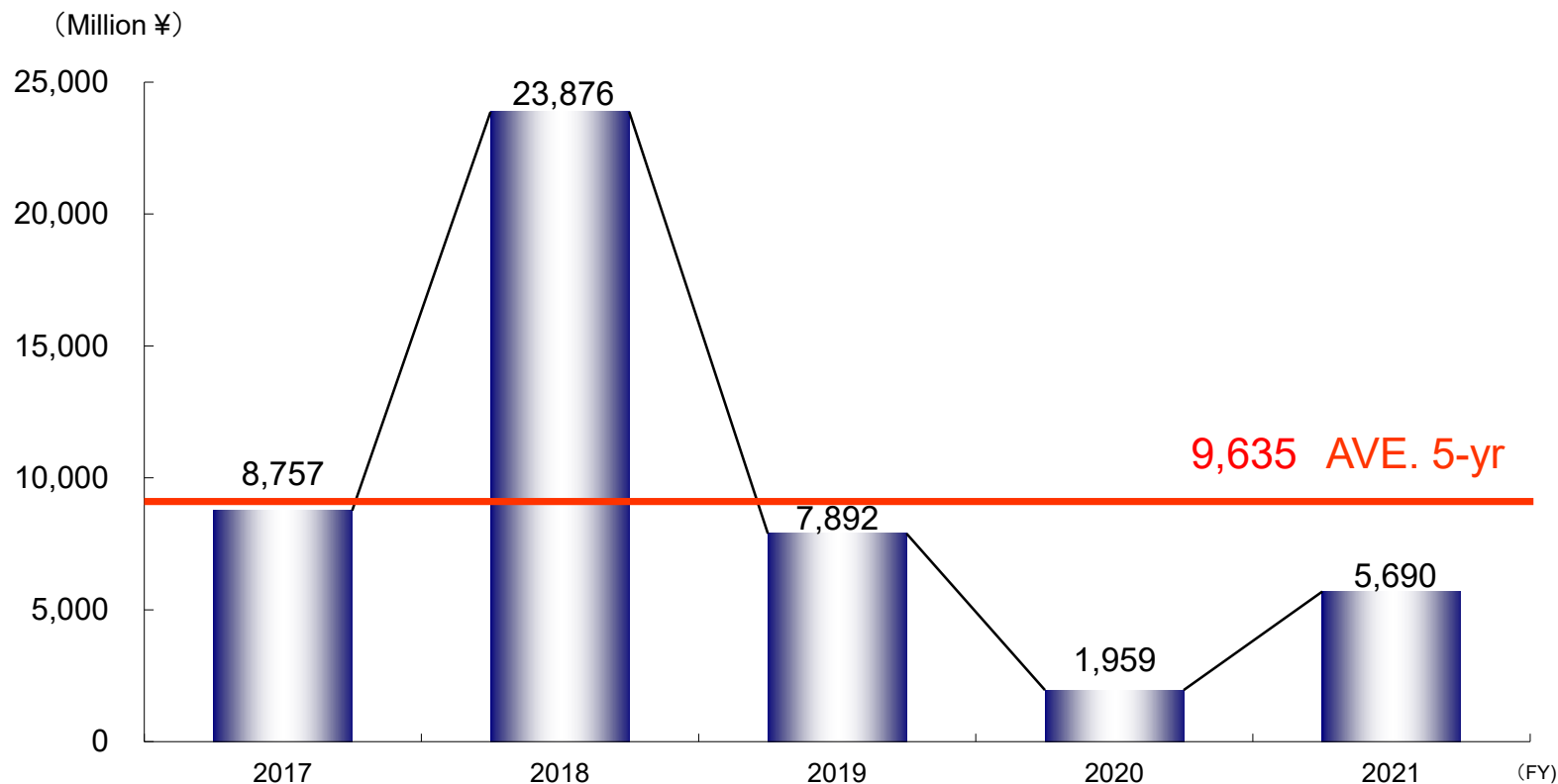
(Consolidated basis)



Fiscal Year	2017	2018	2019	2020	2021
Number of R&D persons	111	129	139	144	139
Share of total employees (%)	11.5	11.6	12.7	13.0	12.1

Capital Expenditures

(Consolidated basis)



※ Purchases of tangible and intangible fixed assets

Consolidated Balance Sheets

(Million ¥)

	FY2017	FY2018	FY2019	FY2020	FY2021
Current Assets	52,499	44,885	35,988	38,177	45,872
Fixed Assets	86,085	97,987	95,859	101,910	97,417
Tangible fixed Assets	21,306	40,852	45,500	41,991	43,967
Intangible fixed Assets	48,976	44,415	40,212	41,003	40,435
Investment and other Assets	15,802	12,718	10,146	18,915	13,013
Total Assets	138,584	142,872	131,848	140,028	143,289
Total Liabilities	29,865	29,594	25,129	29,968	44,433
Current Liabilities	13,180	15,944	5,127	7,954	14,127
Long-term Liabilities	16,685	13,650	20,002	22,014	30,306
Total Net Assets	108,719	113,277	106,718	110,059	98,856
Shareholders' Equity	88,933	97,079	93,192	91,784	89,184
Other Comprehensive Income	10,446	6,564	3,435	11,104	9,671
Subscription rights to shares	625	625	625	—	—
Minority Interest (Non-controlling Interests)	8,712	9,008	9,464	7,170	—
Total Liabilities and Net Assets	138,584	142,872	131,848	140,028	143,289

Consolidated Statement of Income

(Million ¥)

	FY2017	FY2018	FY2019	FY2020	FY2021
Net sales	54,339	67,809	37,487	37,034	57,087
Gross profit	25,703	30,446	12,003	12,582	22,426
S G & A	13,386	13,821	12,198	11,716	13,686
Operating income	12,316	16,624	▲195	865	8,739
Ordinary income	11,946	17,185	236	1,366	9,108
Net income attributable to owners of parent	7,777	11,322	▲1,095	662	6,643

