

Harmonic Drive Systems Inc.

Investors' Guide FY2020

Year ended March 31, 2021

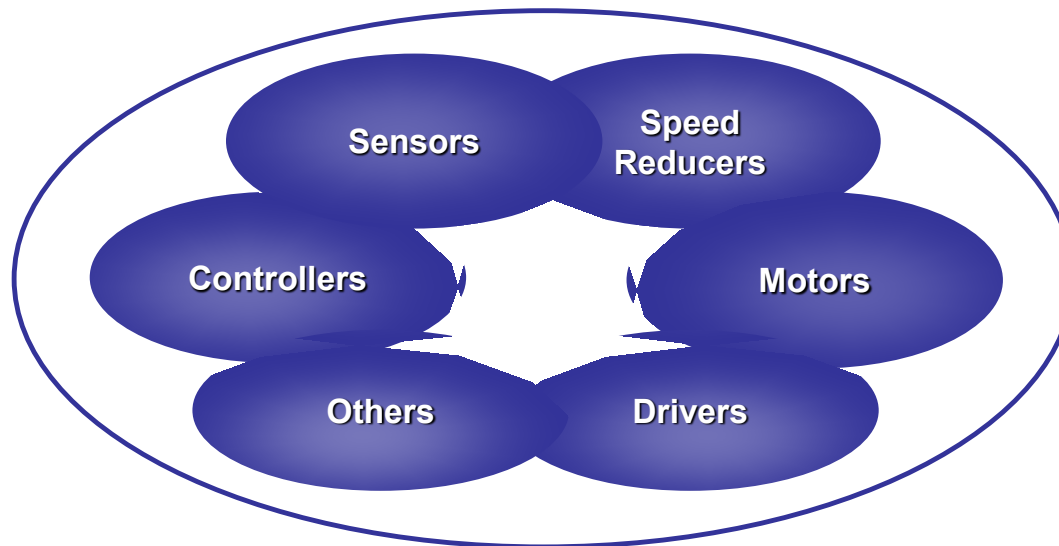
Leadership in Total Motion Control

Nov 12, 2021

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.

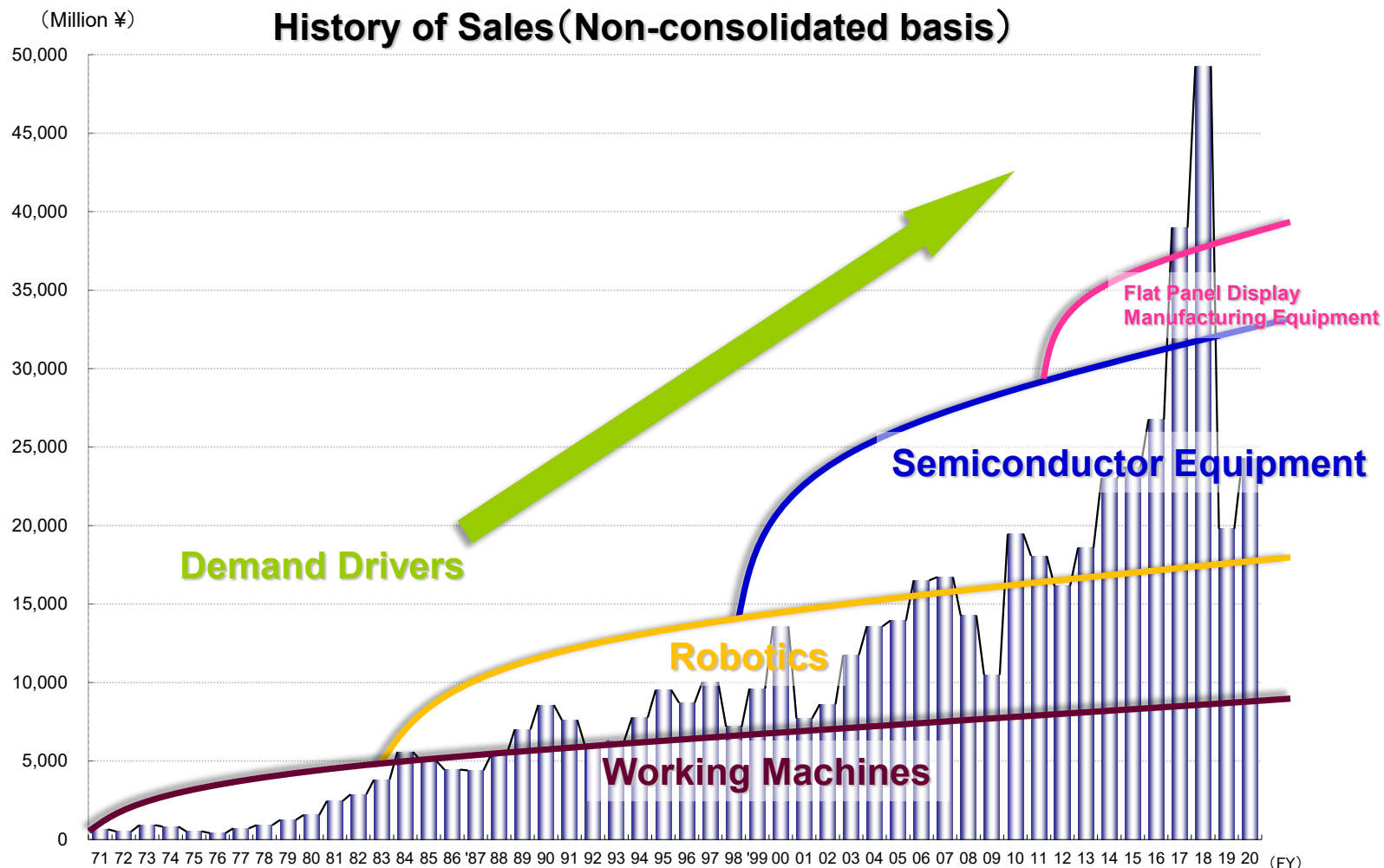
We make our best efforts to create attractive products, services, compensation, working environments, and trading relations to satisfy all these concerned parties.

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

In November 2020, we celebrated the 50th anniversary of our establishment, and to achieve further growth, we have formulated a medium-term management plan (covering the period spanning from April 1, 2021 through March 31, 2024) under the key phrase “Toward the Next 50 Years: Moving to a Solid Growth Stage”. During the previous medium-term management period (from April 1, 2018 through March 31, 2021), the operating environment changed drastically owing to the US-China trade friction and the spread of the novel coronavirus. That said, we remain convinced about opportunities for high levels of growth over the medium to long term. In the markets where we are active—mechatronics and precision speed reducers—demand is forecast to continue rising for products used in industrial robots and collaborative robots. Behind this demand is manufacturing investment in automation and labor savings in emerging markets as well as growing need for addressing labor shortages and improving productivity in developed markets. To achieve a sustainable society and sustainable management in a constantly changing world, we will continue taking on the challenge of developing technologies and skills that capture changes in the environment to provide products and services that go beyond our customers' expectations. Accordingly, we will strive to respond flexibly to short-term fluctuations in the operating environment. At the same time, we will implement strategies in line with the policies outlined in our long-term vision and medium-term management plan. By maintaining a balance between defensive and offensive approaches in our management strategy, we aim to enhance corporate value over the medium to long term.

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 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



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

- (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

Management Indices Targets

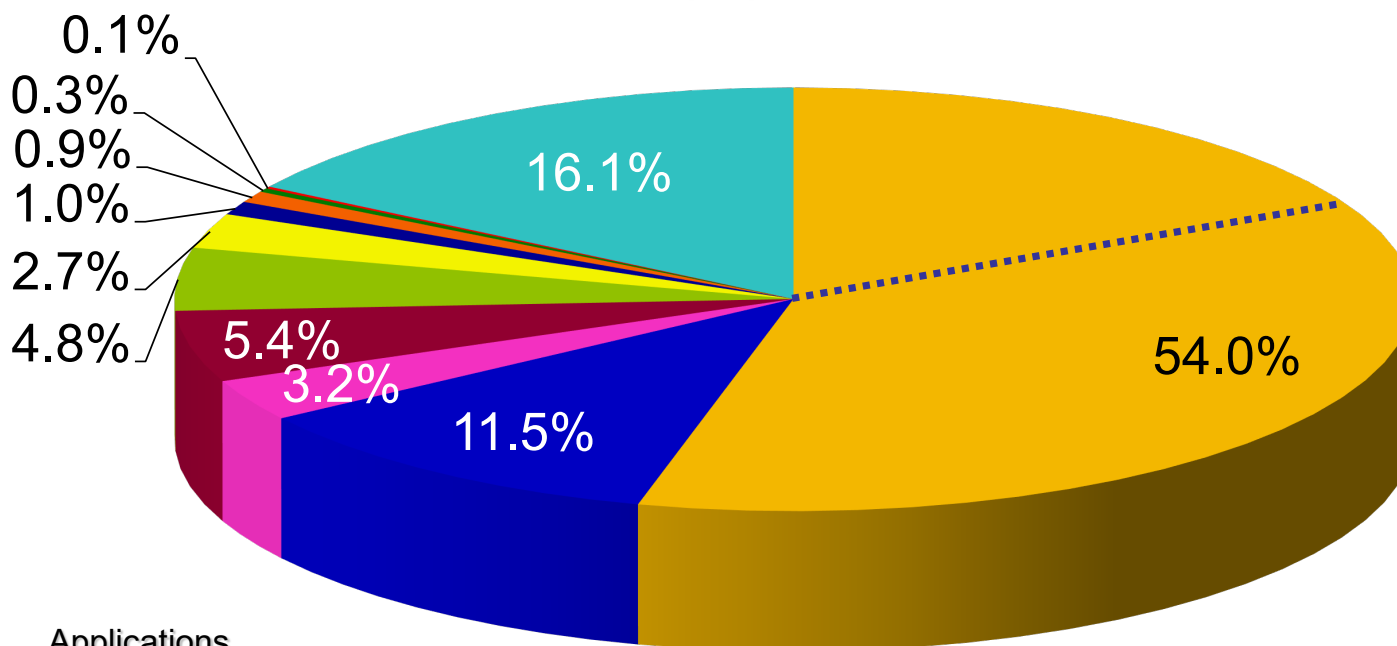
The HDS Group has established the following management indices targets.

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

Sales Composition by Application Fields

(Non-consolidated basis)

