

Harmonic Drive Systems Inc.

Investors' Guide FY2019

Year ended March 31, 2020

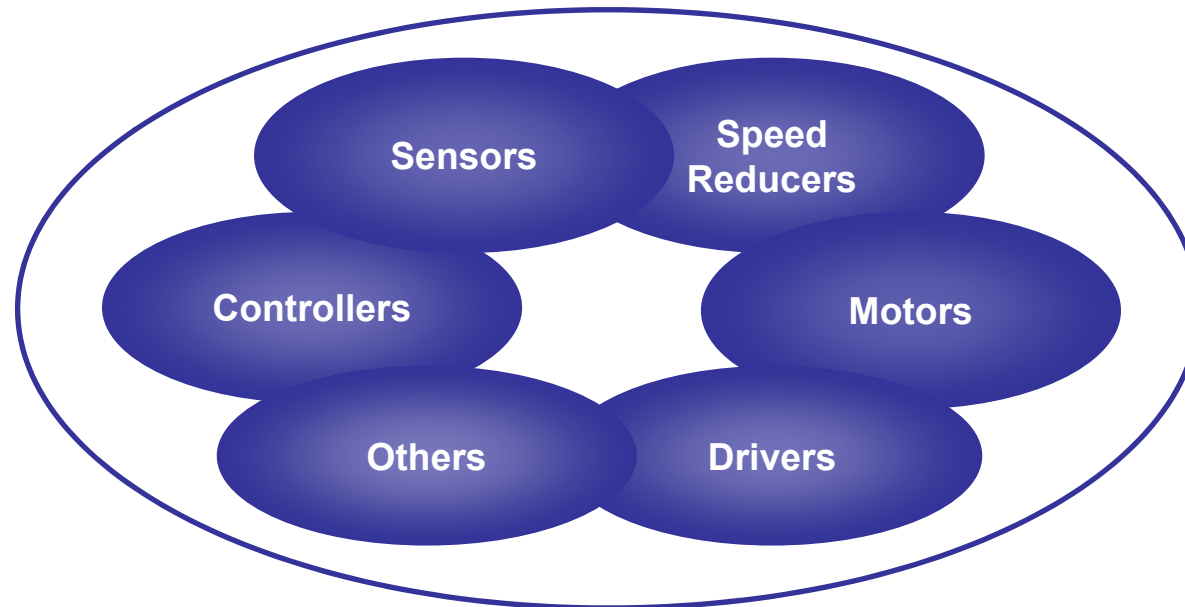
Leadership in Total Motion Control

November 11, 2020

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.

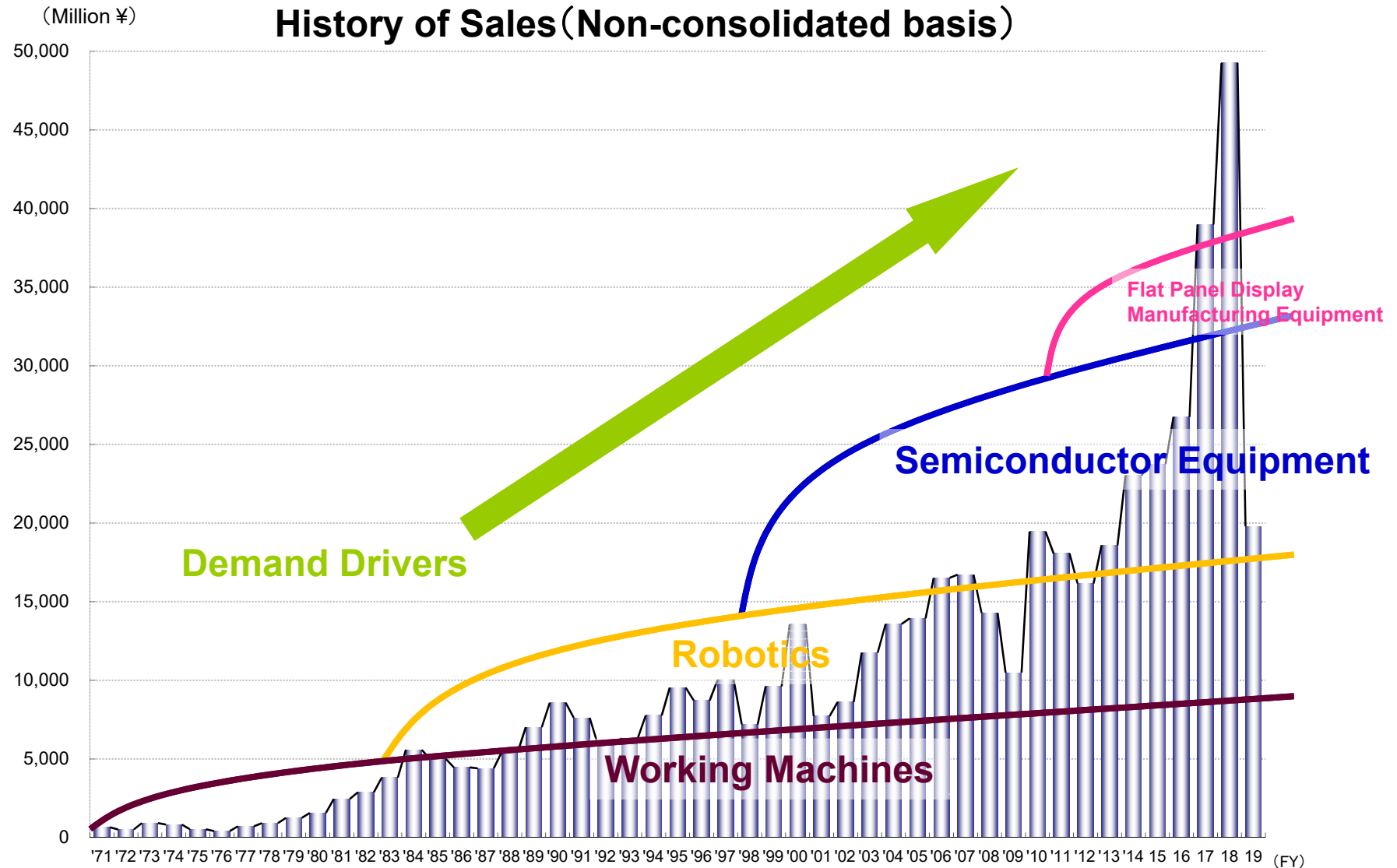
We make our best efforts to create attractive products, services, compensation, working environments, and trading relations to satisfy all these concerned parties.

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, and Issues to be Addressed

The Group has formulated a medium-term management plan for the fiscal years ending March 31, 2019 to 2021. The final year of this plan coincides with our 50th anniversary of establishment.

In the near future we expect the operating environment to be severe. 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 the shift toward manufacturing automation and investment in labor savings in emerging markets, while companies in emerging markets cope with labor shortages and boost productivity.

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 long-term vision and medium-term management plan are outlined below.

Long-term Vision

(Aimed-for corporate structure)

Continue to be without peer in the motion control industry through provision of high-value products and services.

(Aimed-for position)

- A trusted actuator maker having original technology
- A leading company in the precision speed reducer field

Mid-term Management Plan for fiscal years 2018–2020

50th Anniversary of Our Founding

Seizing the rapidly expanding growth opportunities, advance to the next stage

(Basic policies and strategies)

- (a) Major increase in global production capacity
Raise capacity at each production site, spreading out from Japan to North America, Germany, and South Korea
- (b) Raising the capability of each Group company and building greater comprehensive strength
Strengthen the business foundations of each Group company and achieve higher corporate value



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

(c) Improving customer satisfaction by raising QCDS capability

Mechatronics	AccuDrive®, HarmonicPlanetary®	HarmonicDrive®
<ul style="list-style-type: none"> • Develop new markets and applications with original products and services • Strengthen service and support capability • Raise the level of new product development and core technologies 	<ul style="list-style-type: none"> • Deploy sales strategies based on the characteristics of each region • Strengthen development and production technologies 	<ul style="list-style-type: none"> • Normalize and reduce product lead time • Provide distinctive value in the form of high added value products and problem-solving ability

(d) Strengthening the business foundation underlying growth

- Acquire and train human resources in line with sound growth
- Enhance business management platforms drawing on IT
- Carry out business management with the environment, society, and governance in mind

(e) Making moves toward future growth

Foster an institutional climate able to meet changes, even venturing into creative destruction

Management Indices Targets

The HDS Group has established the following management indices targets.