Consolidated Statement of Cash Flows

(Million ¥)

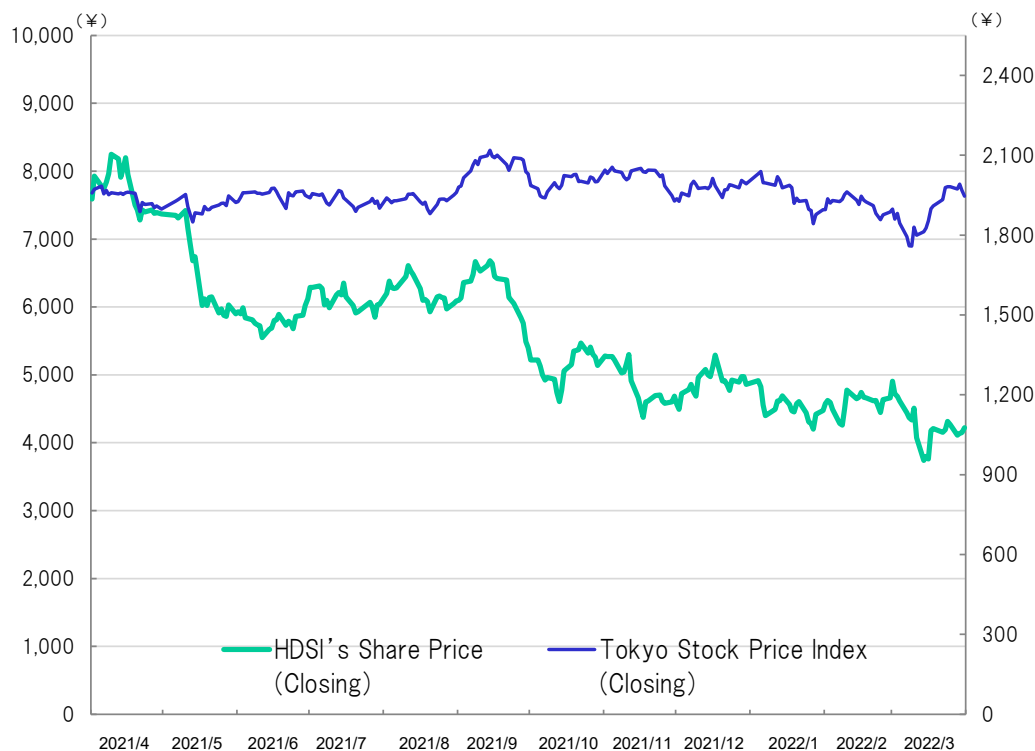
	FY2017	FY2018	FY2019	FY2020	FY2021
Cash flow from operating activities	9,233	15,121	10,950	9,555	9,881
Cash flow from investing activities	▲8,171	▲22,399	▲12,537	▲4,180	▲19,490
Cash flow from financing activities	17,493	▲3,271	2,362	▲3,611	8,123
Effect of exchange rate changes on cash and cash equivalents	95	▲171	▲33	▲108	256
Net increase (decrease) in cash and cash equivalents	18,651	▲10,720	742	1,654	▲1,299
Cash and cash equivalents at end of year	28,320	17,600	18,342	19,996	18,767

Share Price Trend

Share Price

HDSI's Share Price (Closing)

Tokyo Stock Price Index (Closing)



- Number of shares of common stock issued and outstanding:
96,315,400 shares (As of March 31, 2022)
- Number of shareholders:
9,736 persons (As of March 31, 2022)
- Market capitalization:
¥406,230,130,080 (As of March 31, 2022)

Note: TOPIX is a stock index calculated and published for stocks listed on the Tokyo Stock Exchange (TSE).

Harmonic Drive Systems Inc. is listed on the Standard Market of the TSE.

Harmonic Drive Systems Inc.

Investors' Guide FY2021

Year ended March 31, 2022

Appendix

Results forecasts on this document are based on the management's decisions for future business strategies and performance, and may include risks from the business environment, uncertainties, and other factors. For this reason, the understanding is that the actual business results may not agree with the business prospects as presented on this document.

May 13, 2022

Outlook for FY03/23

FY03/23 Outlook

The business environment surrounding the Group remains to be unpredictable primarily due to the worldwide shortage of semiconductors and price hike in raw materials and energy. On the one hand, the Group forecasts strong demand for applications in industrial robots, collaborative robots, and semiconductor manufacturing equipment, which is backed by vigorous demand for capital investment following accelerating electrification of vehicles worldwide, and ongoing capital investment to satisfy voracious appetite for semiconductors. In addition, opportunity for further growth is likely in the new market where we have put our focus, such as advanced medical applications (surgical robot-related) and automotives.

The mechatronics and precision speed reducers handled by the Group are making significant contributions to technological innovation in society, such as the shift to electric vehicles and surgical robots. Demand in these areas will continue to grow going forward. Amid worldwide labor shortages, we also anticipate significant growth opportunities over the longer term stemming from mounting demand for collaborative robots (co-bots). Guided by the Basic Policy of Sustainability we formulated in March 2022, we will also work across the Group to pursue activities that help bring about a sustainable society. We will implement strategies in line with policies outlined in our long-term vision and mid-term management plan, maintaining a balance between offensive and defensive approaches in our management strategy. By doing so, we aim to enhance corporate value over the medium to long term.