Turnover (%) in FY2020

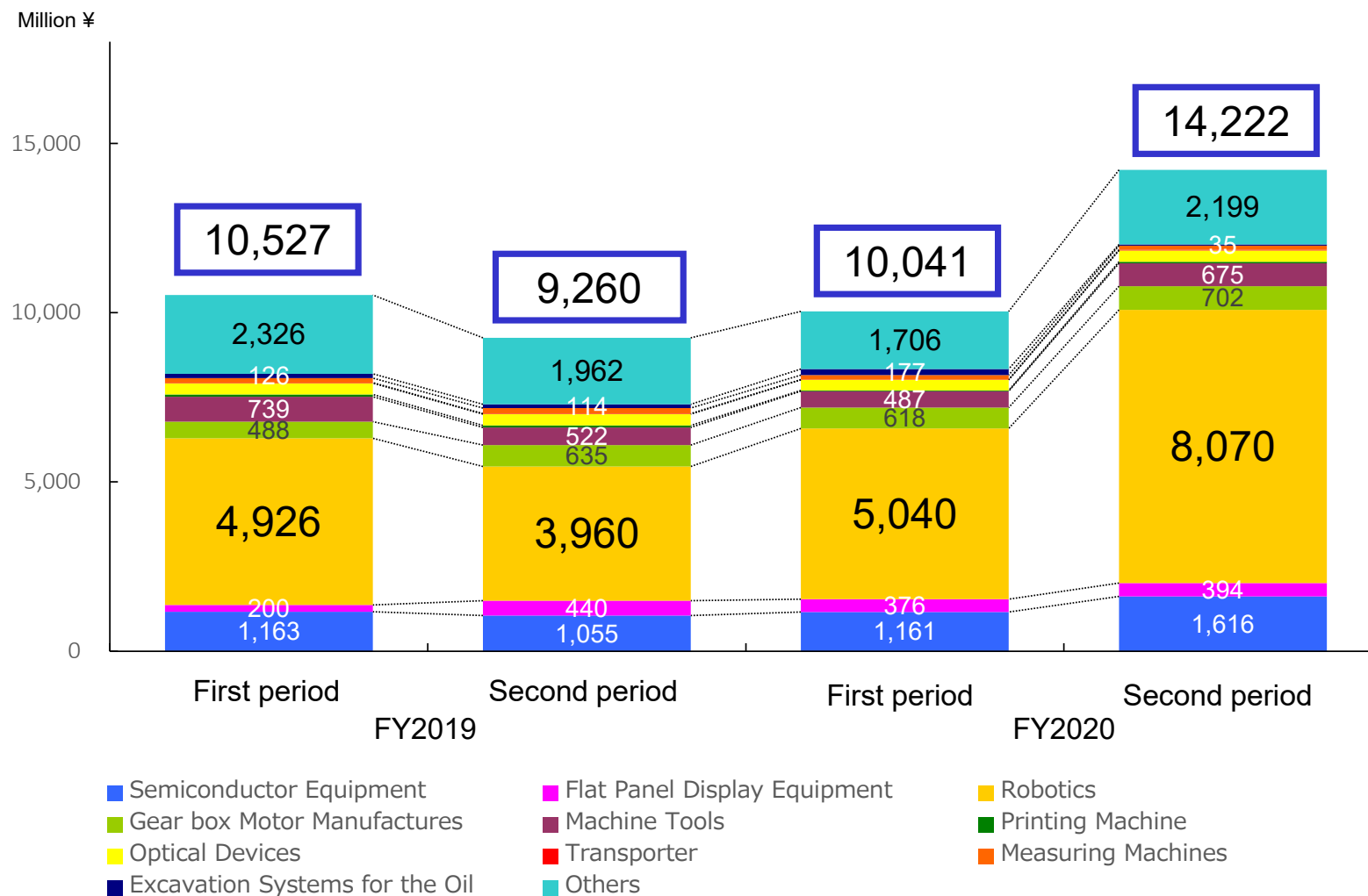


Applications

- Robotics
- Semiconductor Equipment
- Flat Panel Display Equipment
- Gearbox for Motor Manufactures
- Machine Tools
- Optical Devices
- Measuring Machines
- Excavation System for the Oil
- Printing Machines
- Transporter
- Others (including parts and materials for subsidiaries in US and Germany)

Semiannual Sales Composition by Application Fields

(Non-consolidated basis)



Performance Summary Operating Results

During the fiscal year ended March 31, 2021, the HDS Group's business environment remained harsh in the first half of the fiscal year as companies all over the world took a careful approach toward capital investment due to the spread of the novel coronavirus. However, entering the second half of the fiscal year, environments surrounding order bookings showed signs of recovery, especially in Asian markets including Japan, as the Chinese economy became one of the first to recover from the pandemic. Furthermore, toward the end of the fiscal year, the operating environment improved substantially as companies became more inclined to make capital investments.

As mentioned above, the environment surrounding order bookings was harsh in the first half of the fiscal year, but rapidly improved from the second half of the year due to increased investment in automation in the Asian market, especially in China, as well as the acceleration of large-scale investment by major semiconductor companies in response to the surge in data demand. In addition, progress in adjustment of customer inventory, which had been at excess levels until the previous year, also contributed to higher orders. As a result, consolidated orders for the full year rose 38.8% year on year to 41,675 million yen.

Although sales in Asian markets including Japan increased due to a recovery in orders, sales for major application sectors in Europe and the US were generally down due to a slower recovery in economic activities caused by the spread of the novel coronavirus. As a result, consolidated net sales were down 1.2% year on year to 37,034 million yen. By application, sales of products for use in industrial robots rose, thanks to the recovery in capital investment in automation centered on China, as well as higher demand brought on by the adoption of industrial robots in the EV battery production process. Sales to semiconductor production equipment manufacturers rose year on year owing to robust capital investment appetite driven by the expansion of 5G communications and progress in IoT. Meanwhile, sales of products for use in flat panel display manufacturing equipment remained low, hurt by sluggish orders for capital equipment as in the previous year. Sales for machine tools and automotive applications also fell for the full year on sluggish orders in the first half of the fiscal year.

In terms of profitability, we focused on building a leaner organization capable of generating profits under challenging operating environments and preparing for the next expansion period, while prioritizing measures to prevent the spread of the novel coronavirus among customers, trading partners, employees, and their families. As a result, despite the decrease in net sales, operating income came to 865 million yen (compared to an operating loss of 195 million yen in the previous fiscal year). In addition, as a result of the increase in operating income, net income attributable to owners of parent reached 662 million yen (compared to a net loss attributable to owners of parent of 1,095 million yen in the previous fiscal year).

By product type, sales of speed reducers were 29,319 million yen (up 4.6% year on year) and sales of mechatronics products were 7,714 million yen (down 18.4% year on year), accounting for 79.2% and 20.8% of net sales, respectively.

During the fiscal year ended March 31, 2021, the final year of our medium-term management plan (covering the period spanning from April 1, 2018 through March 31, 2021), we implemented relevant measures associated with the plan. Despite these efforts, results fell short of our financial goals.

On the sales front, although it became difficult to engage in in-person sales activities due to the spread of the novel coronavirus, we have been working to strengthen our online sales capabilities and to capture orders by speeding up the process of solving issues for each of our customers. In addition, we participated in exhibitions with thorough infection prevention measures in place, and also set up permanent virtual exhibitions on our website, combining physical and virtual exhibitions to attract more orders and open up new markets.

In terms of quality, we reaffirmed our definition of quality as "satisfying customer expectations" and have been working to improve product quality and operational quality. One specific example of our efforts is the organization of a company-wide team to respond to urgent requests from customers, enabling us to make optimal proposals in a shorter period of time than before, thereby improving customer satisfaction. Although there were restrictions on movement due to the spread of the novel coronavirus, we leveraged IT tools and endeavored to maintain and raise quality under our Common Global Quality initiative to raise quality at all production sites (Japan, Germany, the US, and South Korea) to a unified high standard.

Performance Summary Operating Results

In terms of R&D, we have been working to expand and enrich our basic research through efforts to establish new principles and theories and achieve new technologies as we aim to further develop HarmonicDrive®. At the same time, we have worked to develop and commoditize elements that are potentially essential to next-generation motion control technology. We further strengthened coordination between R&D divisions based in Japan and Germany. We conducted initiatives aimed at raising the efficiency and research levels of our R&D activities through interdivisional implementation of development themes, research expertise, research equipment and facilities, and human resources. Furthermore, in application development, where we reflect the needs of the market in our products, we added a two-level type model to our HPG-R series of HarmonicPlanetary® planetary gear speed reducer to expand our product lineup. By adding the two-level reduction model (reduction ratio of 15 to 50) on top of the single-level reduction model (reduction ratio of 3 to 10) that we launched in 2015, we now offer a product lineup covering a wide range of reduction ratios, from 3 to 50, and have been working to open up the market.

In terms of production, in addition to the safety and sanitary activities that we have been continuously carrying out under the theme of “safety and security,” we have fulfilled our responsibility to supply products to our customers by ensuring the implementation of novel coronavirus infection prevention measures. In addition, to build a production system that can keep up with rapid changes in the environment, we have continued efforts to improve productivity and shorten product lead times. In accordance with our efforts to raise productivity, we accelerated employee training and skill transfer associated with processes that require advanced and proficient labor. On the other hand, we reduced the manpower required for other processes through active investment in automation. To shorten product lead times, we decided to introduce a new production management system and targeted the establishment of a production framework that is capable of flexibly responding to variations in demand while continuing to apply our extensive expertise regarding high-mix low-volume manufacturing.

To combat the spread of the novel coronavirus pandemic, the Group established an internal task force on February 3, 2020 and has done its utmost to prevent the spread of the disease while prioritizing the safety and security of all stakeholders, including employees, customers, and trading partners, above all else. So far, we have incurred no health hazards or impact to factory operations or supply chains as a result of the novel coronavirus pandemic. Moving forward, we will continue to devote ourselves to thorough infection prevention measures.

Performance of reportable segments is stated below:

<Japan>

Sales rose 18.8% year on year to 22,113 million yen as demand for products for use in industrial robots and for semiconductor production equipment recovered, backed by the normalization of production activities mainly in Asian markets including Japan, as well as the recovery and expansion of capital investment aimed at automation and labor savings toward the end of the fiscal year. Segment income (ordinary income) rose 93.3% year on year to 4,809 million yen, reflecting higher sales.

<North America>

Sales fell 17.6% year on year to 5,144 million yen, owing to a decline in demand mainly for products for use in amusement arcade equipment due to the lockdown caused by the novel coronavirus, as well as a general decline in capital investment demand due to stagnant economic activity. Segment income (ordinary income) was down 67.5% year on year to 310 million yen.

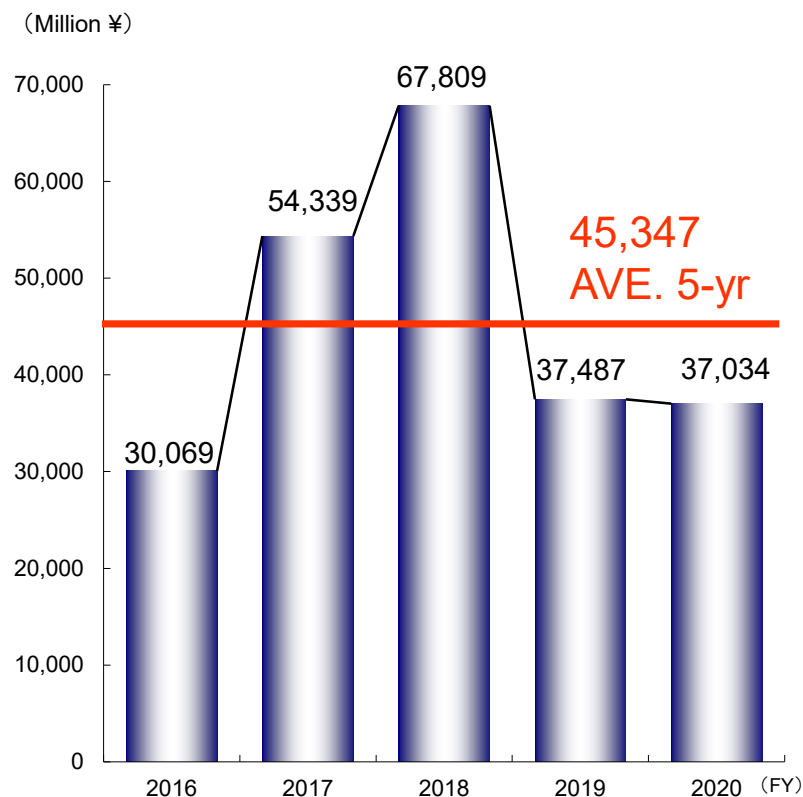
<Europe>

Sales fell 22.6% year on year to 9,775 million yen due to inventory adjustments at customers, as well as marketwide weakness in demand brought on by the pandemic leading to lower demand mainly for products for use in industrial robots and other general industrial machinery. Furthermore, we incurred a segment loss (ordinary loss) of 920 million yen owing to lower profits caused by lower sales, as well as 1,497 million yen in amortization of intangible assets recorded upon the acquisition of shares in Harmonic Drive SE.