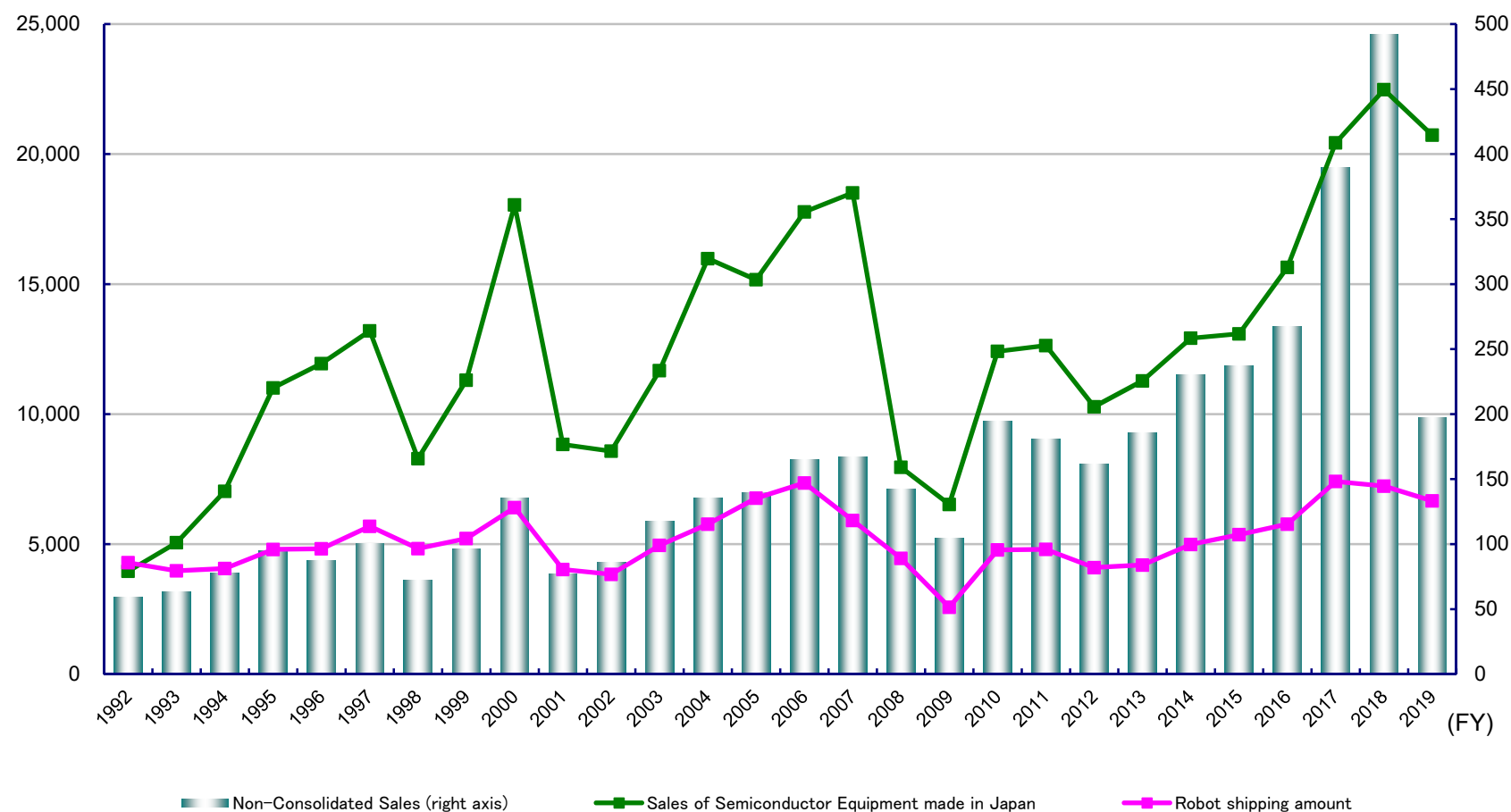
- Profit Margin : At least 20%
- Return on Equity (ROE) : At least 10%

Factors that Affect HDSI

(Non-consolidated basis)

one hundred million ¥

one hundred million ¥

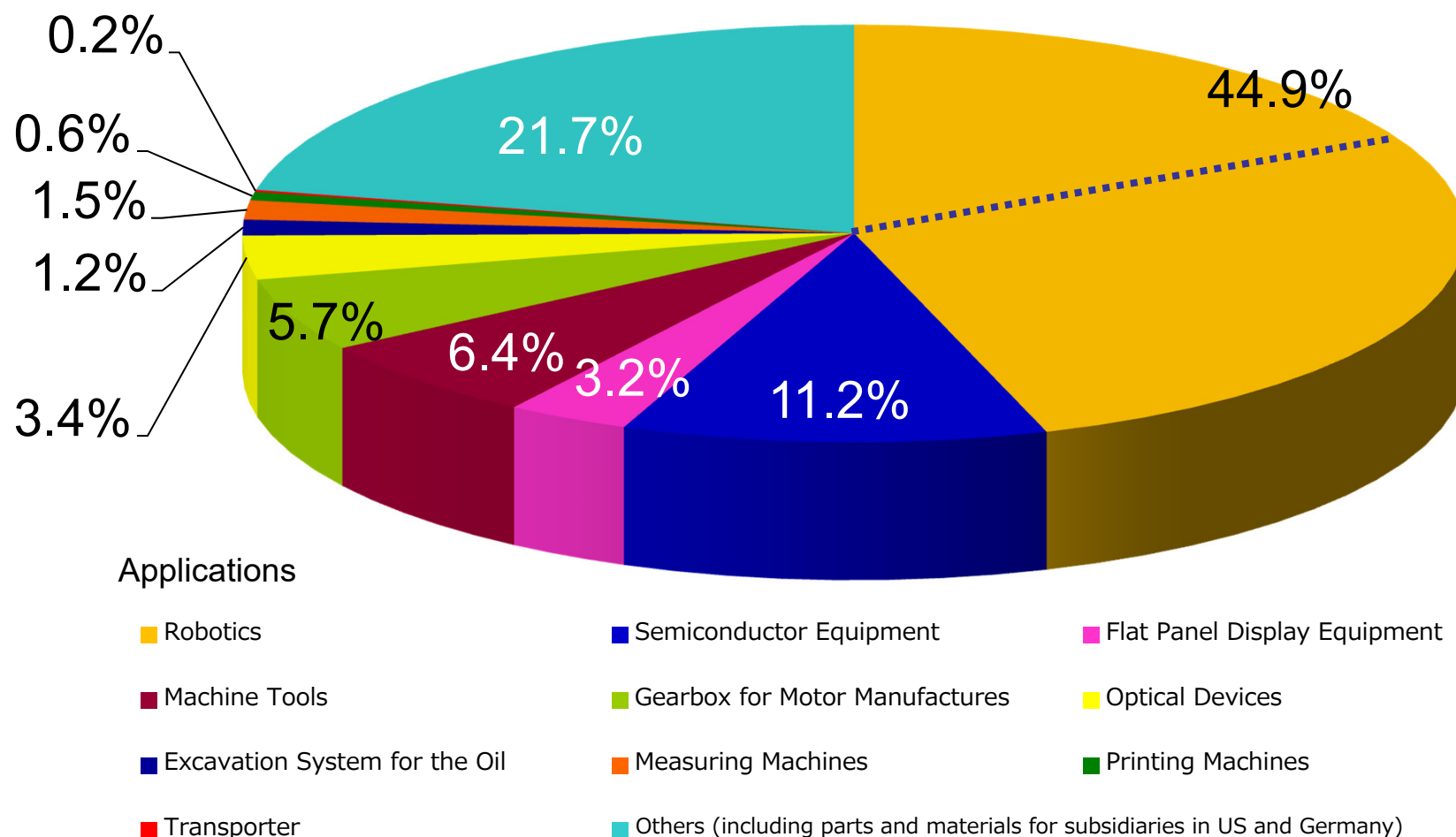


Source: Semiconductor Equipment Association of Japan, Japan Robot Association

Sales Composition by Application Fields

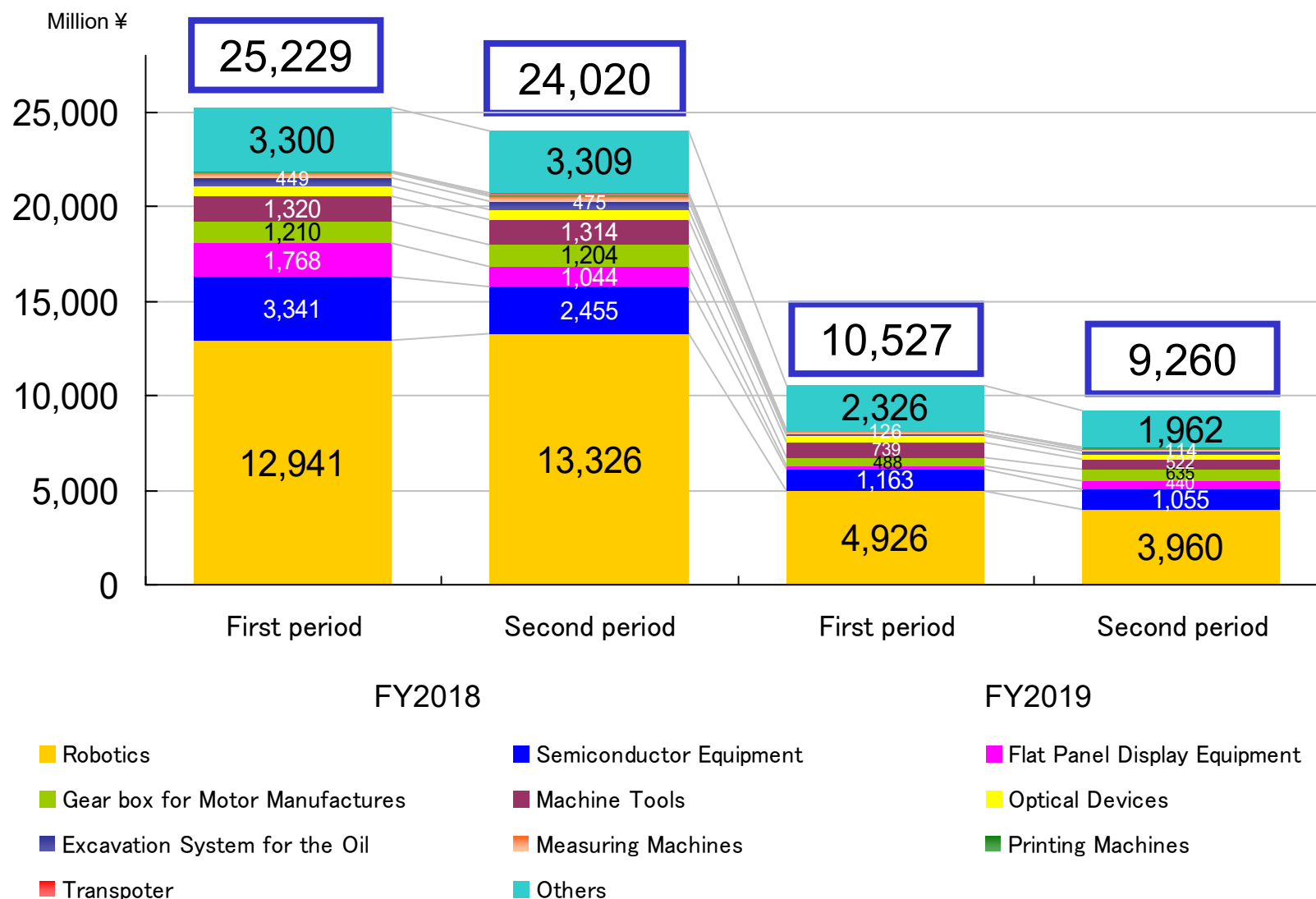
(Non-consolidated basis)