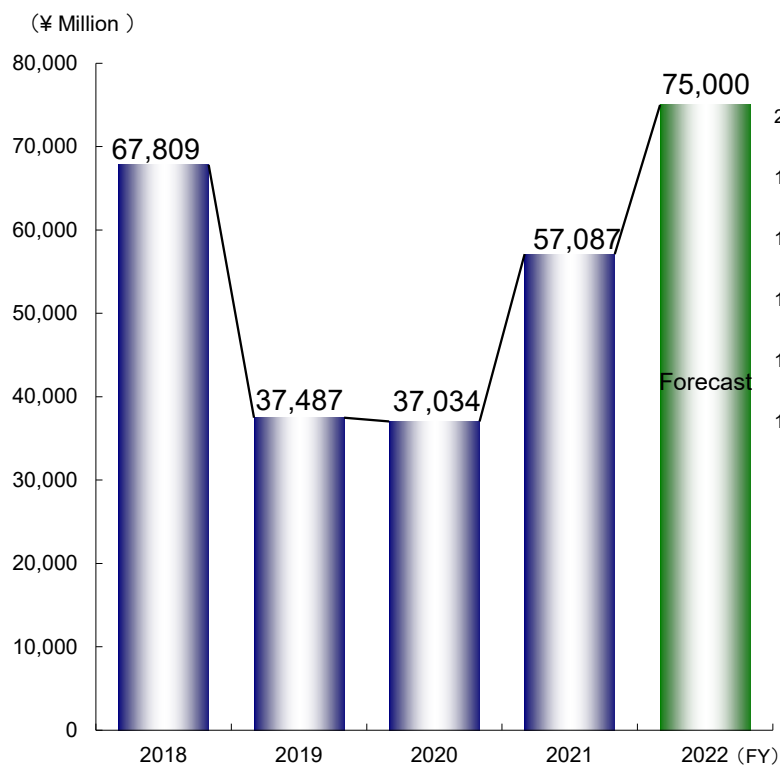
For the consolidated earnings for the fiscal year ending March 31, 2023, based on the above business environment, the Group forecasts net sales of ¥75,000 million, operating profit of ¥13,000 million, ordinary profit of ¥13,000 million, and profit attributable to owners of parent of ¥9,000 million.



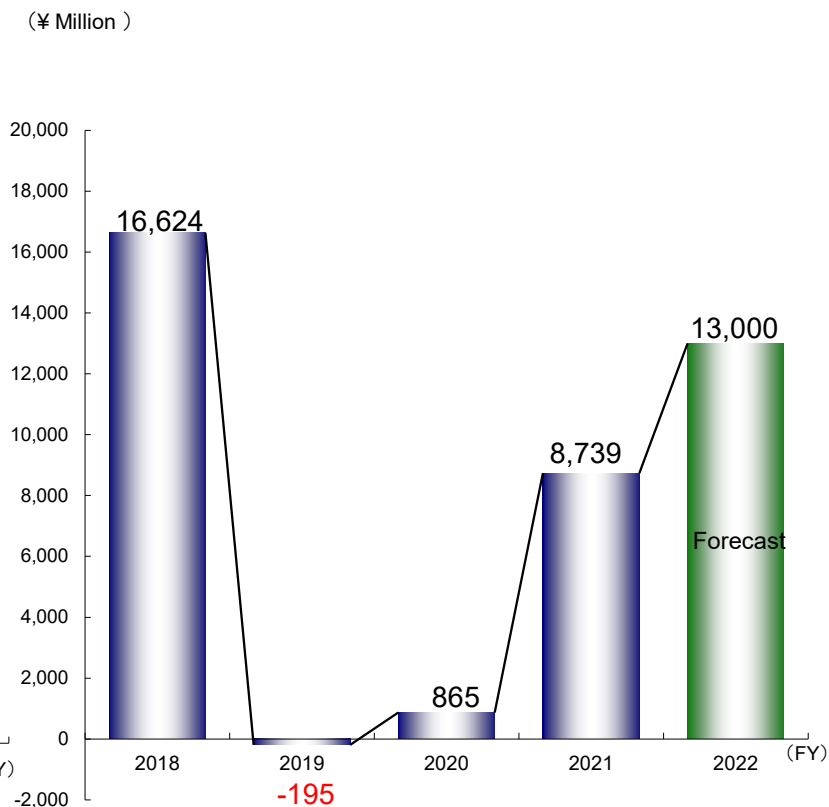
Forecast i Net Sales, Operating Income

(Consolidated basis)