Results i Net Sales, EBIT

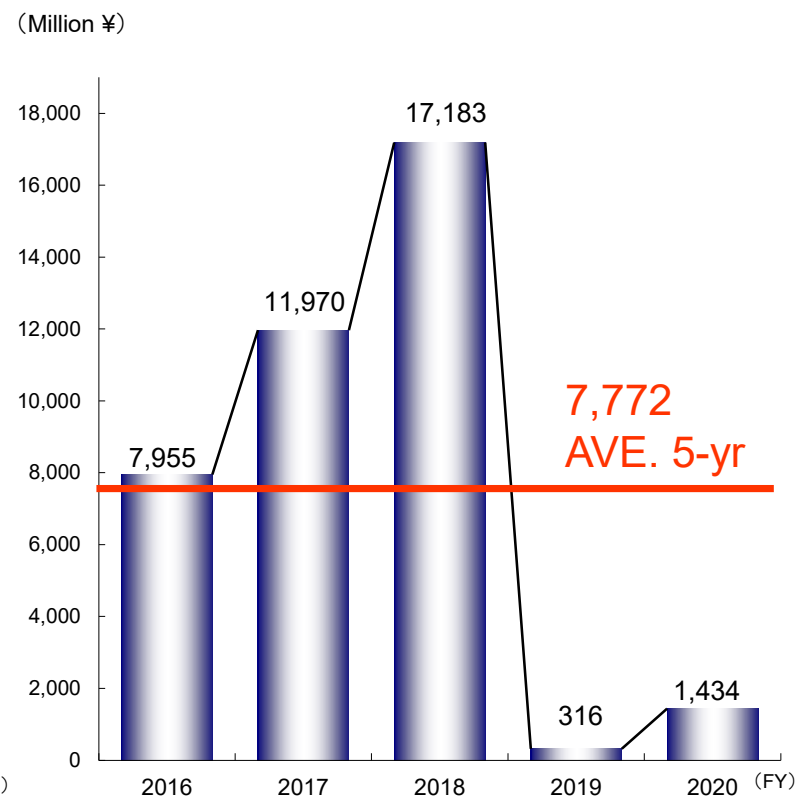
(Consolidated basis)

Net Sales



EBIT

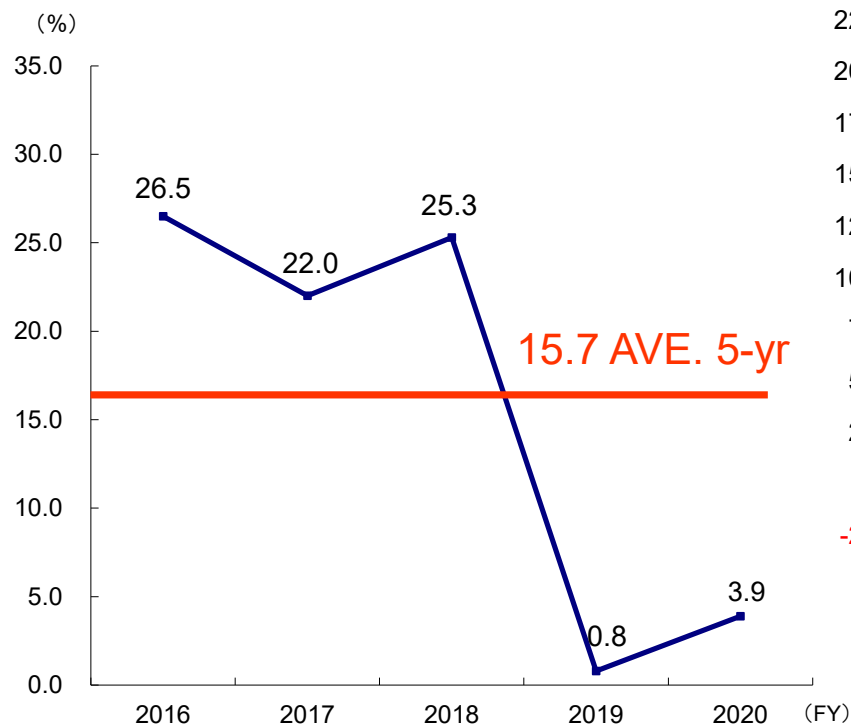
EBIT=Ordinary income + Interest paid — Interest income



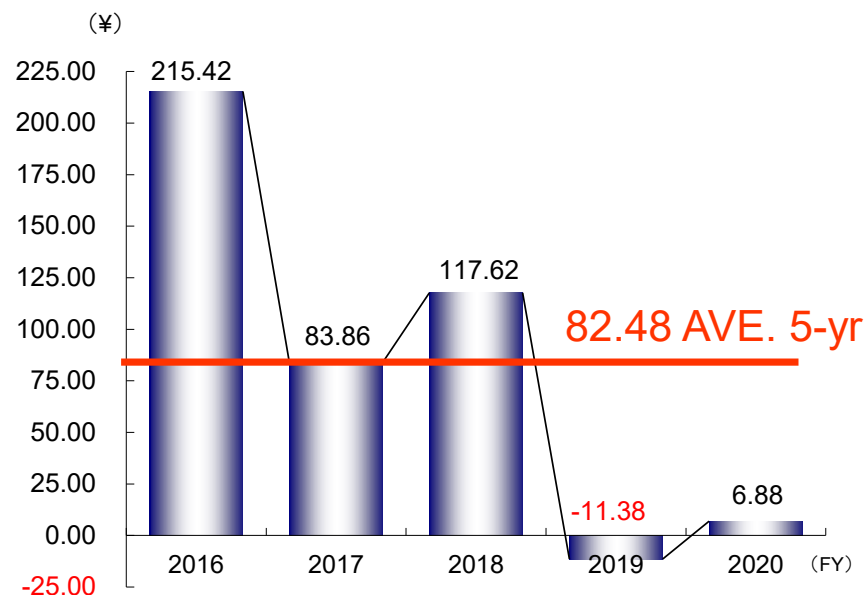
Results ii EBIT to Net Sales Ratio, EPS

(Consolidated basis)

EBIT to Net Sales Ratio



EPS



Dividends paid per share

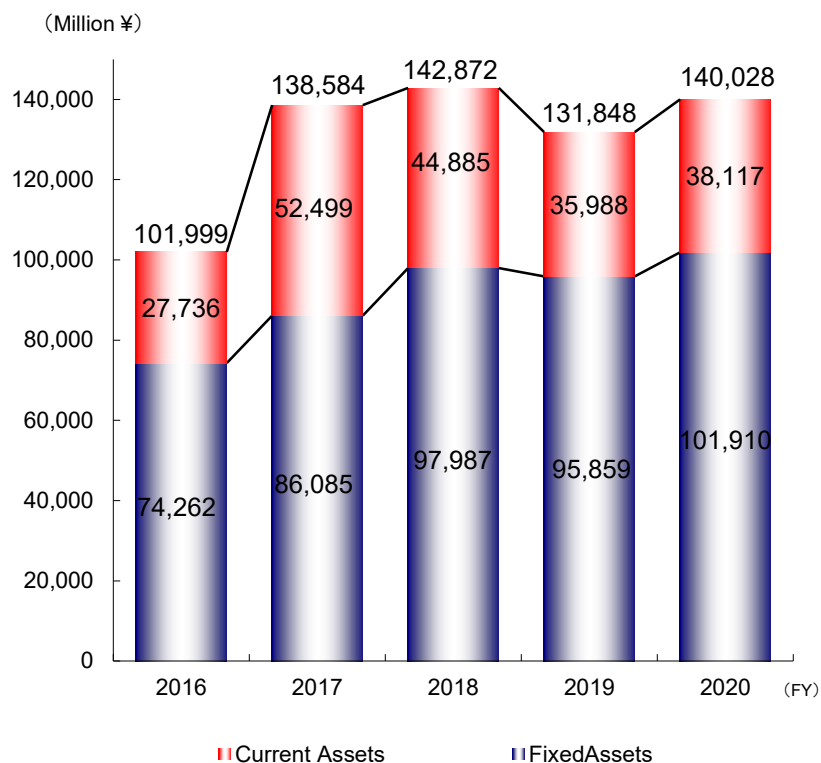
FY	2016	2017	2018	2019	2020
Dividends(¥)	20	26	38	20	20

※1. Net income attributable to owners of parent for fiscal 2016 included 13,963 million yen of valuation gain (gain on step acquisition) because the consolidation as a group subsidiary of the German company Harmonic Drive AG, previously accounted for under the equity method, required revaluation of the existing equity holding at the market value of the additionally acquired equity.

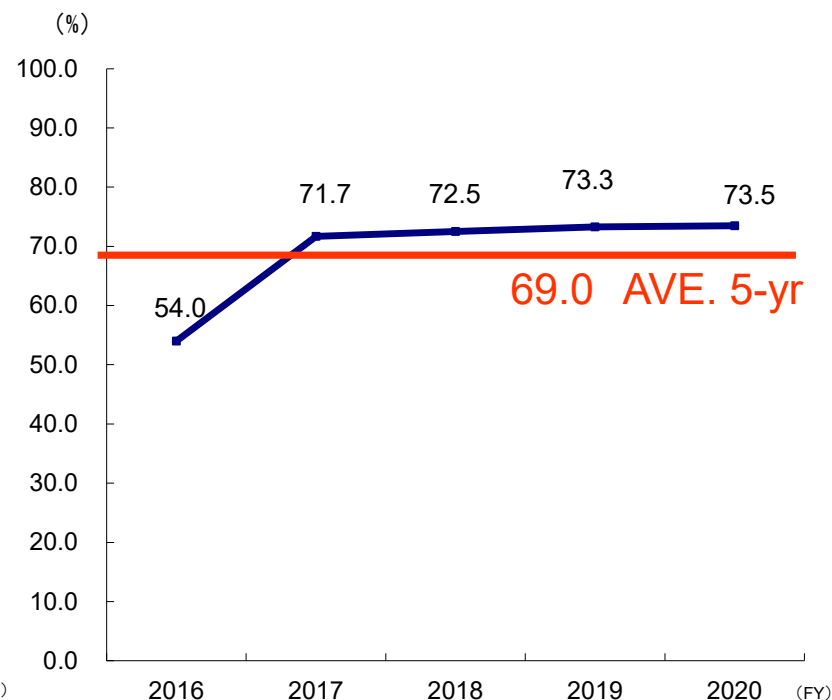
Results iii Total Assets, Equity Ratio

(Consolidated basis)

Total Assets



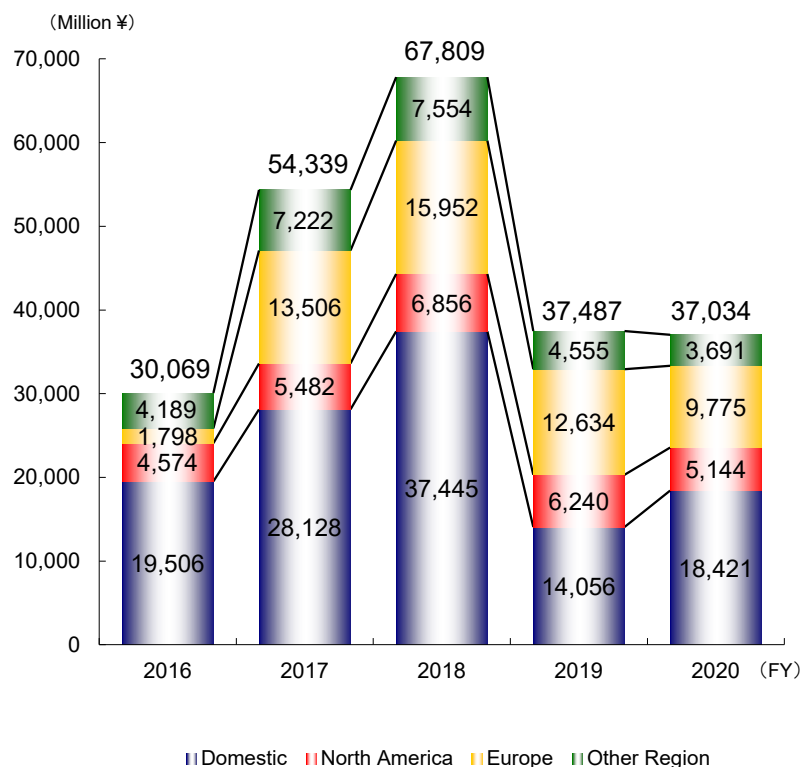
Equity Ratio



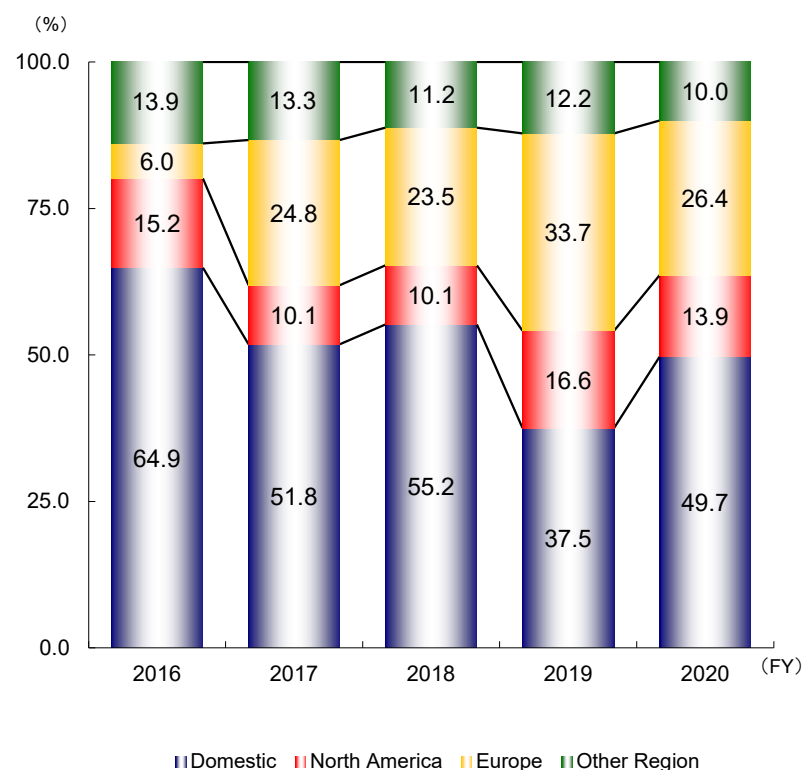
Sales Structure by Regions

(Consolidated basis)