Turnover (%) in FY2019



Semiannual Sales Composition by Application Fields

(Non-consolidated basis)



Performance Summary Operating Results

During the fiscal year ended March 31, 2020, the HDS Group's business environment was severe as more companies in the global manufacturing sector adopted a careful approach toward capital investment due in part to prolonged trade friction between the US and China. Entering the second half of the fiscal year, environments surrounding order bookings showed signs of recovery, particularly in the Asian market, which includes Japan. However, the spread of the novel coronavirus pandemic that broke out in the latter stages of the fiscal year gave rise to an unprecedented increase in uncertainty concerning the future of the global economy.

During the fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020), the business environment surrounding the HDS Group was characterized by depressed orders, as manufacturers around the world, starting with China in particular, postponed or curtailed capital investment in the first half of the year. This was exacerbated by order adjustments at client companies in response to robust upfront orders they had placed in the previous fiscal year. In the second half of the year, we were able to confirm that orders had indeed bottomed out, as some clients made progress in liquidating excess inventory and semiconductor-related demand recovered. Nonetheless, consolidated orders for the full year fell 33.0% year on year to 30,029 million yen. Further, due to the decline in orders, consolidated net sales were down 44.7% year on year to 37,487 million yen.

By application, sales of products for use in industrial robots declined year on year due to inventory adjustments of our products at client companies and our distributors. On the other hand, sales of products for use in collaborative robots, which differ from conventional industrial robots in that they are proven safe to be operated alongside humans, increased year on year. Further, although semiconductor-related demand somewhat recovered starting in the latter half of the year, sales to semiconductor production equipment manufacturers decreased year on year for the full year. Sales of products for use in flat panel display manufacturing equipment were also down year on year, hurt by sluggish orders for capital equipment.

To overcome the difficult business environment, we worked to minimize depreciation expenses by partially suspending capital investment and reduce costs through thorough cost management. However, such efforts were not enough to offset the impact of lower net sales, and operating income dropped 99.6% year on year to 67 million yen. This decline in operating income, together with the drawing down of deferred tax assets, resulted in a net loss attributable to owners of parent of 832 million yen (versus net income of 11,601 million yen in the previous fiscal year).

By product type, sales of speed reducers were 28,031 million yen (down 50.7% year on year) and sales of mechatronics products were 9,456 million yen (down 13.4% year on year), accounting for 74.8% and 25.2% of net sales, respectively.

During the fiscal year ended March 31, 2020, the second 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, we endeavored to book orders by pitching solutions aimed at contributing to accelerating automation in manufacturing sectors worldwide and a variety of rapidly progressing robot technologies while responding to increasingly sophisticated and diverse customer needs.

Performance Summary Operating Results

The Group has also been devoted to opening up new markets that are expected to grow by thoroughly exploring and applying its own original technologies.

To maintain and improve quality amid rapid fluctuations in production volume, we implemented process improvement that incorporated both employee training and automation while enhancing quality management systems throughout our supply chain. Additionally, to raise quality at all production sites that have expanded their production capacities (in Japan, Germany, and the US) to a unified high standard, we have endeavored to maintain and raise quality under our Common Global Quality initiative.

In terms of R&D, we strove to expand and enrich our basic research through efforts to establish new principles and theories and achieve new technologies as we aimed 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. Moreover, we have further strengthened coordination between R&D divisions based in Japan and Germany. We have 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.

Starting in 2017, we have endeavored to strengthen HarmonicDrive® production capacities at sites in Japan, the US, and Europe in anticipation of medium-term demand growth. In Japan, we completed construction on a new wing at the Ariake Factory (Hotaka Ariake, Azumino, Nagano Prefecture) in September 2019. Currently, we are preparing to construct a production line with the aim of making the factory a production site for specially designated projects involving expansion in production volume. Furthermore, we launched operations at the Matsumoto Factory (Matsumoto, Nagano Prefecture), where we manufacture crossed roller bearings that are key mechanical components of our products, in March 2019. In the US, we finished construction on a new wing adjacent to one of our existing factories in January 2020. Moving forward, we will strive to increase our customer satisfaction within the North American market. To do so, we will raise our local competitiveness in the US in terms of cost, delivery speed, and service by expanding our production capacity. In Germany, we have augmented existing factories and completed enhancements to our production system with the goal of preparing for increases in demand. These efforts included arrangements to lease new factory space nearby.

While striving to increase production capacity, the Group has also continuously conducted initiatives targeting higher productivity and shorter 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.

Performance Summary Operating Results

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 suppliers, 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 fell 58.9% year on year to 18,612 million yen, impacted by marketwide adjustment in the factory automation market, as well as inventory correction at the Group's customers and distributors. As a result, we experienced a decline in sales for major application sectors, including products for use in industrial robots, semiconductor production equipment, flat panel display manufacturing equipment, and gearboxes for motor manufacturers. Segment income (ordinary income) decreased by 85.6% year on year to 2,488 million yen due in part to lower sales and higher depreciation expenses.

<North America>

Performance was strong overall when compared to the Japan and Europe segments. However, sales declined 8.4% year on year to 6,240 million yen due in part to lower demand for some product applications, including for use in semiconductor production equipment. Segment income (ordinary income) was down 30.6% year on year to 954 million yen.

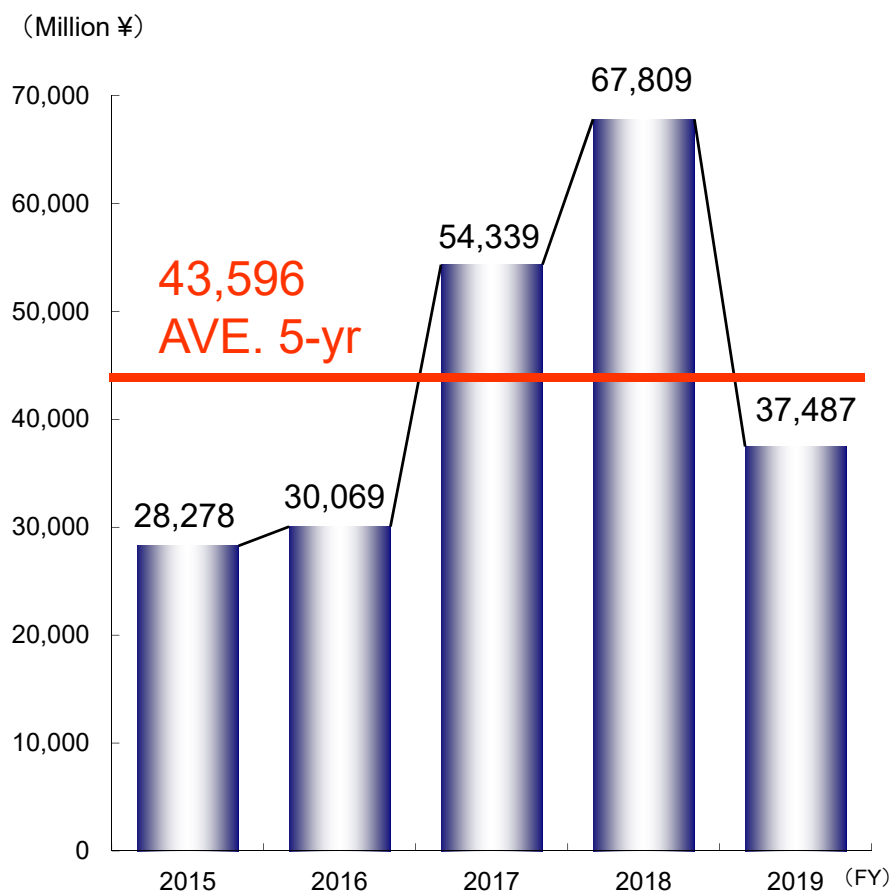
<Europe>

Sales dropped 19.4% year on year to 12,634 million yen mainly because of a decline in demand for products used in industrial robots. The decline is due in part to widespread adjustment in the European economy and, as in the Japan segment, customer inventory correction. Furthermore, we incurred segment loss (ordinary loss) of 800 million yen due to lower sales and 1,462 million yen in amortization of intangible assets recorded upon the acquisition of shares in Harmonic Drive SE.