Net Sales



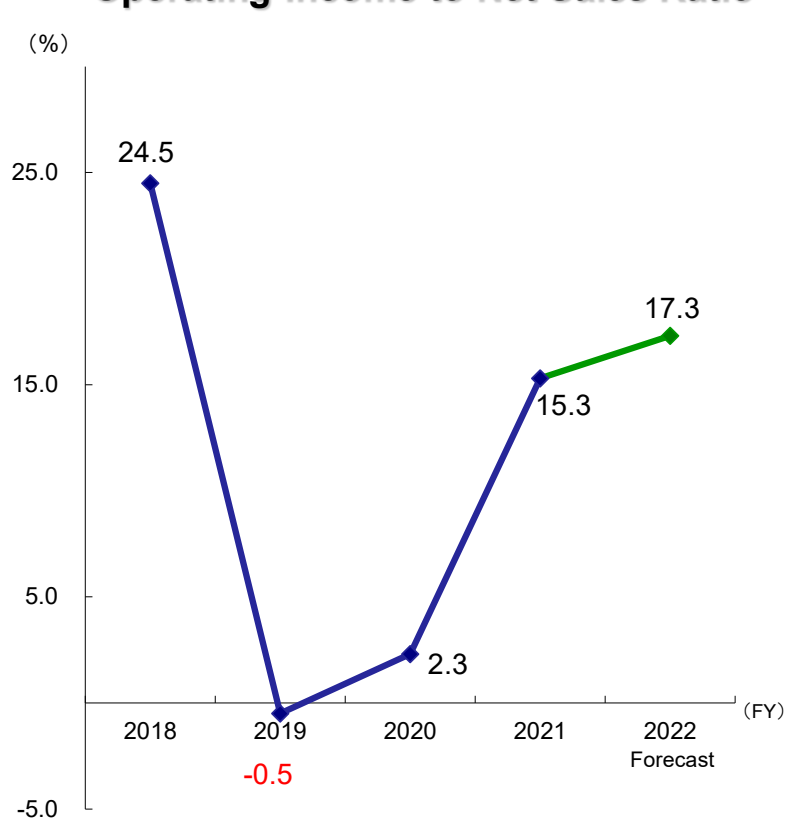
Operating Income



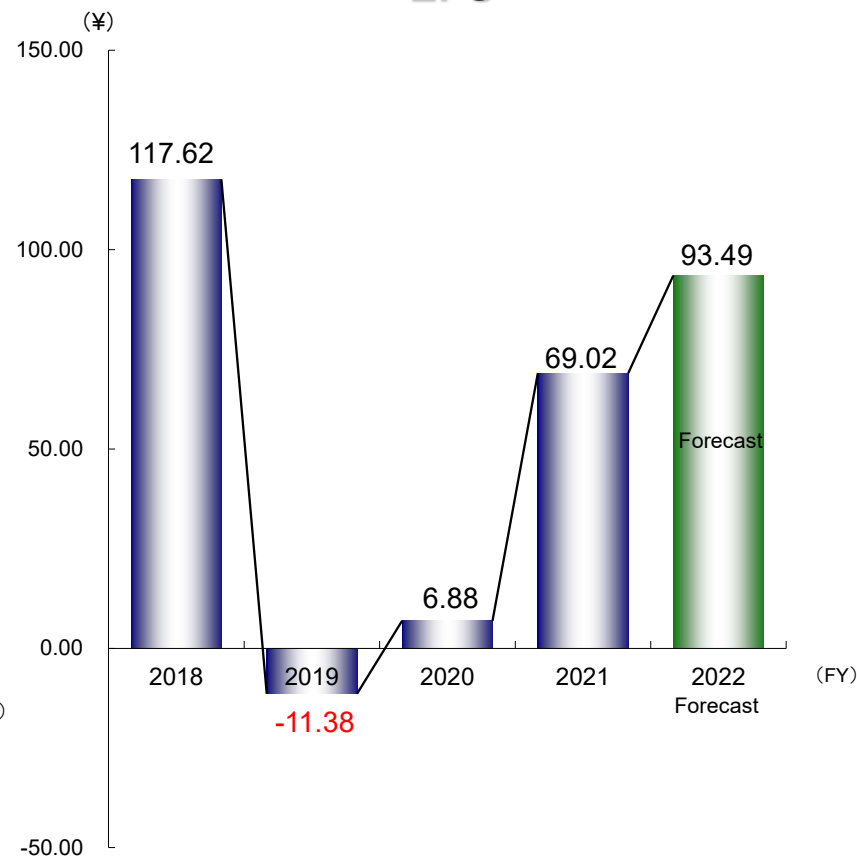
Forecast ii Operating Income to Net Sales Ratio, EPS

(Consolidated basis)

Operating Income to Net Sales Ratio



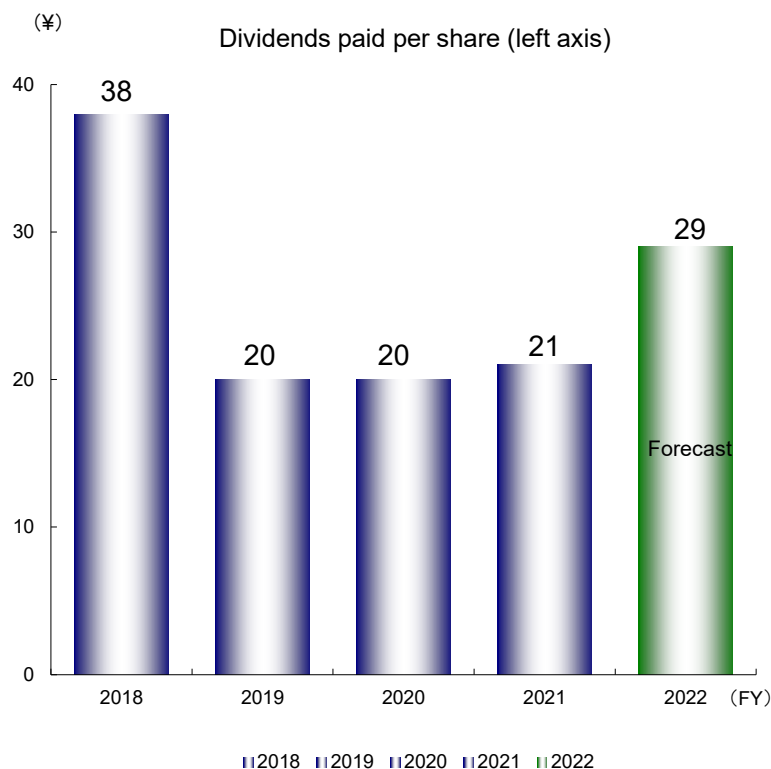
EPS



Forecast iii Dividends paid per share

(Consolidated basis)

Dividends paid Per share



Basic Policy on Earnings Distribution

At HDSI, our basic policy is to distribute earnings in accordance with operating performance.

While our general dividend policy is to maintain an annual dividend payout ratio of 30% of net income attributable to owners of parent, we determine return to shareholders through comprehensive considerations including dividend continuity and the maintenance of sufficient internal reserves.

For future business development, internal reserves are mostly invested in such areas as researching and developing new products, expanding and improving production facilities, and upgrading information management systems. Internal reserves are also used for agile execution of capital policies.

Harmonic Drive Systems Inc.