By Regions



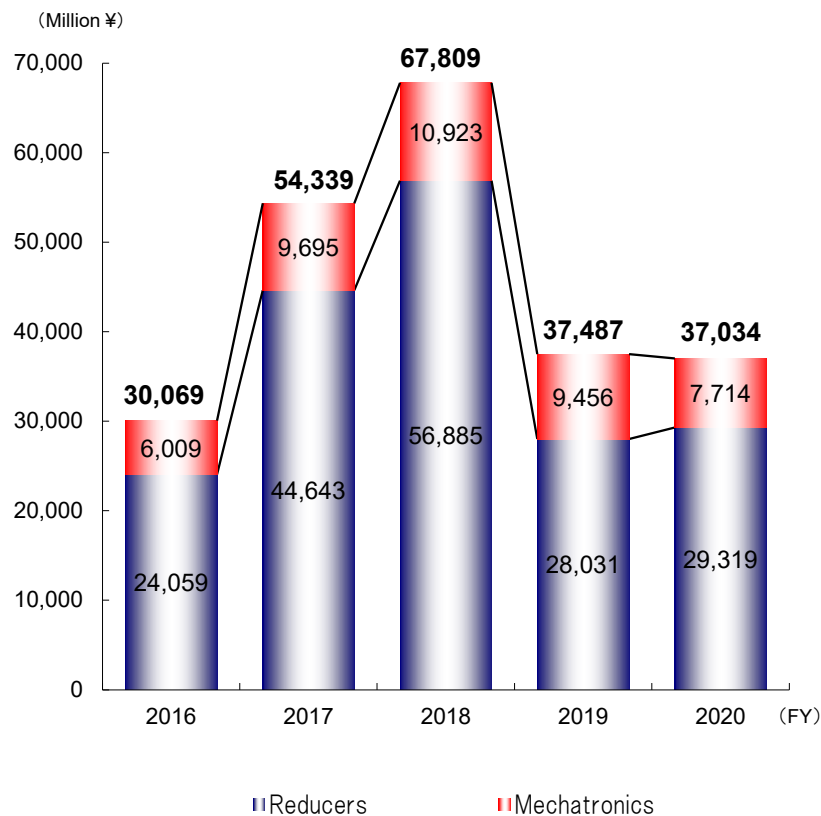
By Regions



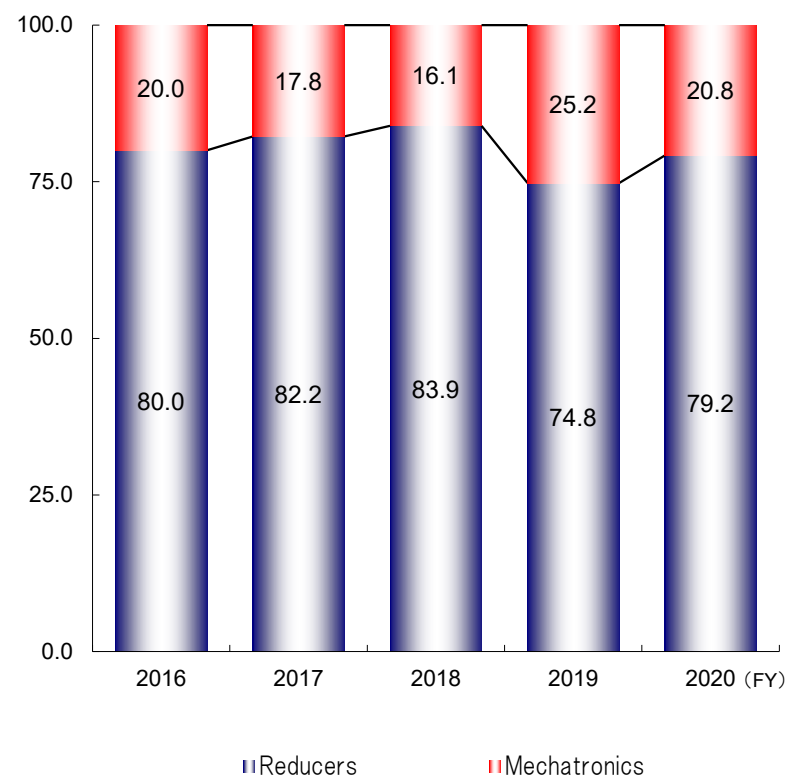
Sales Structure by Product Types

(Consolidated basis)

By Product Types



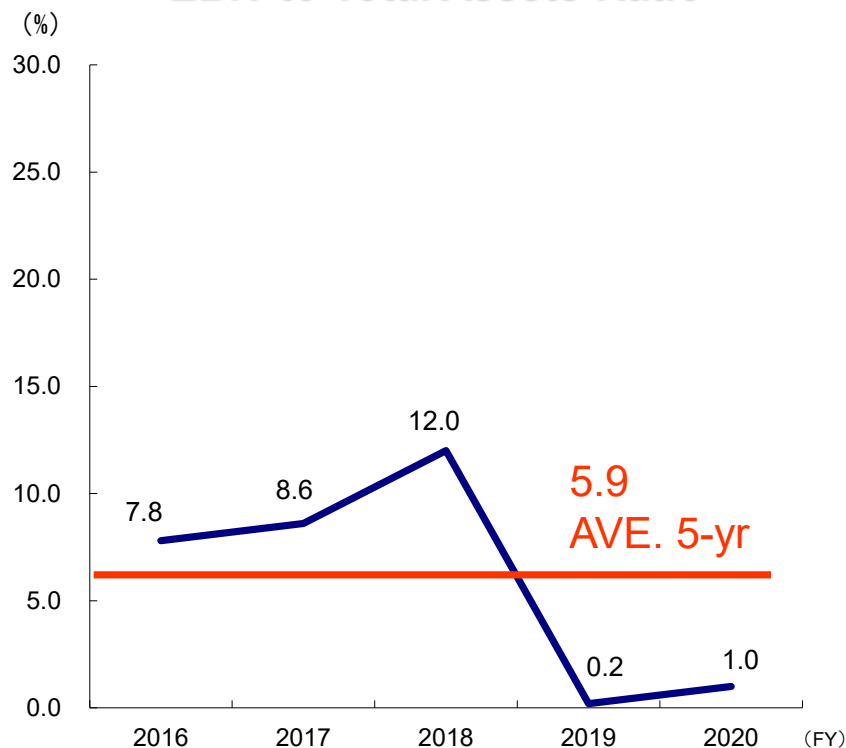
By Product Types



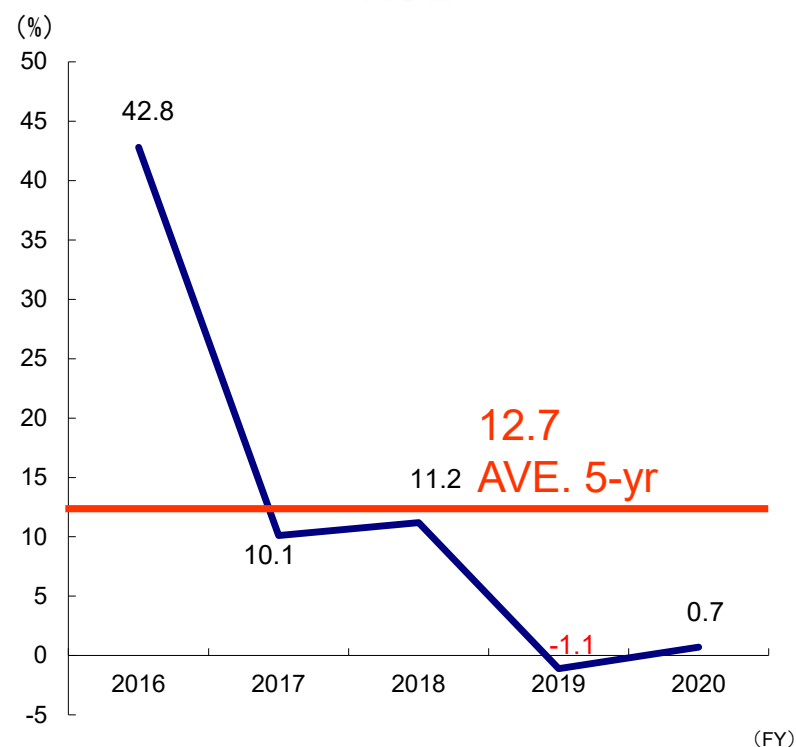
Profitability EBIT to Total Assets Ratio, ROE

(Consolidated basis)

EBIT to Total Assets Ratio



ROE

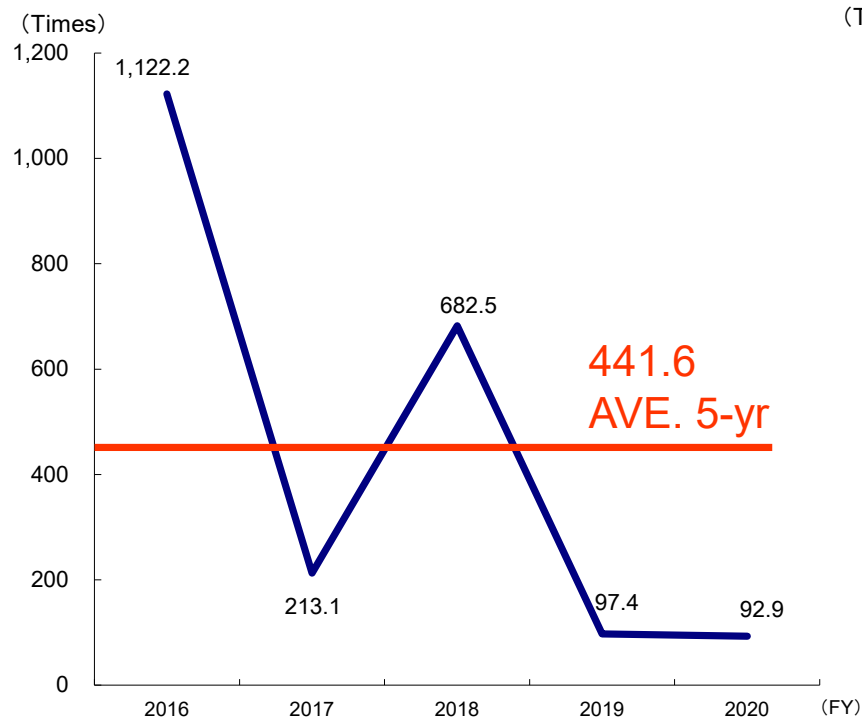


Stability Interest Coverage Ratio, Debt / Equity Ratio

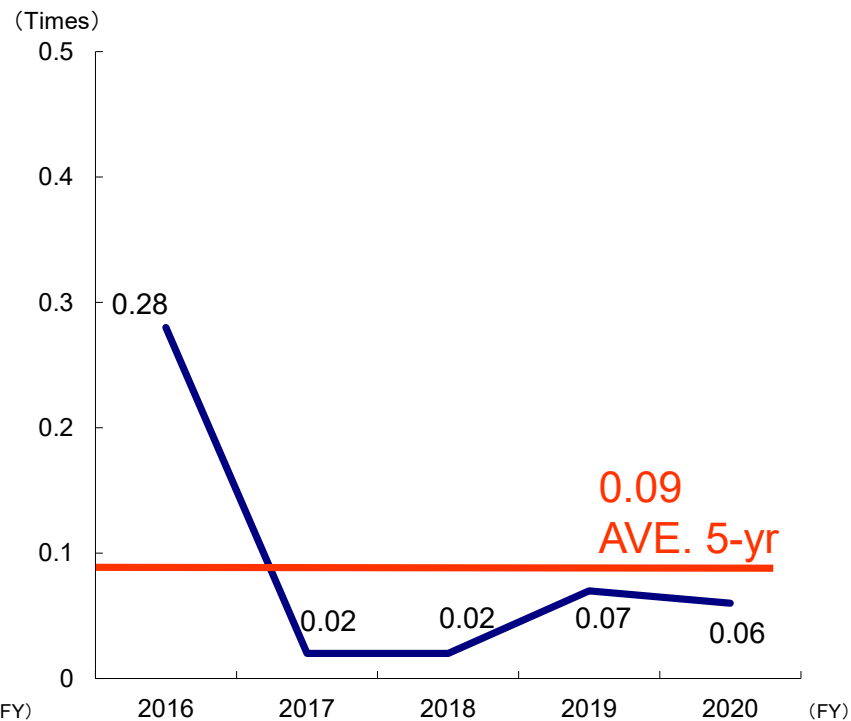
(Consolidated basis)