Results i Net Sales, EBIT

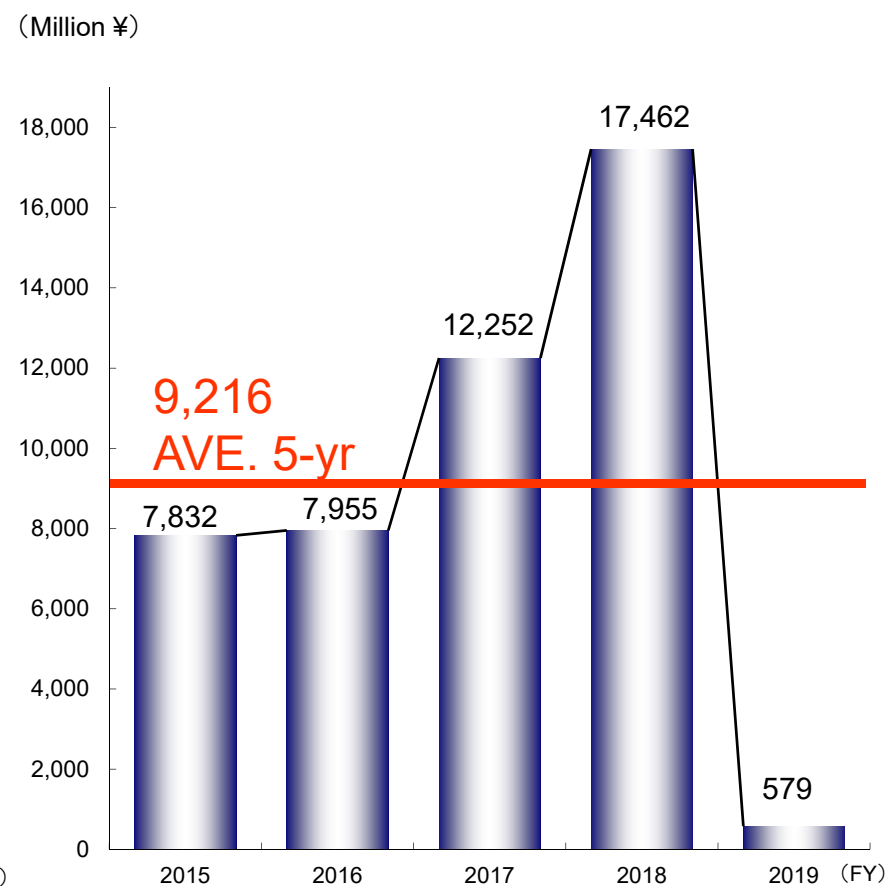
(Consolidated basis)

Net Sales



EBIT

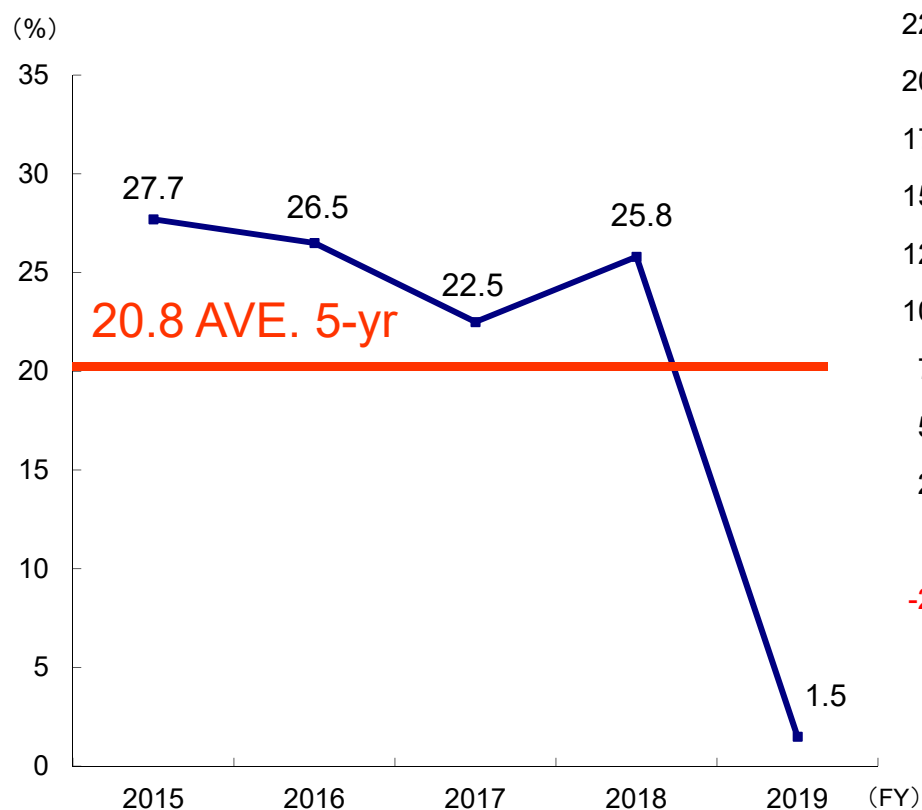
EBIT=Ordinary income + Interest paid — Interest income



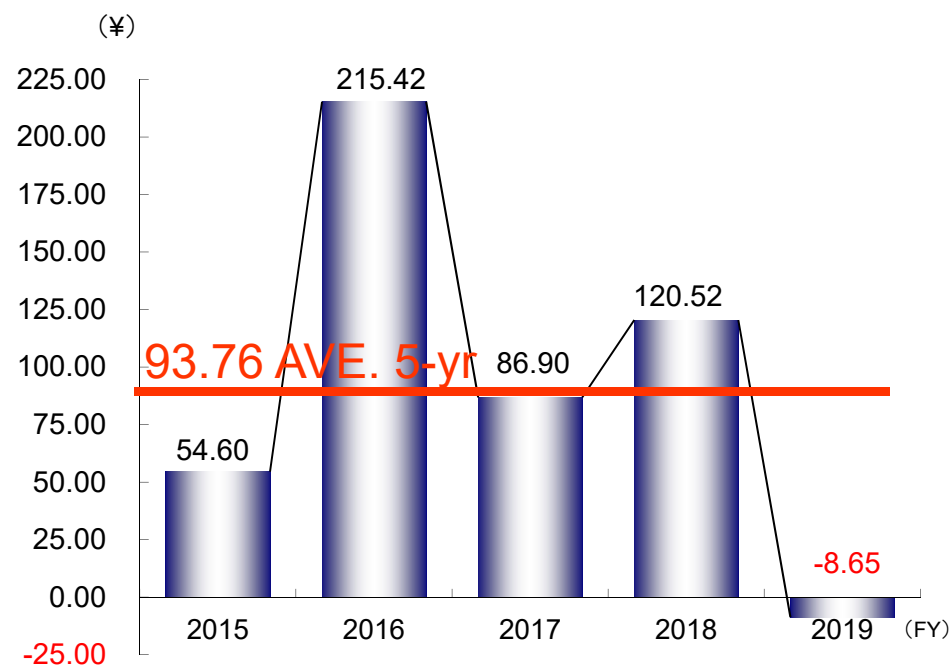
Results ii EBIT to Net Sales Ratio, EPS

(Consolidated basis)

EBIT to Net Sales Ratio



EPS



Dividends paid per share

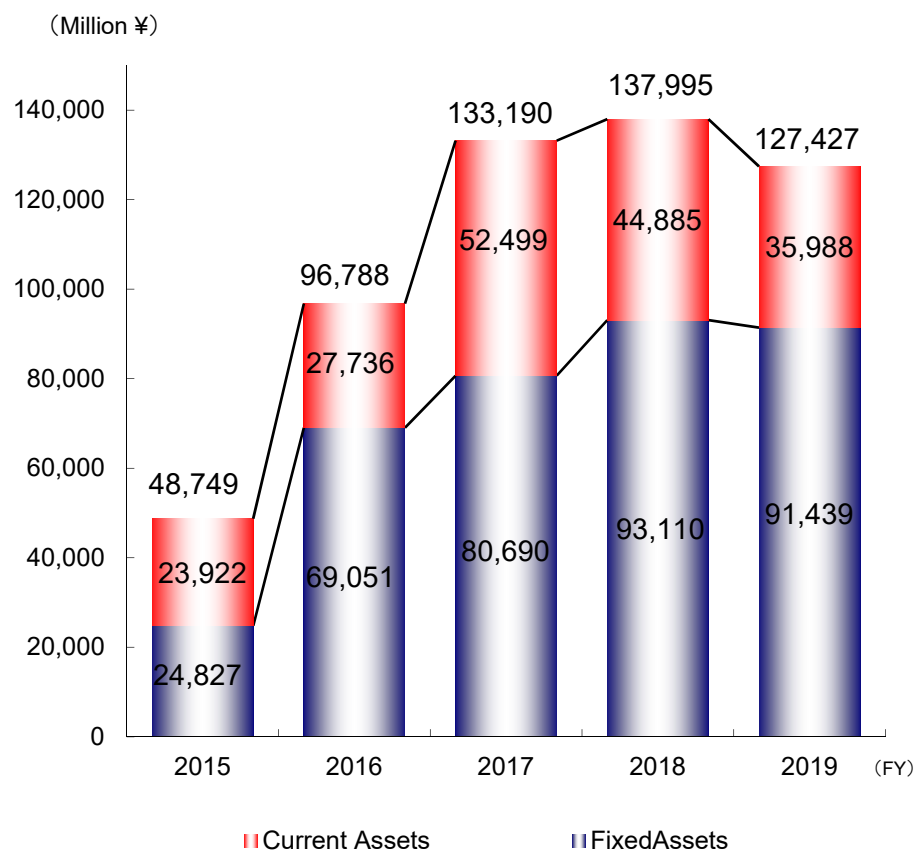
FY	2015	2016	2017	2018	2019
Dividends(¥)	18	20	26	38	20

※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.