Business Activity – Products

Leadership in Total Motion Control

May 13, 2022

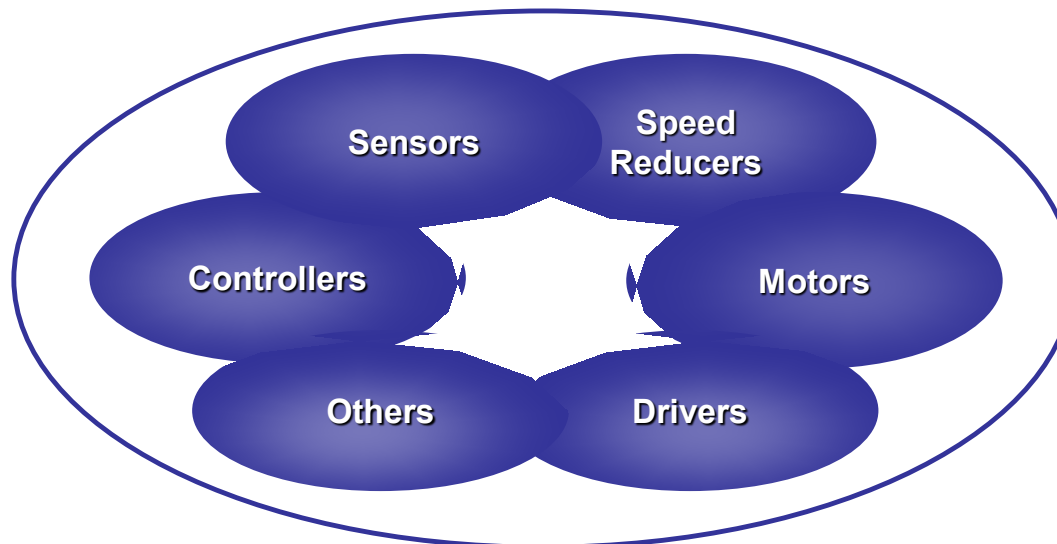
Total Motion Control

Our business Domain

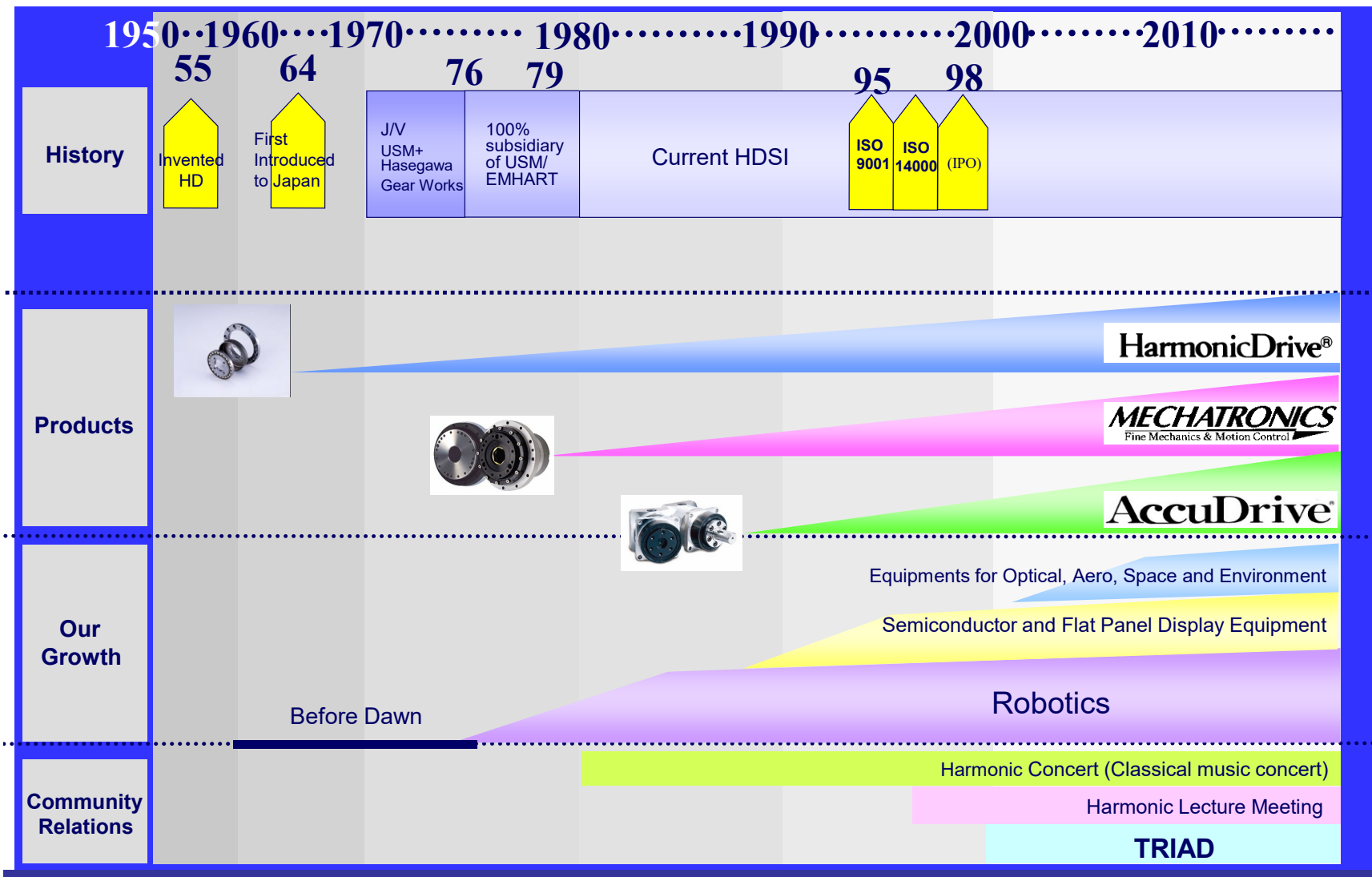


Developing and producing Precision Control Equipment and Components for a broad range of applications, focus on “Total Motion Control”