Interest Coverage Ratio

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

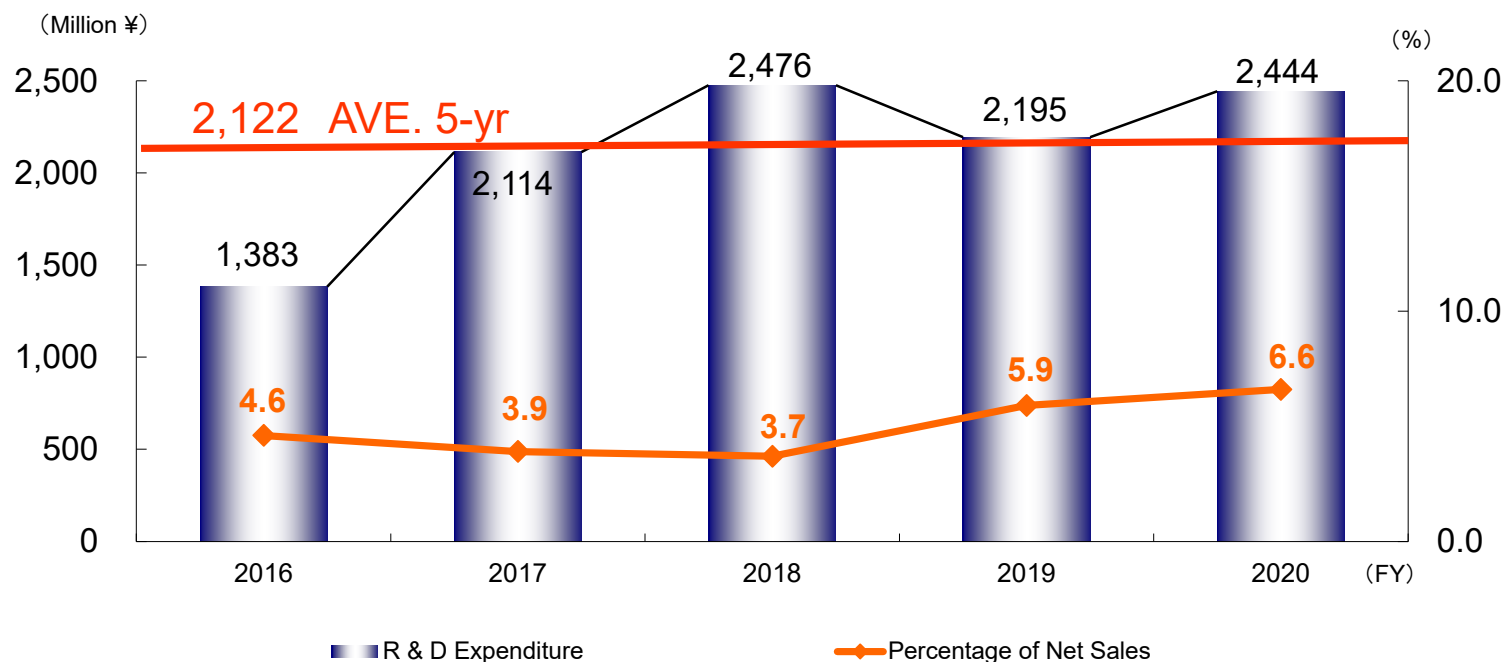


Debt / Equity Ratio



R&D Investments

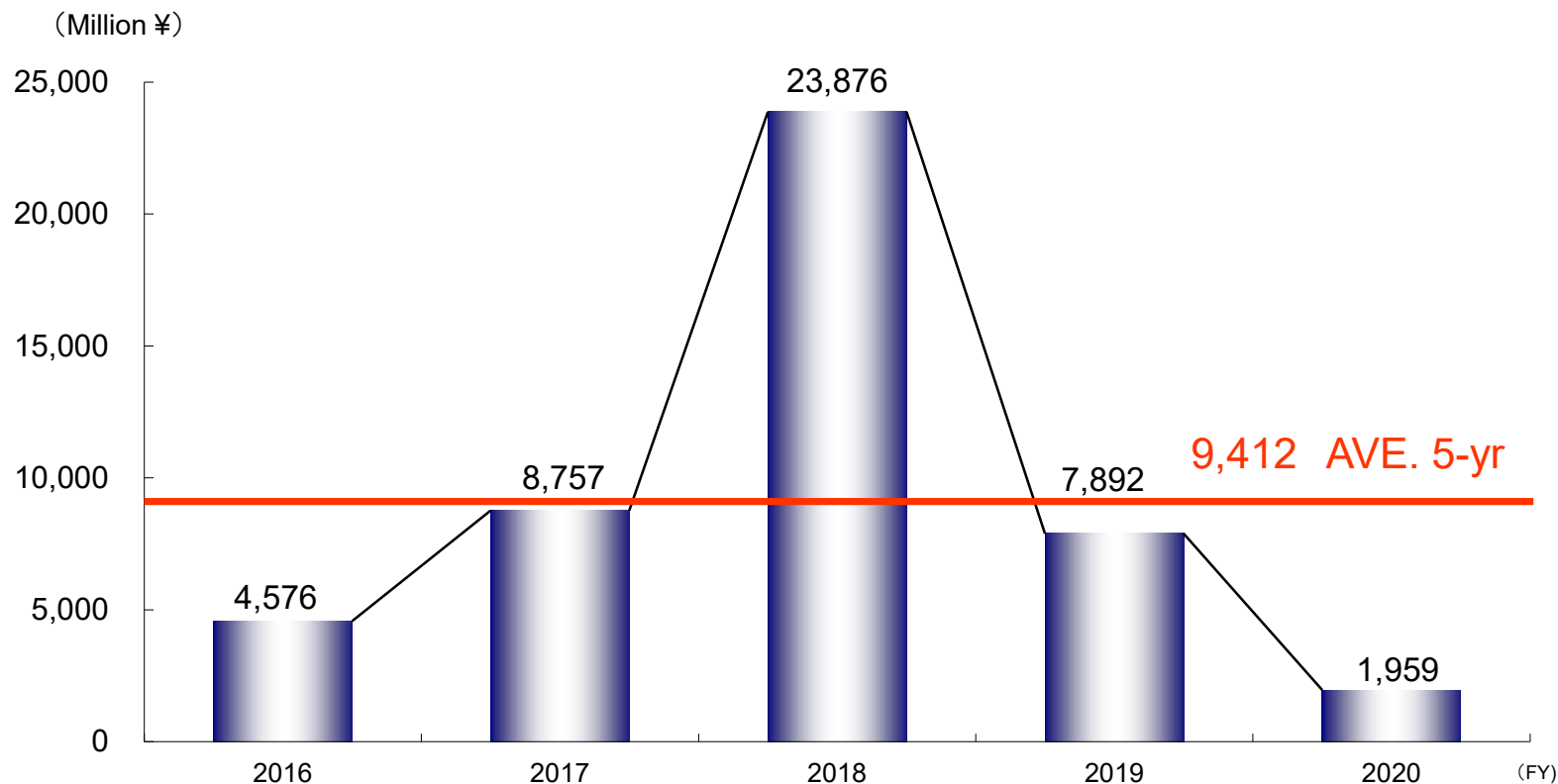
(Consolidated basis)



Fiscal Year	2016	2017	2018	2019	2020
Number of R&D persons	86	111	129	139	144
Share of total employees (%)	9.9	11.5	11.6	12.7	13.0

Capital Expenditures

(Consolidated basis)



※ Purchases of tangible and intangible fixed assets

Consolidated Balance Sheets

(Million ¥)

	FY2016	FY2017	FY2018	FY2019	FY2020
Current Assets	27,736	52,499	44,885	35,988	38,177
Fixed Assets	74,262	86,085	97,987	95,859	101,910
Tangible fixed Assets	14,644	21,306	40,852	45,500	41,991
Intangible fixed Assets	47,834	48,976	44,415	40,212	41,003
Investment and other Assets	11,783	15,802	12,718	10,146	18,915
Total Assets	101,999	138,584	142,872	131,848	140,028
Total Liabilities	39,387	29,865	29,594	25,129	29,968
Current Liabilities	23,934	13,180	15,944	5,127	7,954
Long-term Liabilities	15,453	16,685	13,650	20,002	22,014
Total Net Assets	62,611	108,719	113,277	106,718	110,059
Shareholders' Equity	50,393	88,933	97,079	93,192	91,784
Other Comprehensive Income	4,661	10,446	6,564	3,435	11,104
Subscription rights to shares	—	625	625	625	—
Minority Interest (Non-controlling Interests)	7,557	8,712	9,008	9,464	7,170
Total Liabilities and Net Assets	101,999	138,584	142,872	131,848	140,028

Consolidated Statement of Income

(Million ¥)

	FY2016	FY2017	FY2018	FY2019	FY2020
Net sales	30,069	54,339	67,809	37,487	37,034
Gross profit	13,866	25,703	30,446	12,003	12,582
S G & A	6,052	13,386	13,821	12,198	11,716
Operating income	7,813	12,316	16,624	▲195	865
Ordinary income	7,958	11,946	17,185	236	1,366
Net income attributable to owners of parent	19,732	7,777	11,322	▲1,095	662

Consolidated Statement of Cash Flows

(Million ¥)

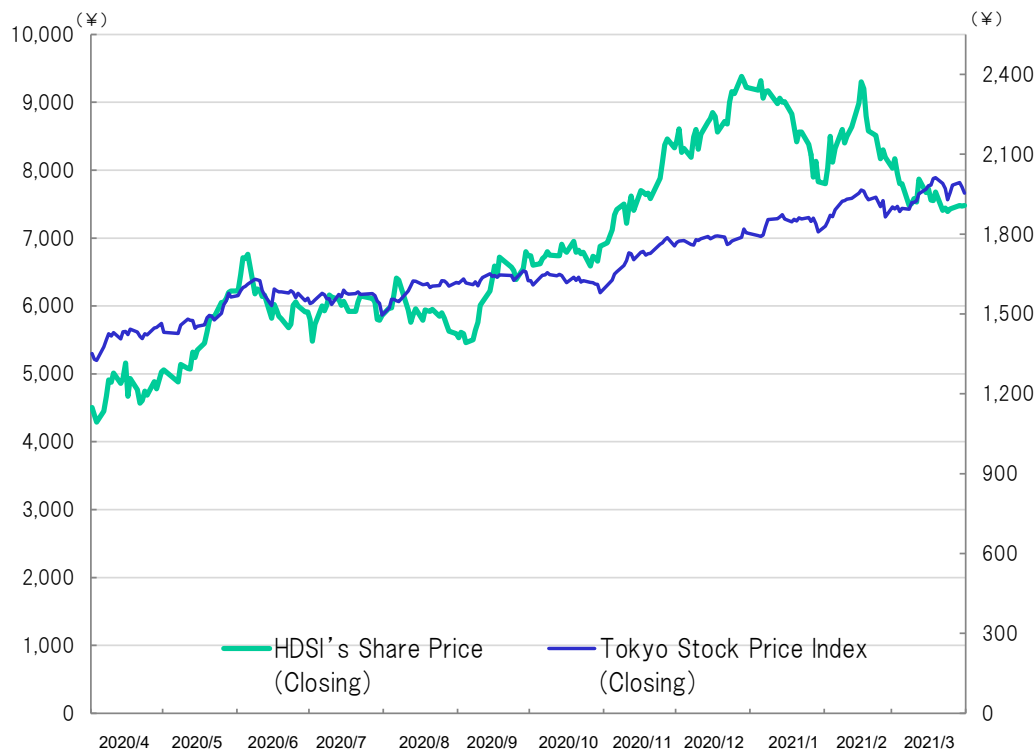
	FY2016	FY2017	FY2018	FY2019	FY2020
Cash flow from operating activities	7,225	9,233	15,121	10,950	9,555
Cash flow from investing activities	▲32,522	▲8,171	▲22,399	▲12,537	▲4,180
Cash flow from financing activities	24,648	17,493	▲3,271	2,362	▲3,611
Effect of exchange rate changes on cash and cash equivalents	▲121	95	▲171	▲33	▲108
Net increase (decrease) in cash and cash equivalents	▲770	18,651	▲10,720	742	1,654
Cash and cash equivalents at end of year	9,668	28,320	17,600	18,342	19,996

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, 2021)

■ Number of shareholders:
6,017 persons (As of March 31, 2021)

■ Market capitalization:
¥720,048,549,000 (As of March 31, 2021)

Note: The Tokyo Stock Price Index ('TOPIX') is a composite index of all common stocks listed on the First Section of Tokyo Stock Exchange.