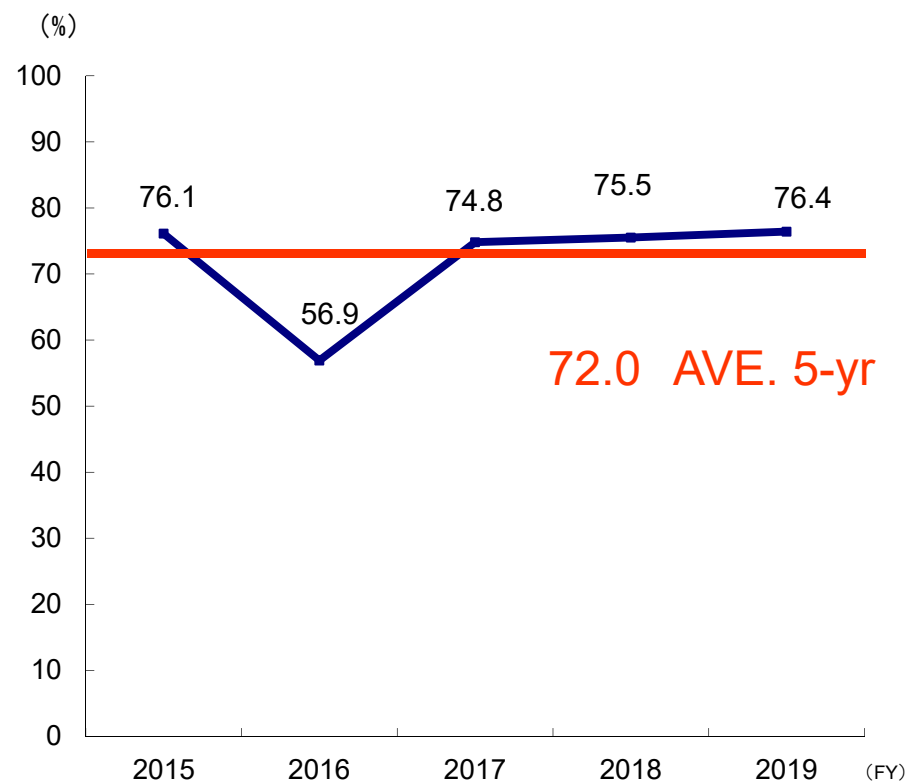
Results iii Total Assets, Equity Ratio

(Consolidated basis)

Total Assets



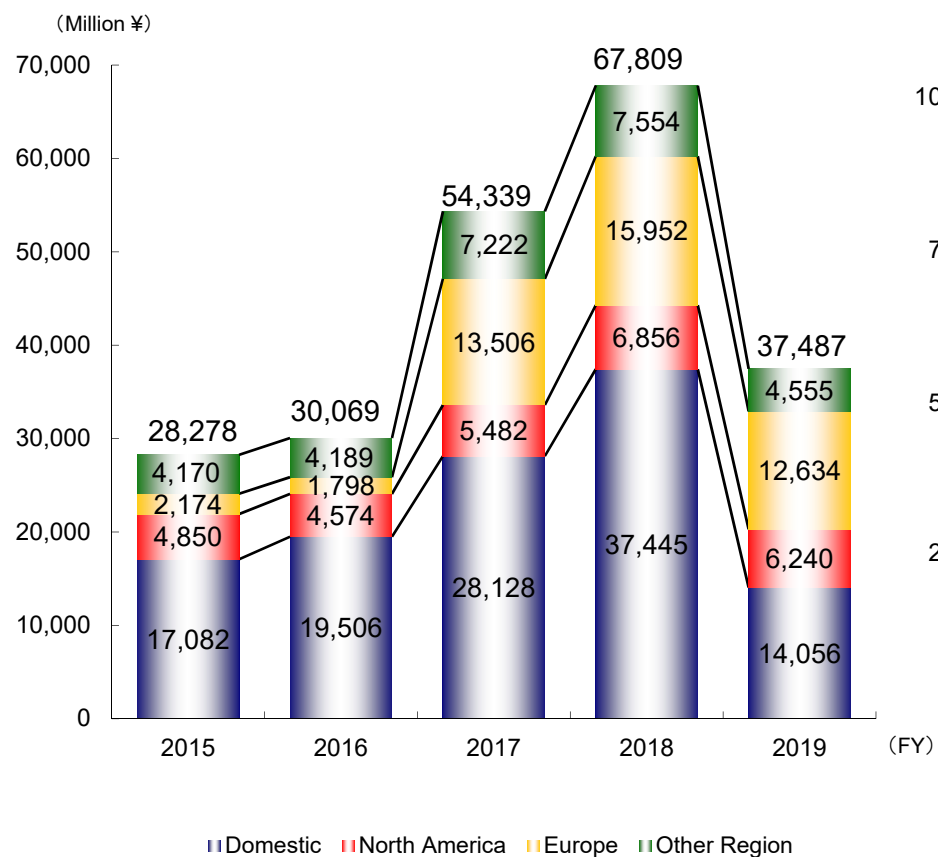
Equity Ratio



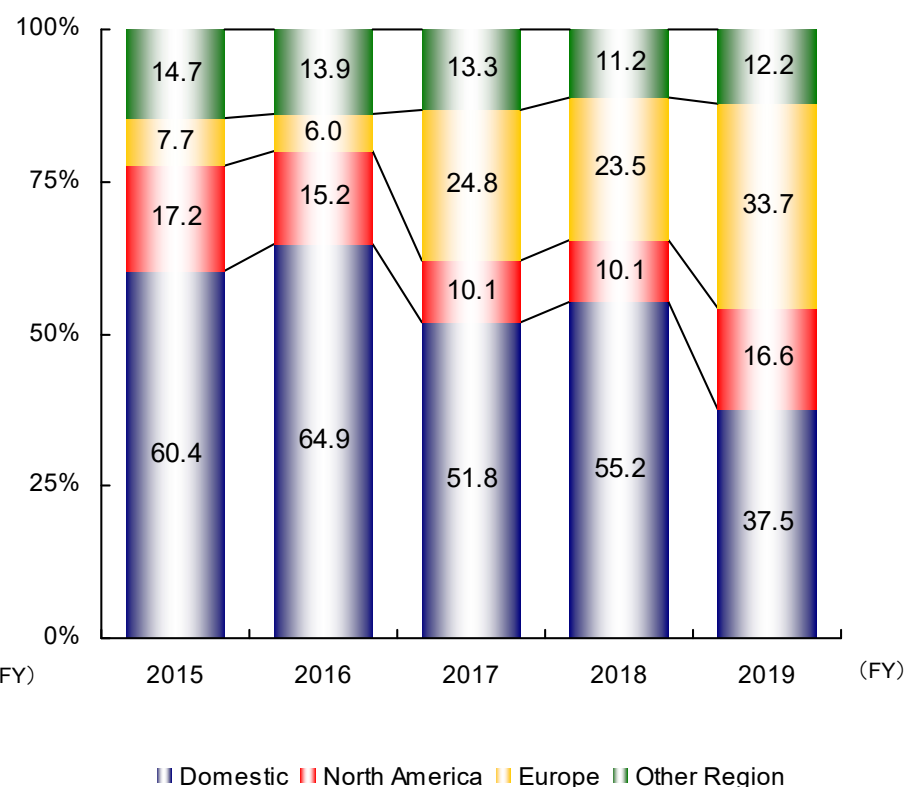
Sales Structure by Regions

(Consolidated basis)