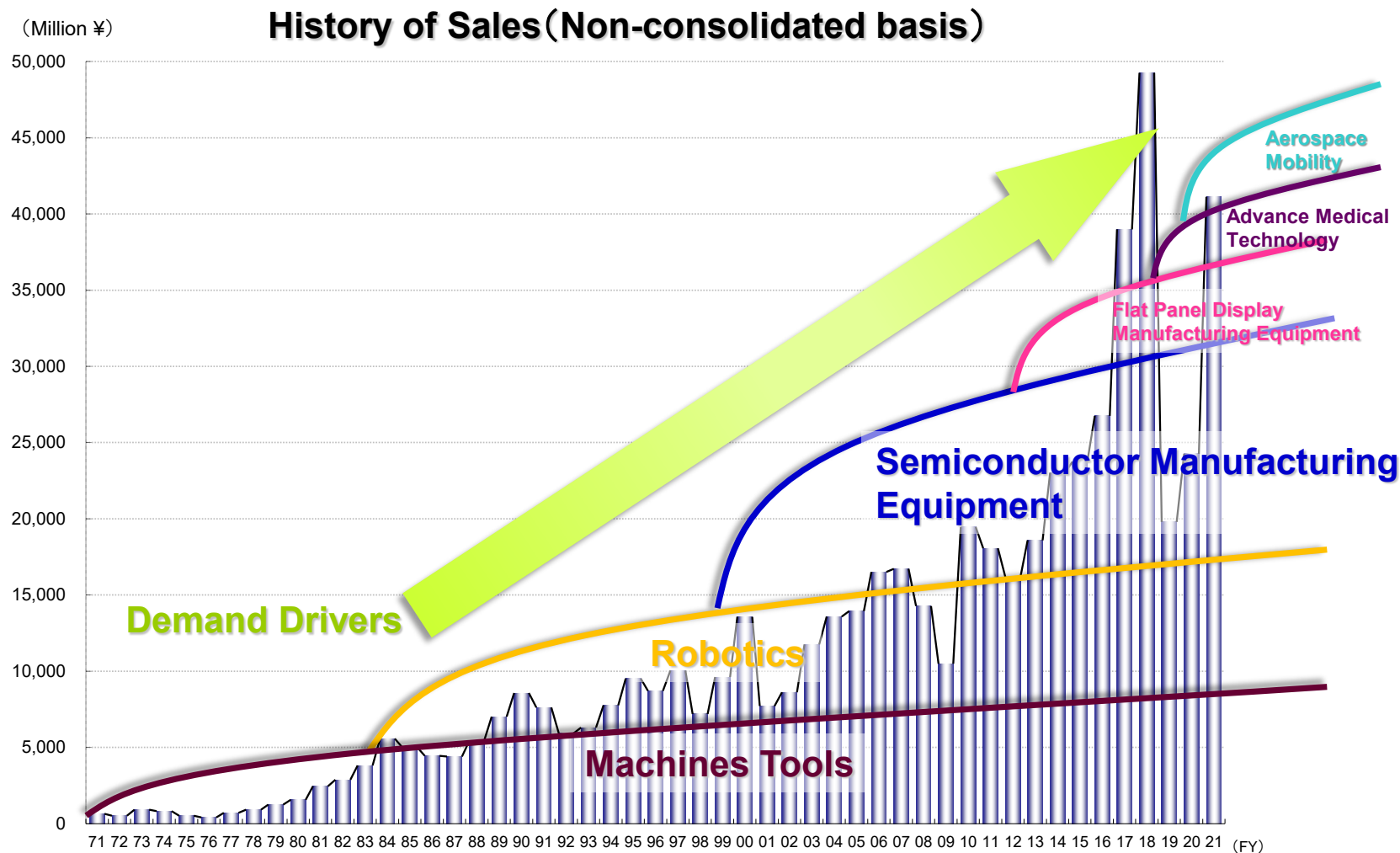
Schematic Concept of Total Motion Control



History of Harmonic Drive Systems Inc.