Harmonic Drive Systems Inc. is listed on JASDAQ standard market of Tokyo Securities Exchange, Inc.

Harmonic Drive Systems Inc.

Investors' Guide FY2020

Year ended March 31, 2021

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.

Nov 12, 2021

Outlook for FY03/22

FY03/22 Outlook

Although the business environment surrounding our Group remains unpredictable due to concerns about the prolonged spread of the novel coronavirus, demand for products used in semiconductor production equipment is firm, and we expect demand for products used in industrial robots to trend favorably on the back of investment in automation in the automobile, electronics, and home appliance industries.

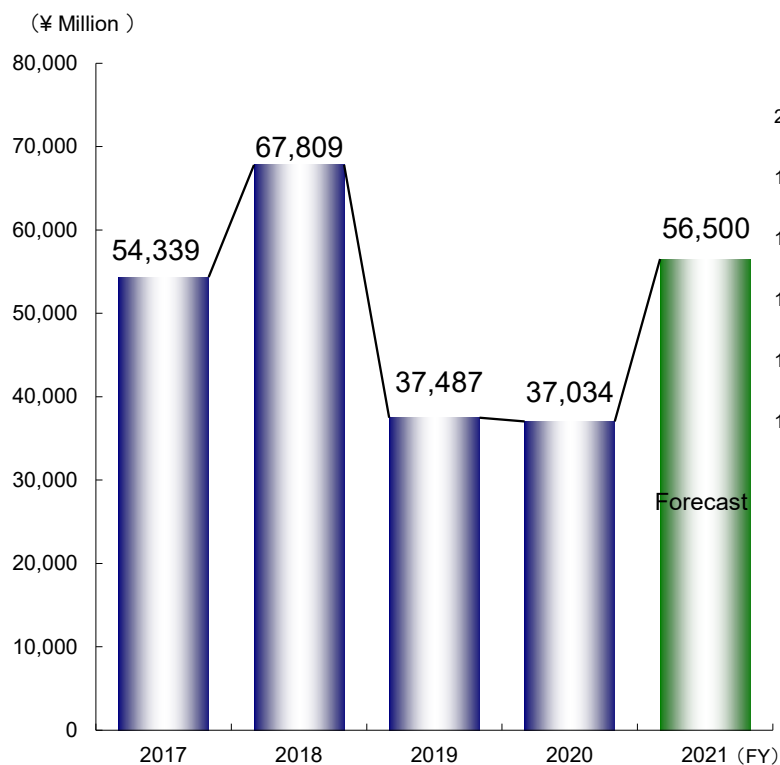
To achieve a sustainable society and sustainable management in a constantly changing world, we will continue taking on the challenge of developing technologies and skills that capture changes in the environment to provide products and services that go beyond our customers' expectations. Accordingly, we will strive to respond flexibly to short-term fluctuations in the operating environment. At the same time, we will implement strategies in line with the policies outlined in our long-term vision and medium-term management plan. By maintaining a balance between defensive and offensive approaches in our management strategy, we aim to enhance corporate value over the medium to long term.

In regard to our consolidated earnings forecast for the fiscal year ending March 31, 2022, based on the above business environment, our Group projects net sales of ¥56,500 million (+52.6% year on year), operating income of ¥8,200 million (+847.0% year on year), ordinary income of ¥8,200 million (+499.9% year on year), and net income attributable to owners of parent of ¥5,500 million (+730.2% year on year).

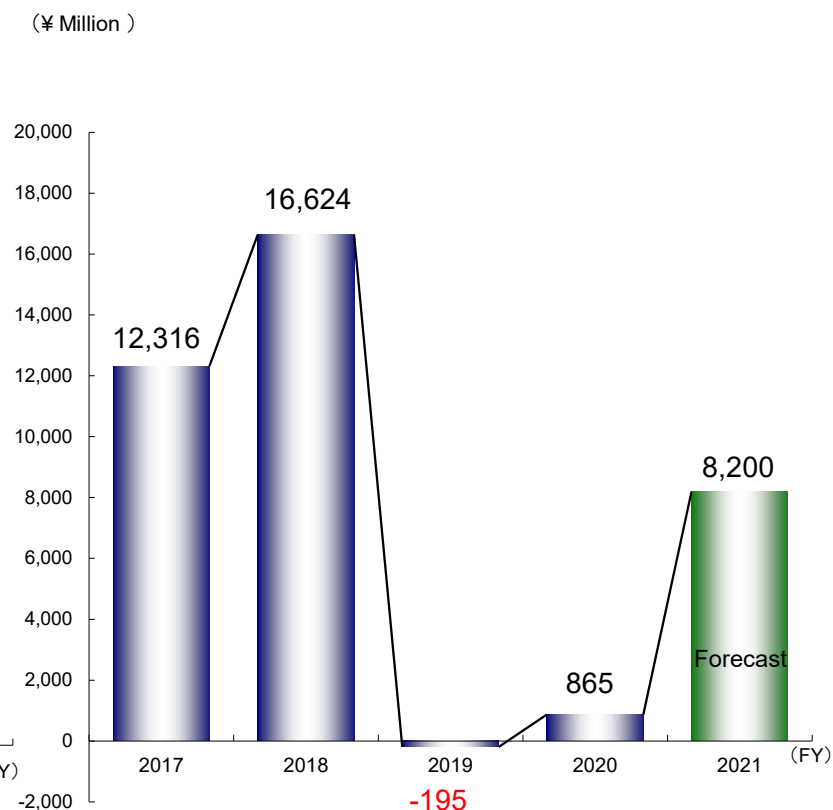
Forecast i Net Sales, Operating Income

(Consolidated basis)

Net Sales



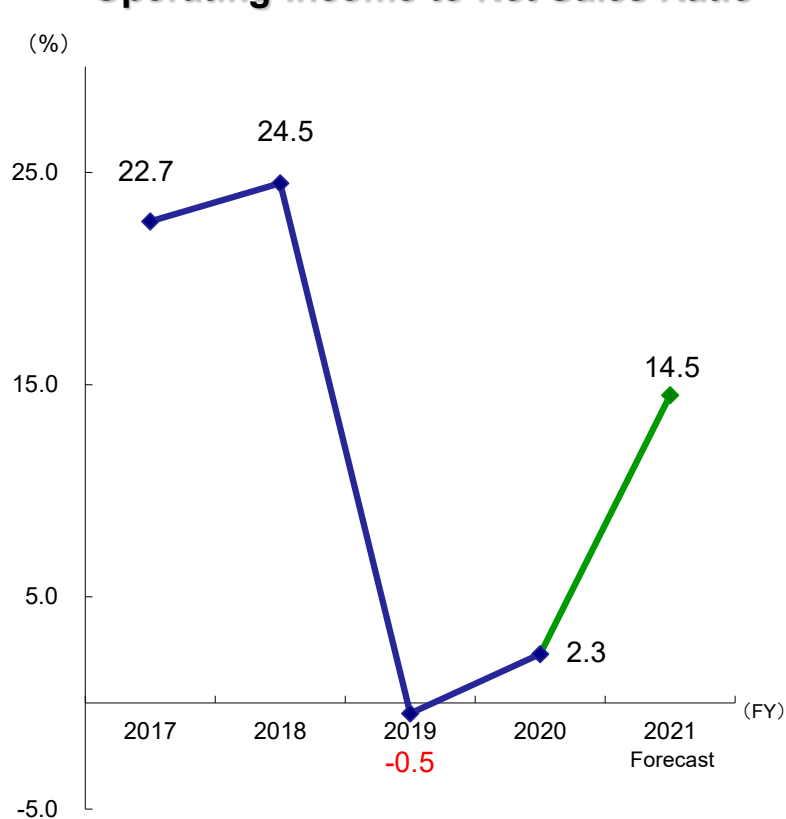
Operating Income



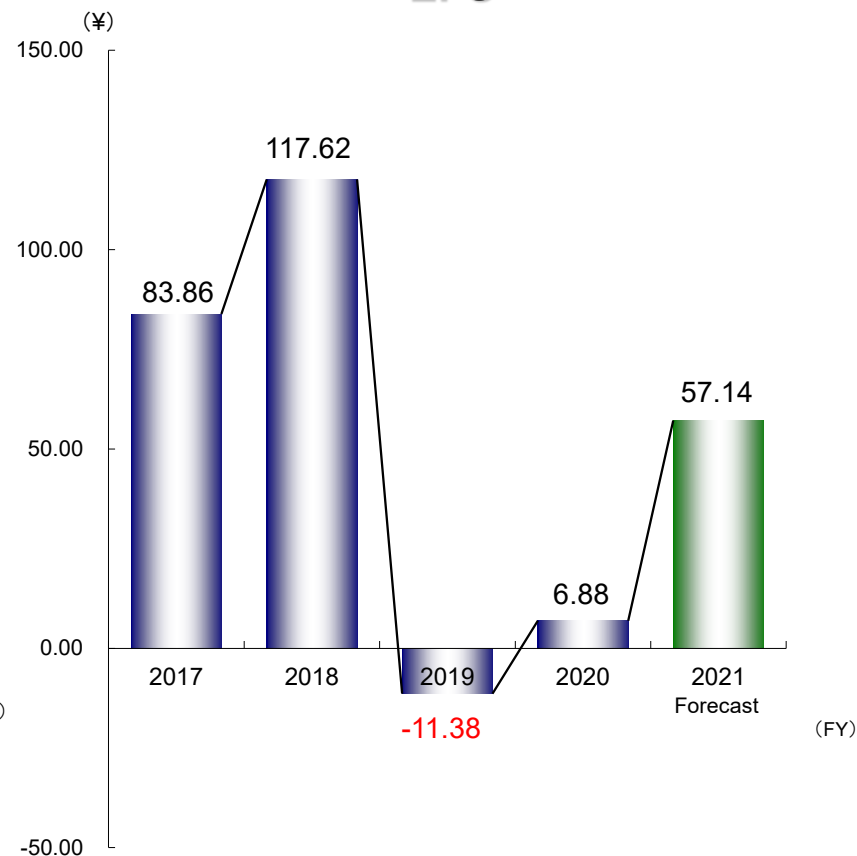
Forecast ii Operating Income to Net Sales Ratio, EPS

(Consolidated basis)