By Regions



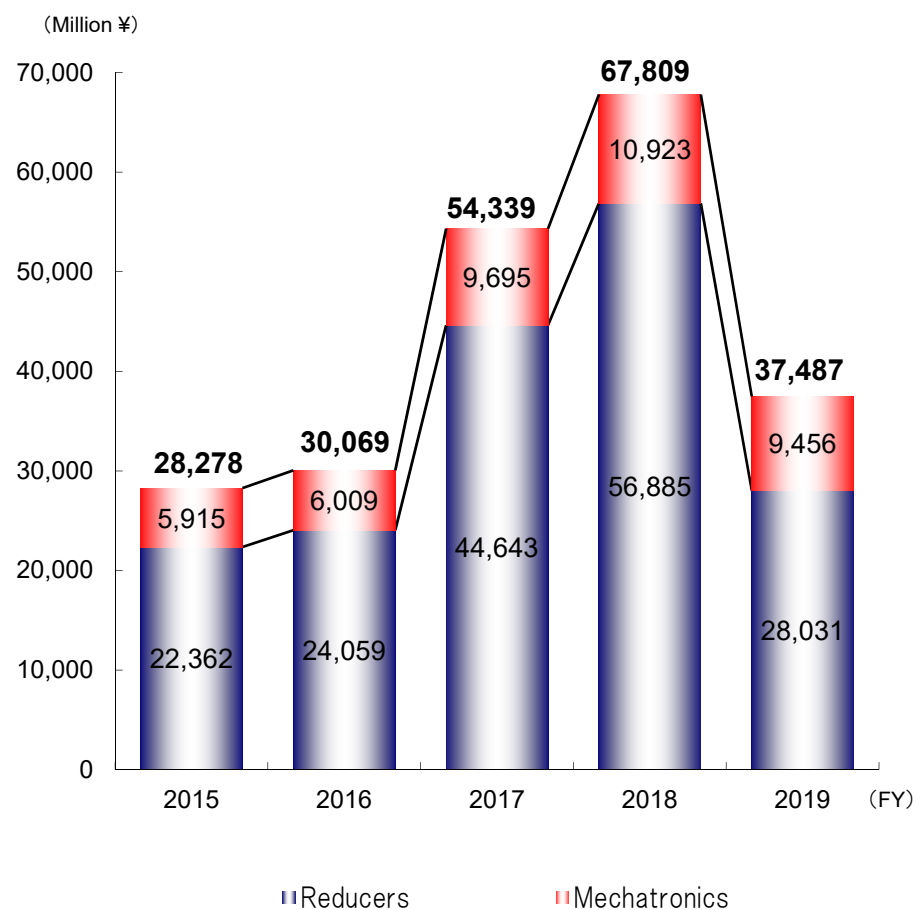
By Regions



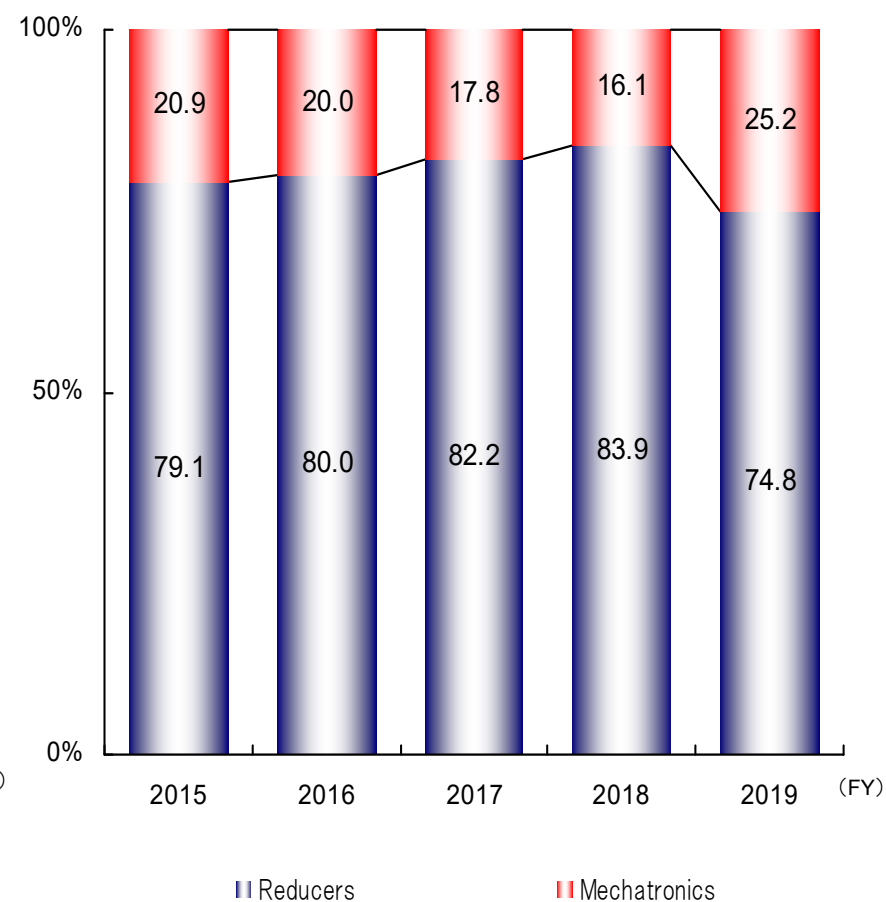
Sales Structure by Product Types

(Consolidated basis)

By Product Types



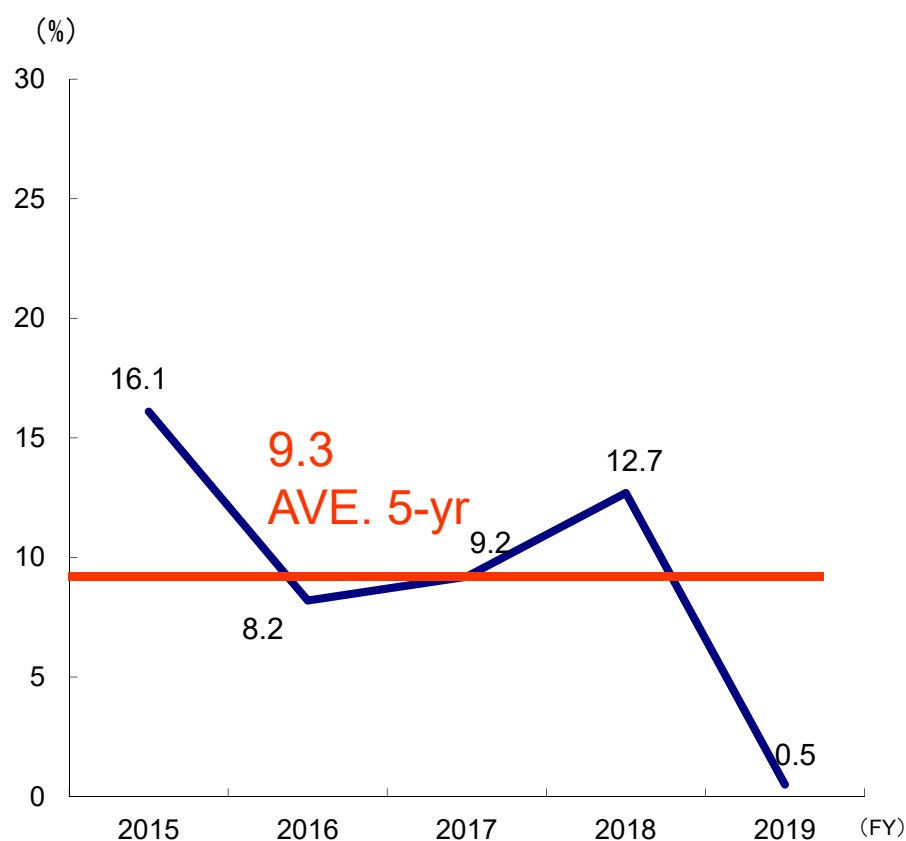
By Product Types



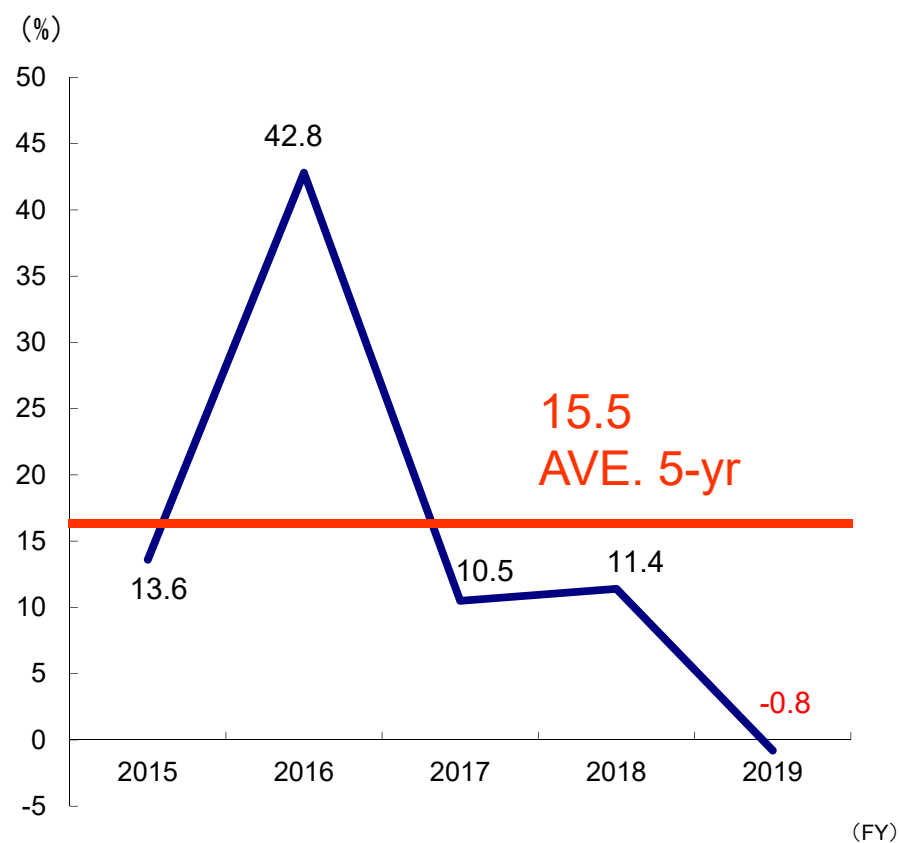
Profitability EBIT to Total Assets Ratio, ROE

(Consolidated basis)