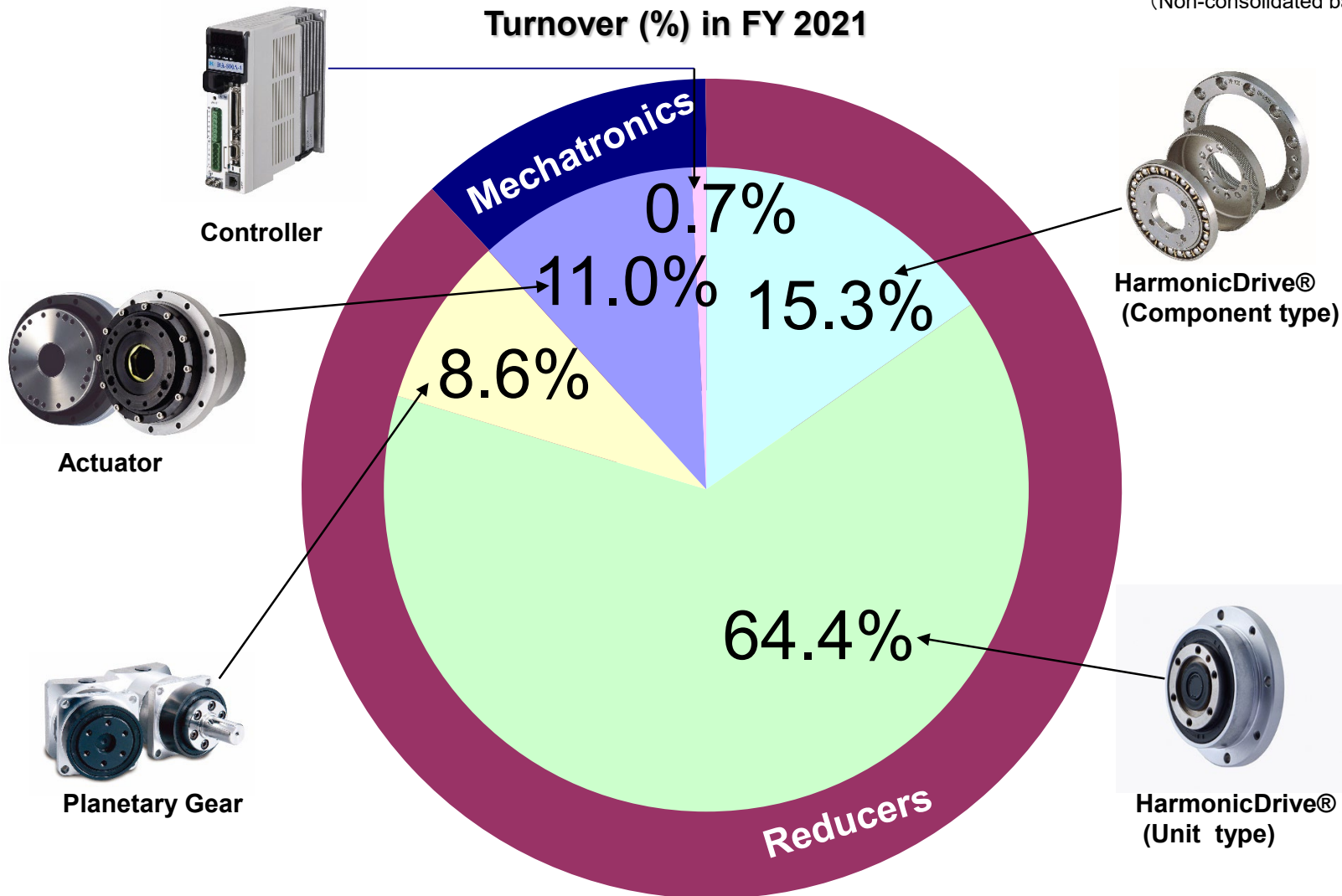


History of Sales

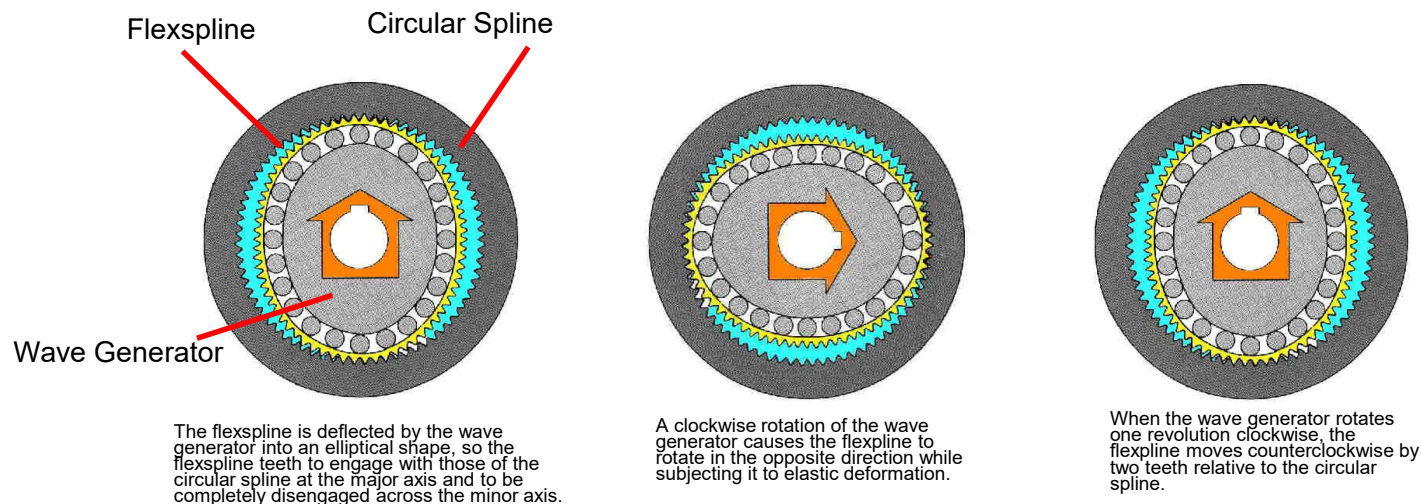


Sales Structure by Product Types

(Non-consolidated basis)



Principle and Advantages of “HarmonicDrive®”