Operating Income to Net Sales Ratio



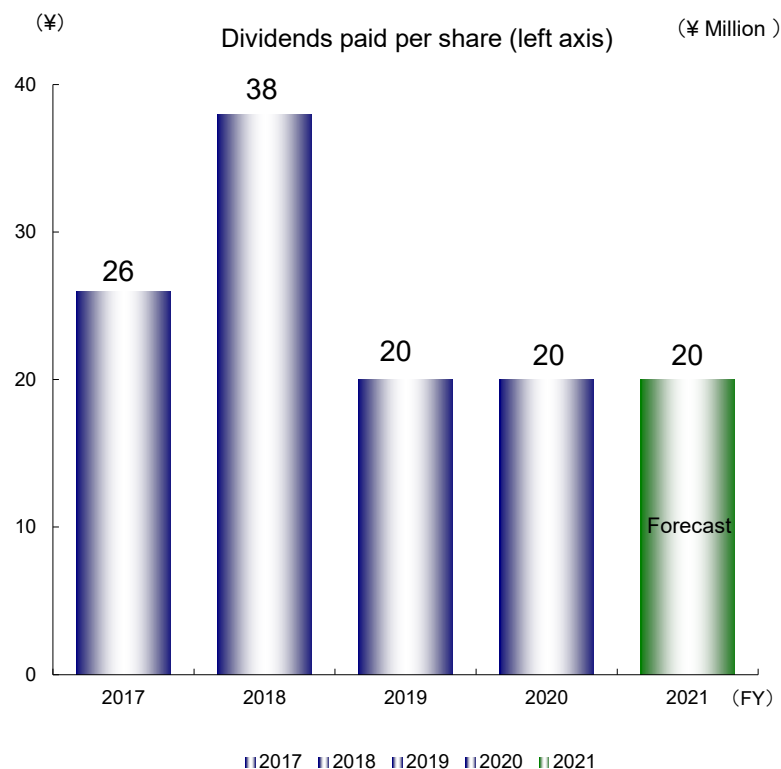
EPS



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

Nov 12, 2021

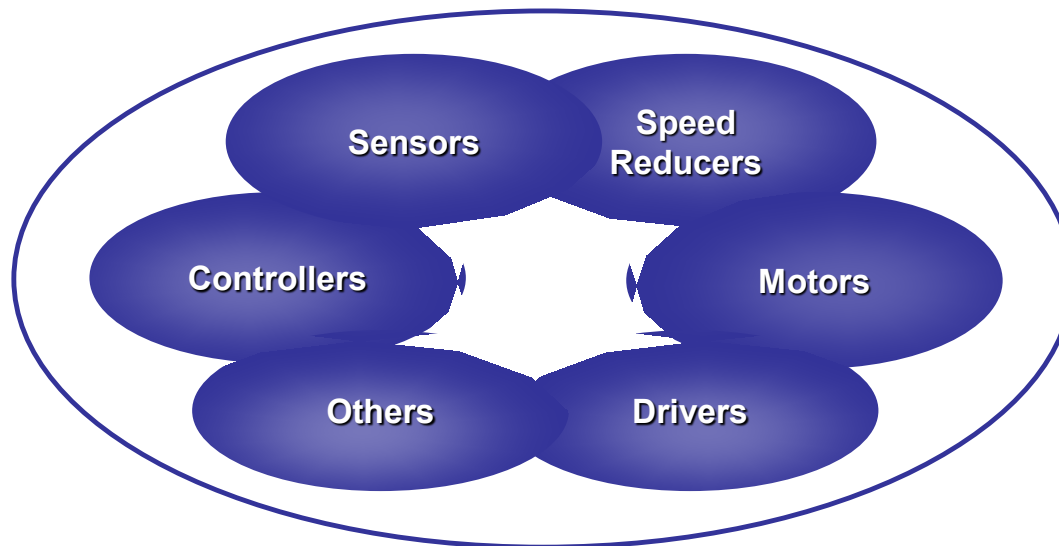
Total Motion Control

Our business Domain

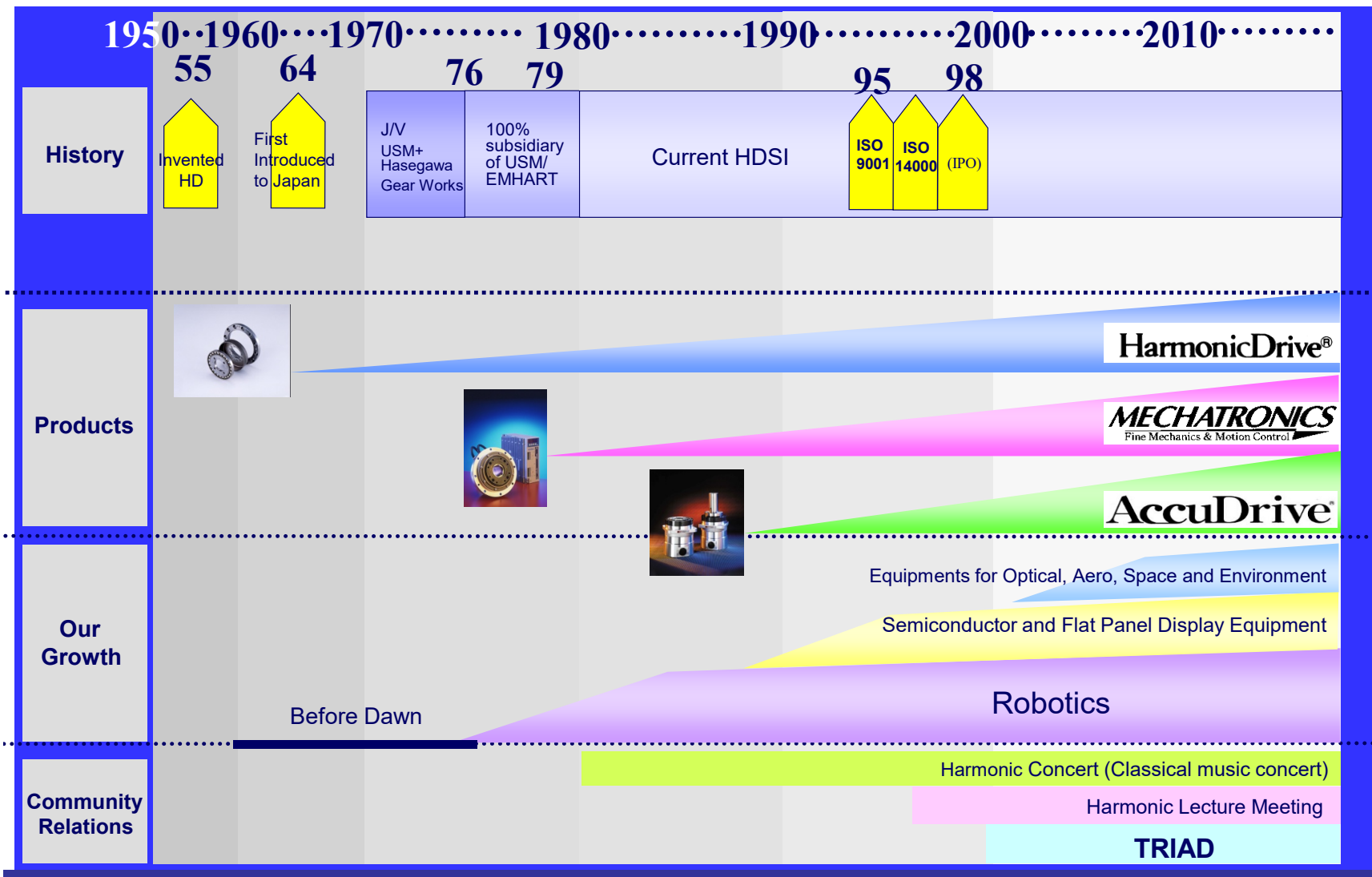


Developing and producing Precision Control Equipment and Components for a broad range of applications, focus on “Total Motion Control”

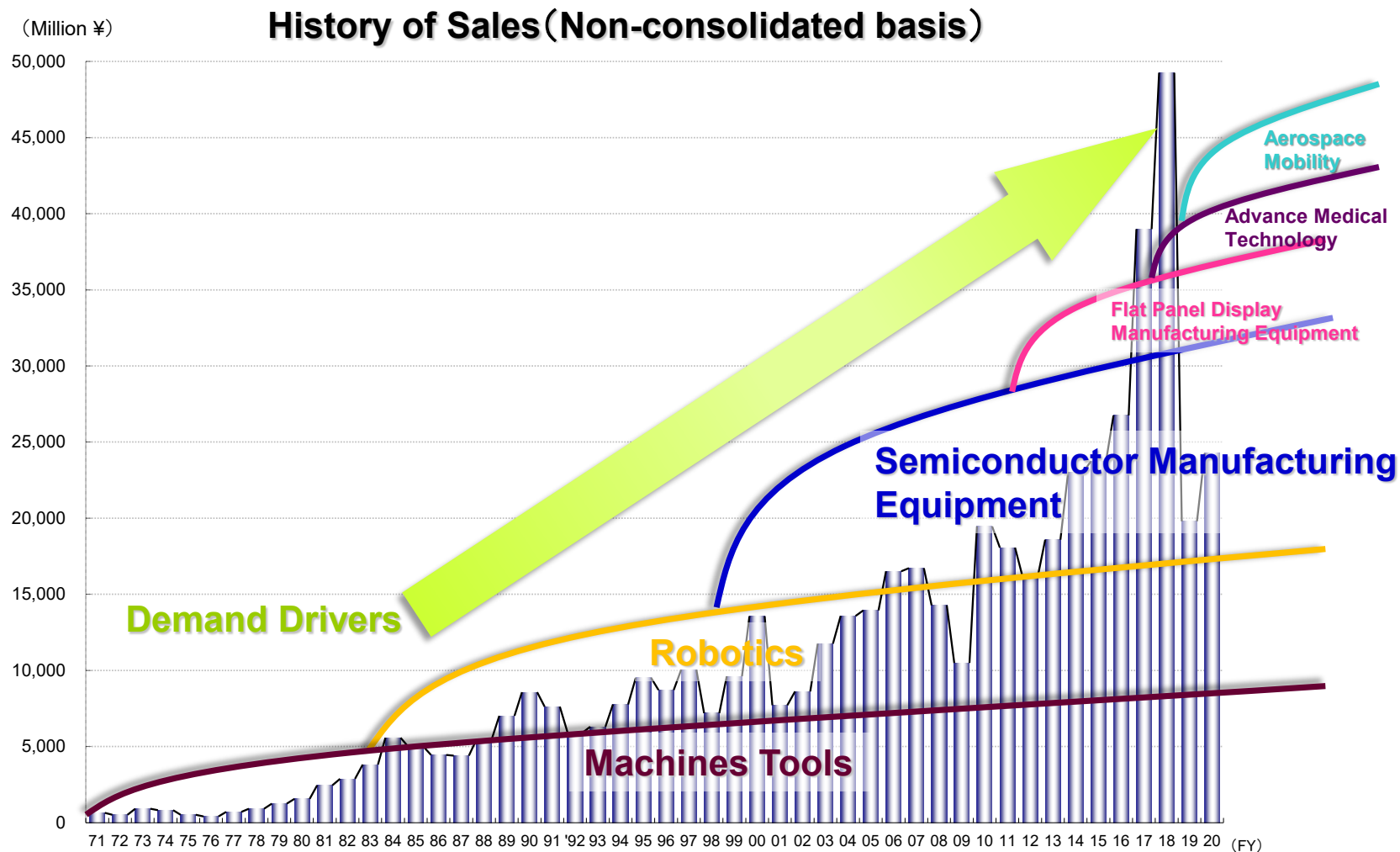
Schematic Concept of Total Motion Control



History of Harmonic Drive Systems Inc.