EBIT to Total Assets Ratio



ROE



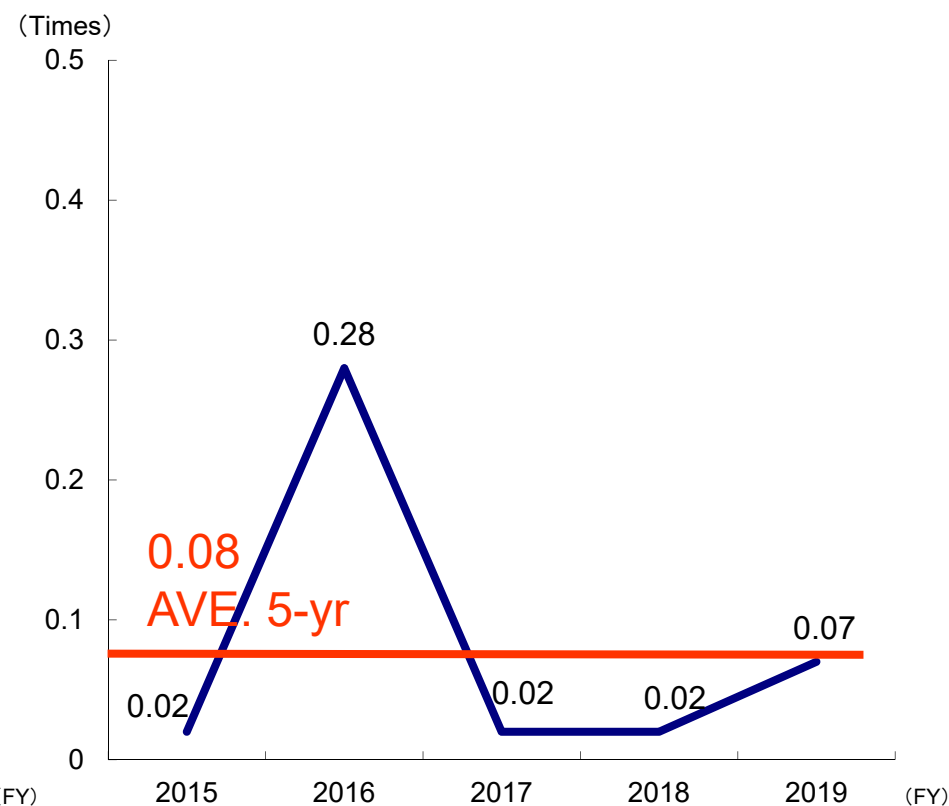
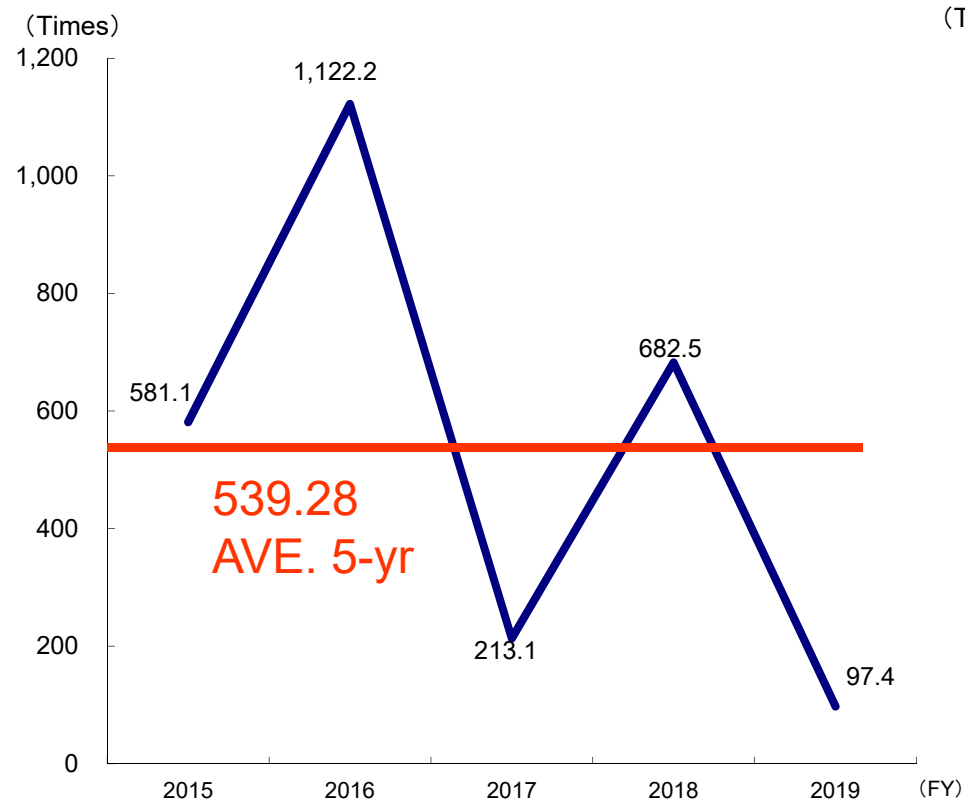
Stability Interest Coverage Ratio, Debt / Equity Ratio

(Consolidated basis)

Interest Coverage Ratio

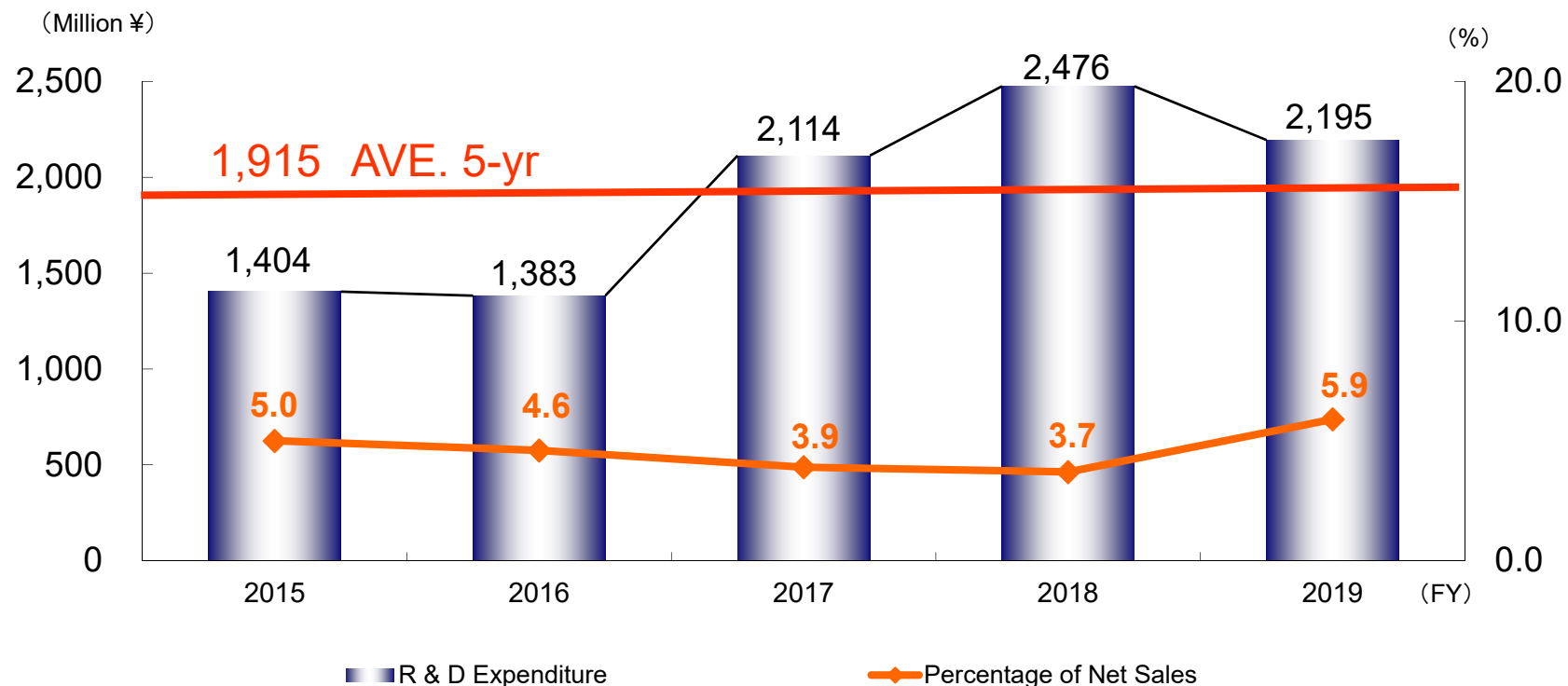
Interest Coverage Ratio = Net Cash provided by operating activities / Interest paid-net