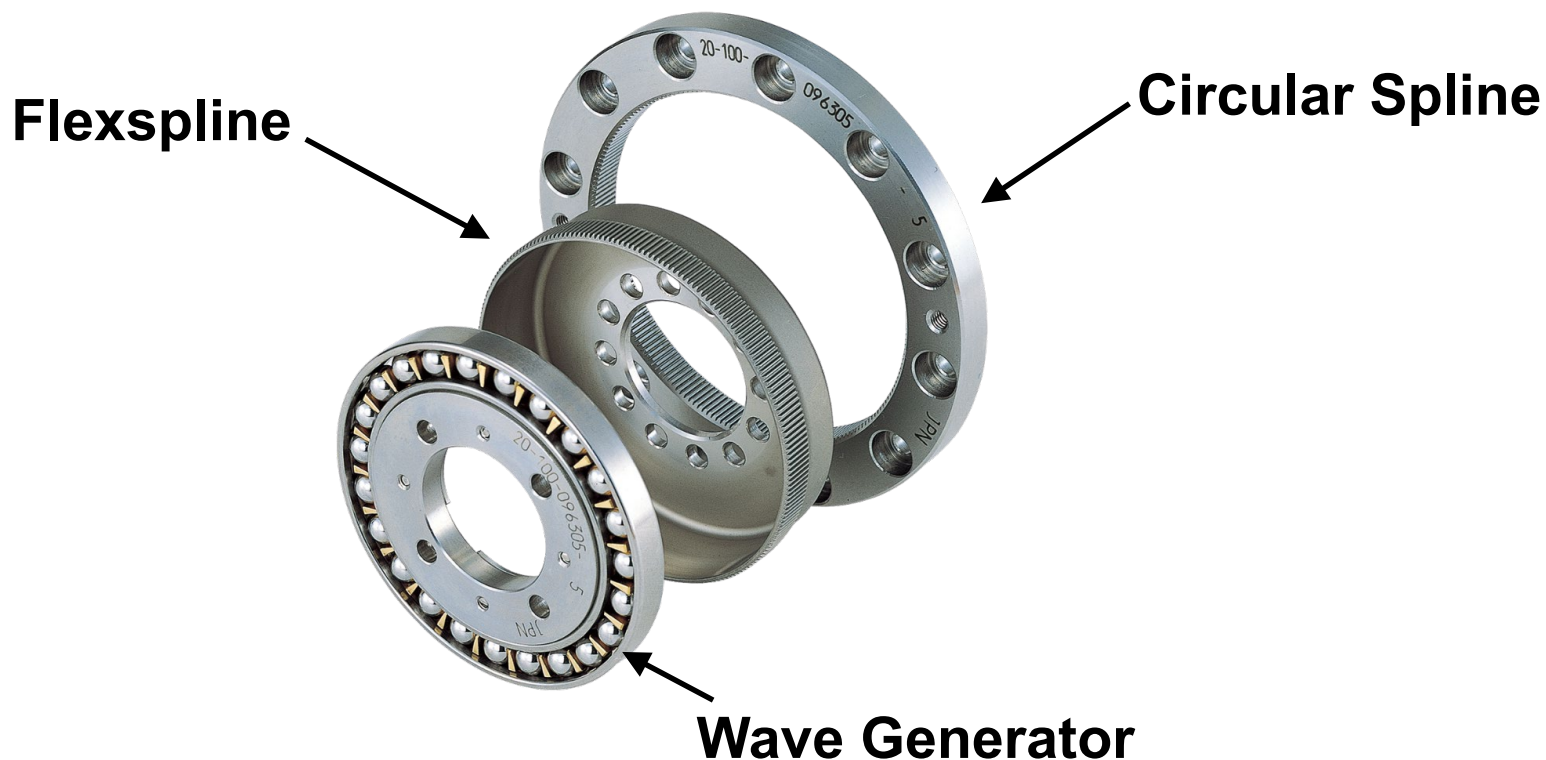


Advantage of “HarmonicDrive®”

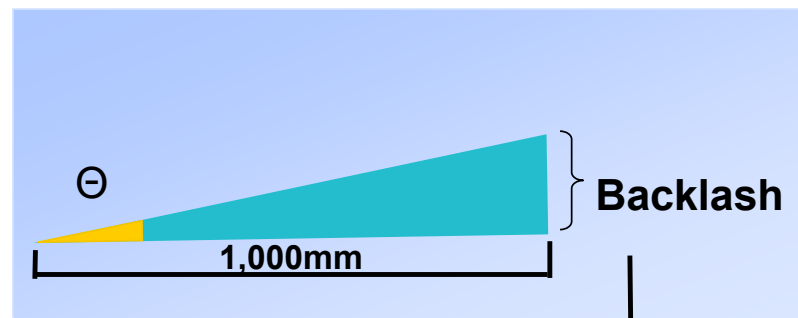
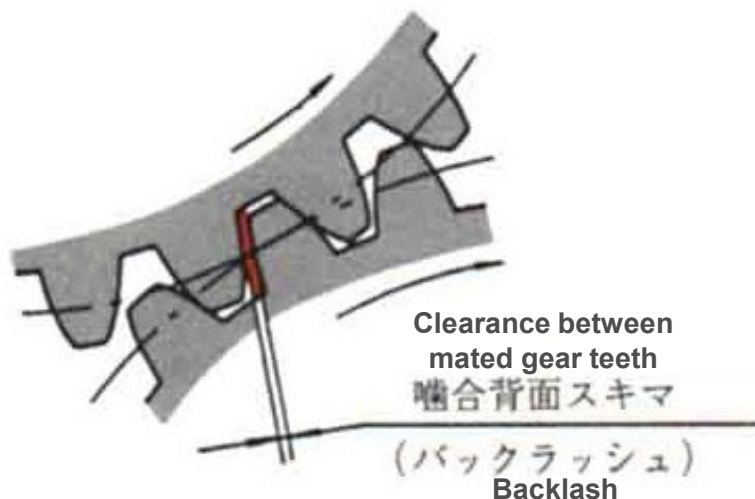
- Compact Design/ Reduced Weight
- Non-backlash
- Hollow Construction
- High Reduction Ratio by Single Stage
- High Efficiency
- High Torque Capacity
- High Positioning Accuracy and Repeatability
- High Torsional Stiffness
- Simple Installation and Assembly
- Low Noise and Smoothness operation

Features and Benefits “ Compact and Lightweight”

Comprised of just three basic components → Compact and Lightweight



Features and Benefits “Zero Backlash”



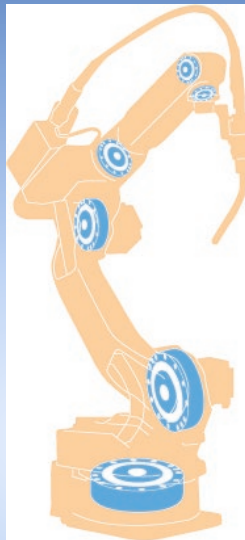
Applications	Backlash	Backlash after 1m	Our Products
General Industrial Machinery	0.5 degrees	8.7mm	None
Transporters and Processing Machinery	0.05~0.25 degrees	0.9mm~4.3mm	AccuDrive [®] HarmonicPlanetary [®]
Robotics and Semiconductor Equipment	0~0.02degrees	0~0.3mm	HarmonicDrive [®]

Feature Applications

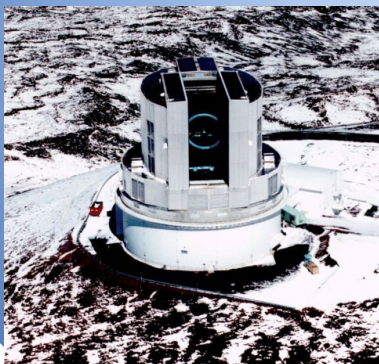
Hayabusa 1.2 Photograph courtesy of Japan Aerospace Exploration Agency (JAXA)



Industrial robots



eVTOL



Optical-infrared telescope "Subaru"
installed on Mauna Kea on the island of Hawaii

Photograph courtesy of the National Astronomical Observatory of Japan, National Institutes of Natural Sciences



Cobot Photograph courtesy of Techman Robot Inc.



Robotic Surgical System

Target Segment Image