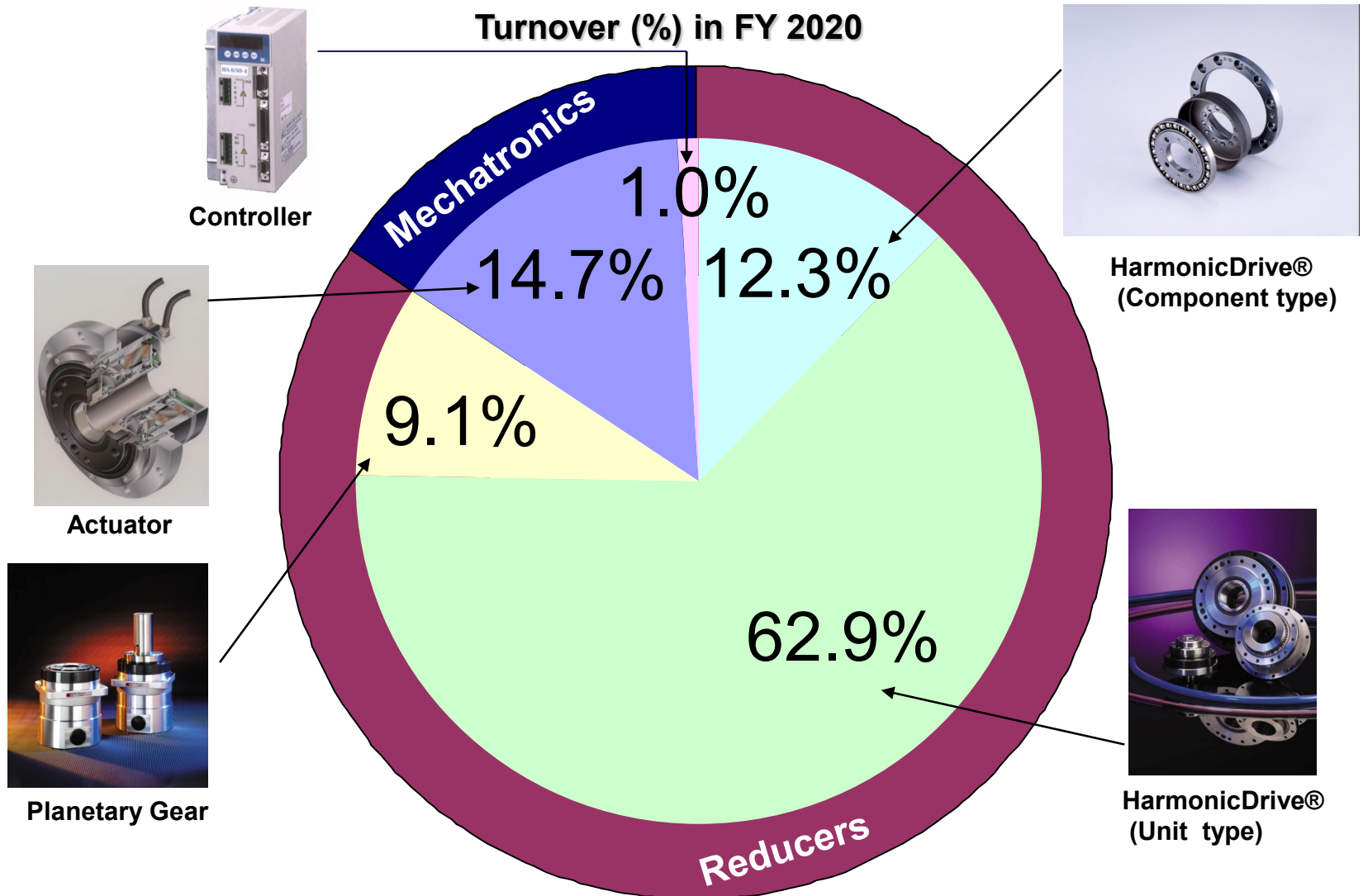


History of Sales

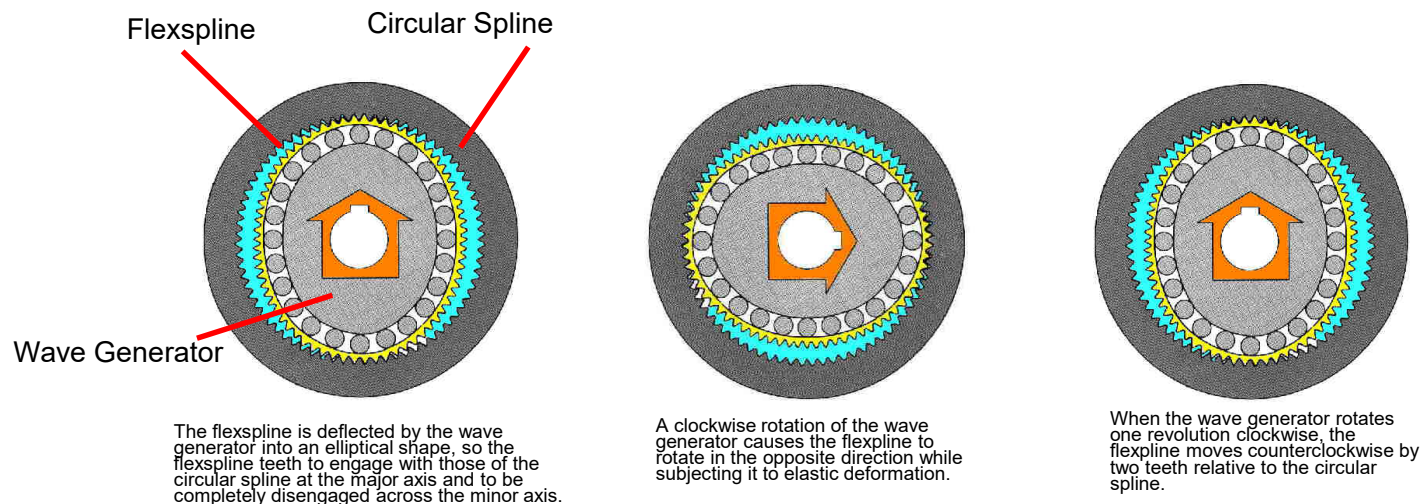


Sales Structure by Product Types

(Non-consolidated basis)



Principle and Advantages of “HarmonicDrive®”

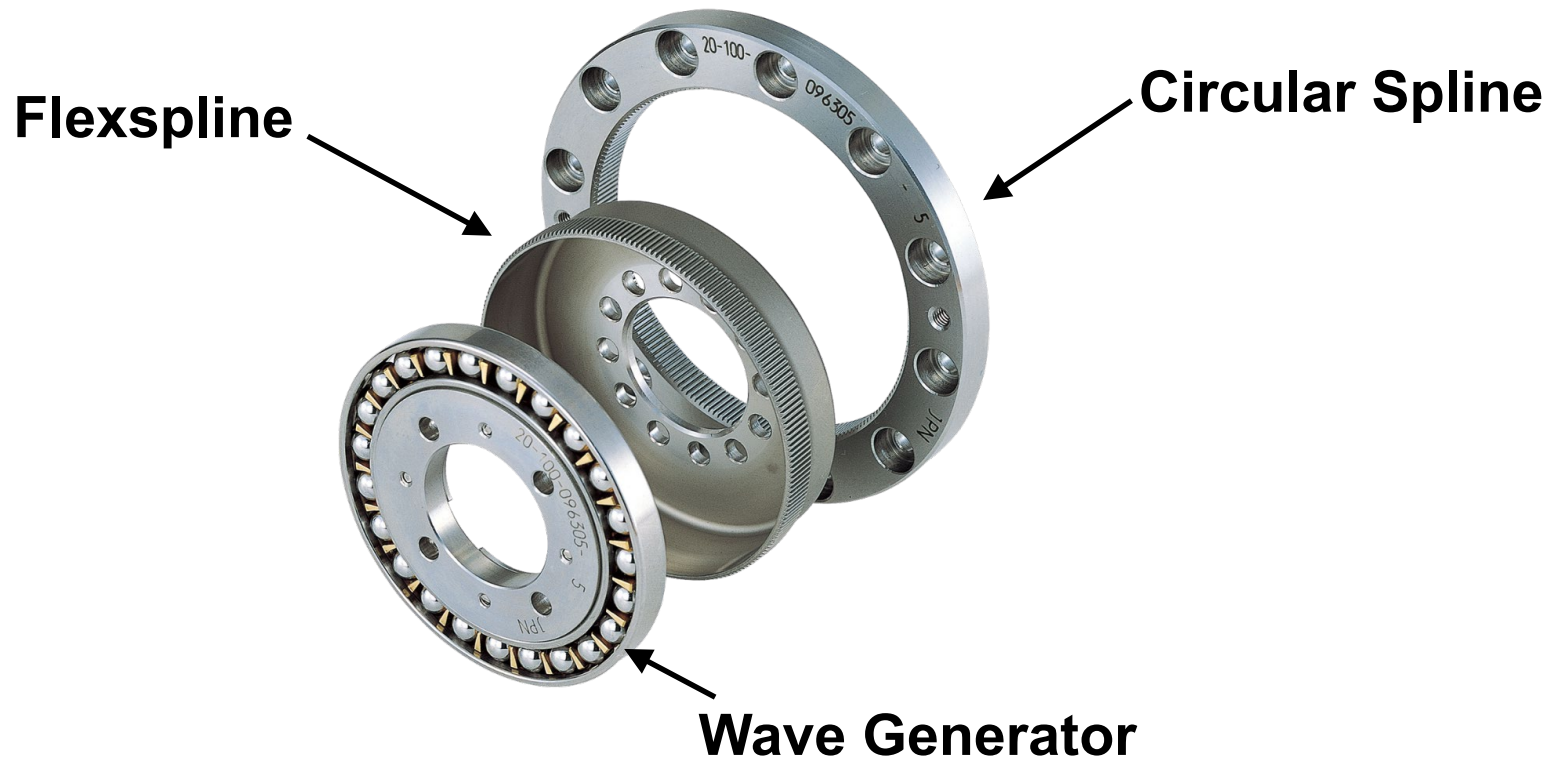


Advantage of “HarmonicDrive®”

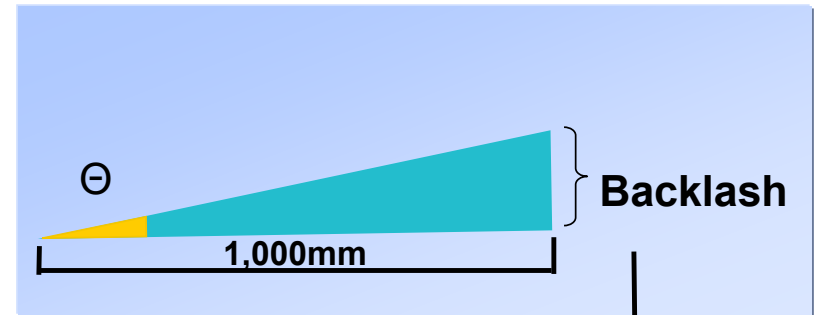
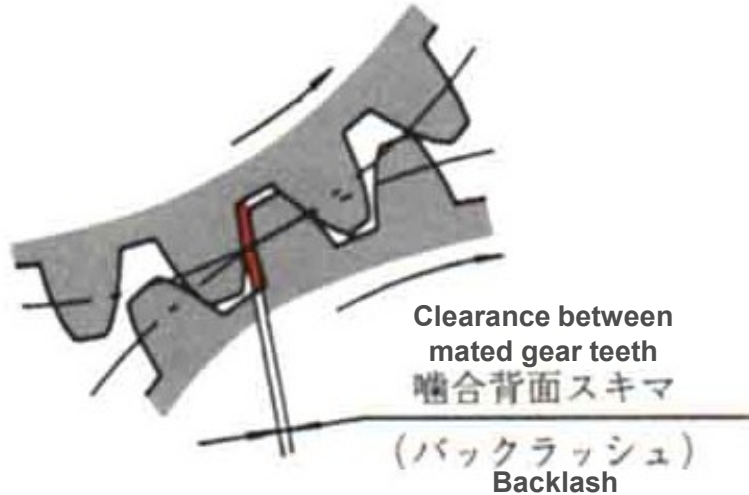
- Compact Design/ Reduced Weight
- Non-backlash
- Hollow Construction
- High Reduction Ratio by Single Stage
- High Efficiency
- High Torque Capacity
- High Positioning Accuracy and Repeatability
- High Torsional Stiffness
- Simple Installation and Assembly
- Low Noise and Smoothness operation

Features and Benefits “ Compact and Lightweight”

Comprised of just three basic components → Compact and Lightweight



Features and Benefits “Zero Backlash”



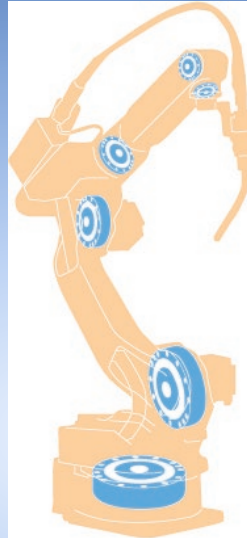
Applications	Backlash	Backlash after 1m	Our Products
General Industrial Machinery	0.5 degrees	8.7mm	None
Transporters and Processing Machinery	0.05~0.25 degrees	0.9mm~4.3mm	AccuDrive [®] HarmonicPlanetary [®]
Robotics and Semiconductor Equipment	0~0.02degrees	0~0.3mm	HarmonicDrive [®]

Feature Applications

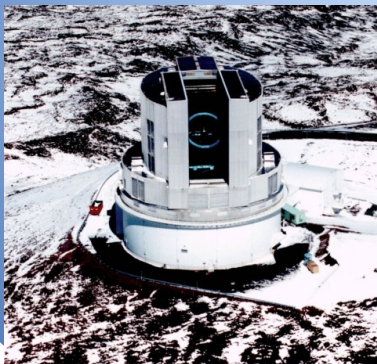
Hayabusa 1.2 Photograph courtesy of Japan Aerospace Exploration Agency (JAXA)



Industrial robots



eVTOL

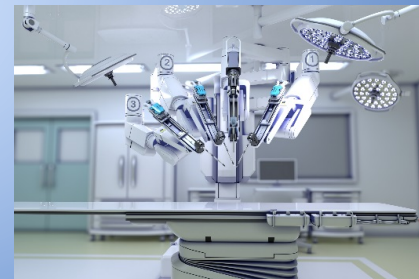


Optical-infrared telescope "Subaru" installed on Mauna Kea on the island of Hawaii

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