Debt / Equity Ratio



R&D Investments

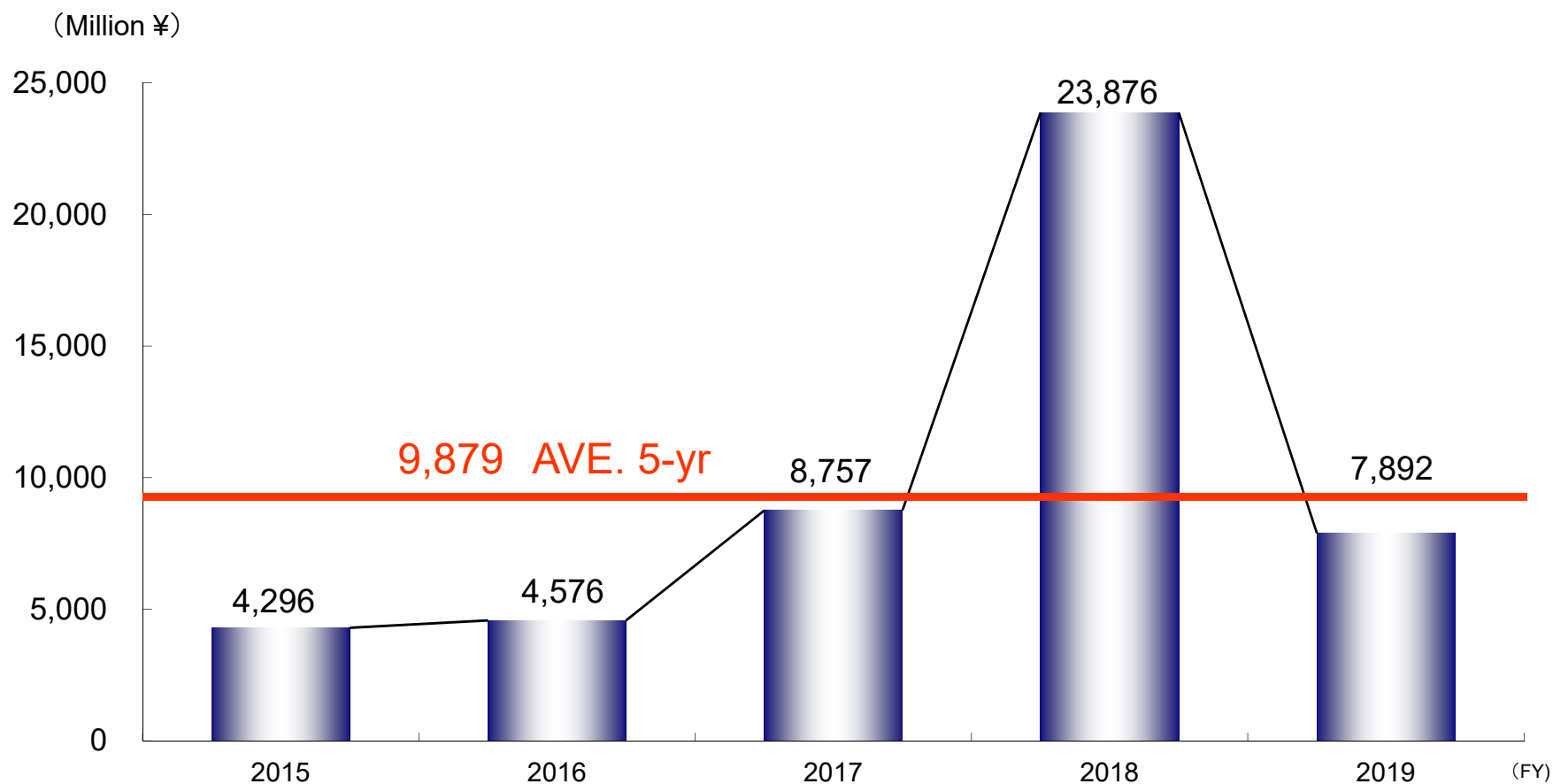
(Consolidated basis)



Fiscal Year	2015	2016	2017	2018	2019
Number of R&D persons	66	86	111	129	139
Share of total employees (%)	12.5	9.9	11.5	11.6	12.7

Capital Expenditures

(Consolidated basis)



※ Purchases of tangible and intangible fixed assets

Consolidated Balance Sheets

(Million ¥)

	FY2015	FY2016	FY2017	FY2018	FY2019
Current Assets	23,922	27,736	52,499	44,885	35,988
Fixed Assets	24,827	69,051	80,690	93,110	91,439
Tangible fixed Assets	9,807	14,644	21,306	40,852	45,500
Intangible fixed Assets	181	42,623	43,582	39,538	35,791
Investment and other Assets	14,837	11,783	15,802	12,718	10,146
Total Assets	48,749	96,788	133,190	137,995	127,427
Total Liabilities	9,858	39,387	29,865	29,594	25,129
Current Liabilities	5,944	23,934	13,180	15,944	5,127
Long-term Liabilities	3,913	15,453	16,685	13,650	20,002
Total Net Assets	38,891	57,400	103,324	108,400	102,297
Shareholders' Equity	32,401	50,393	89,215	97,640	94,016
Other Comprehensive Income	4,720	4,661	10,448	6,545	3,391
Subscription rights to shares	—	—	625	625	625
Minority Interest (Non-controlling Interests)	1,769	2,345	3,034	3,589	4,263
Total Liabilities and Net Assets	48,749	96,788	133,190	137,995	127,427

Consolidated Statement of Income

(Million ¥)

	FY2015	FY2016	FY2017	FY2018	FY2019
Net sales	28,278	30,069	54,339	67,809	37,487
Gross profit	13,286	13,866	25,703	30,446	25,484
S G & A	5,667	6,052	13,104	13,542	11,935
Operating income	7,618	7,813	12,598	16,903	67
Ordinary income	7,829	7,958	12,228	17,464	499
Net income attributable to owners of parent	5,001	19,732	8,059	11,601	▲832

Consolidated Statement of Cash Flows

(Million ¥)

	FY2015	FY2016	FY2017	FY2018	FY2019
Cash flow from operating activities	6,499	7,225	9,233	15,121	10,950
Cash flow from investing activities	▲4,394	▲32,522	▲8,171	▲22,399	▲12,537
Cash flow from financing activities	▲1,384	24,648	17,493	▲3,271	2,362
Effect of exchange rate changes on cash and cash equivalents	▲11	▲121	95	▲171	▲33
Net increase (decrease) in cash and cash equivalents	708	▲770	18,651	▲10,720	742
Cash and cash equivalents at end of year	10,439	9,668	28,320	17,600	18,342

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, 2020)
- Number of shareholders:
10,847 persons (As of March 31, 2020)
- Market capitalization:
¥454,843,501,875 (As of March 31, 2020)

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 FY2019

Year ended March 31, 2020

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.

November 11, 2020

Outlook for FY03/21

FY03/21 Outlook

The business environment surrounding our Group during the fiscal year ending March 31, 2021 has been characterized by a gradual recovery in orders that occurred as our customers consumed their inventories of our products. However, the international spread of the COVID-19 pandemic has caused rising uncertainty in both the global economy and our operating environment, and we anticipate that this unpredictability will continue to be a factor for the foreseeable future.

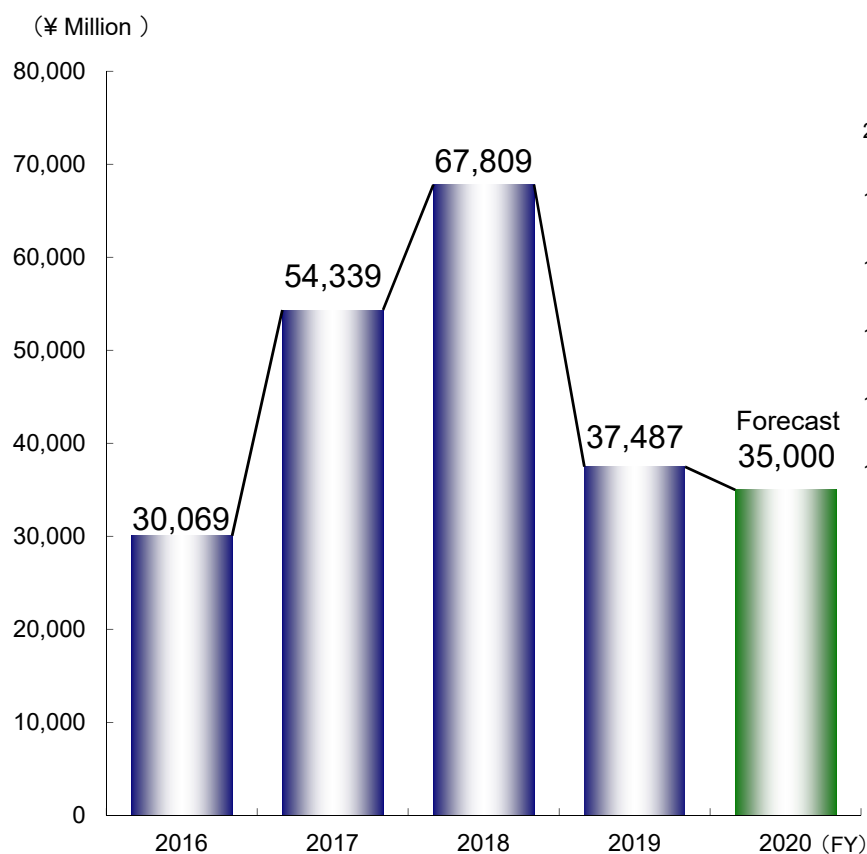
Responding to this environment, our Group will emphasize the keywords of “safety” and “security” as we strive to protect customers, suppliers, employees, and their families from infection as our top priority. We will simultaneously focus strongly on maintaining operations at all production bases and enhancing collaboration throughout our supply chain. Additionally, to achieve our goal of “providing customer satisfaction that exceeds expectations,” we will work to further expand our competitiveness by improving the quality of our products and services, reducing costs and shortening lead times through production reforms, and implementing initiatives aimed at strengthening and accelerating our problem-solving capabilities.

In regard to our consolidated earnings forecast for the fiscal year ending March 31, 2021, based on the above business environment, our Group projects net sales of ¥35,000 million (-6.6% YoY), operating loss of ¥800 million (versus operating income of ¥67 million in the previous fiscal year), ordinary loss of ¥450 million (versus ordinary income of ¥500 million in the previous fiscal year), and net loss attributable to owners of parent of ¥450 million (versus net loss attributable to owners of parent of ¥830 million in the previous fiscal year).

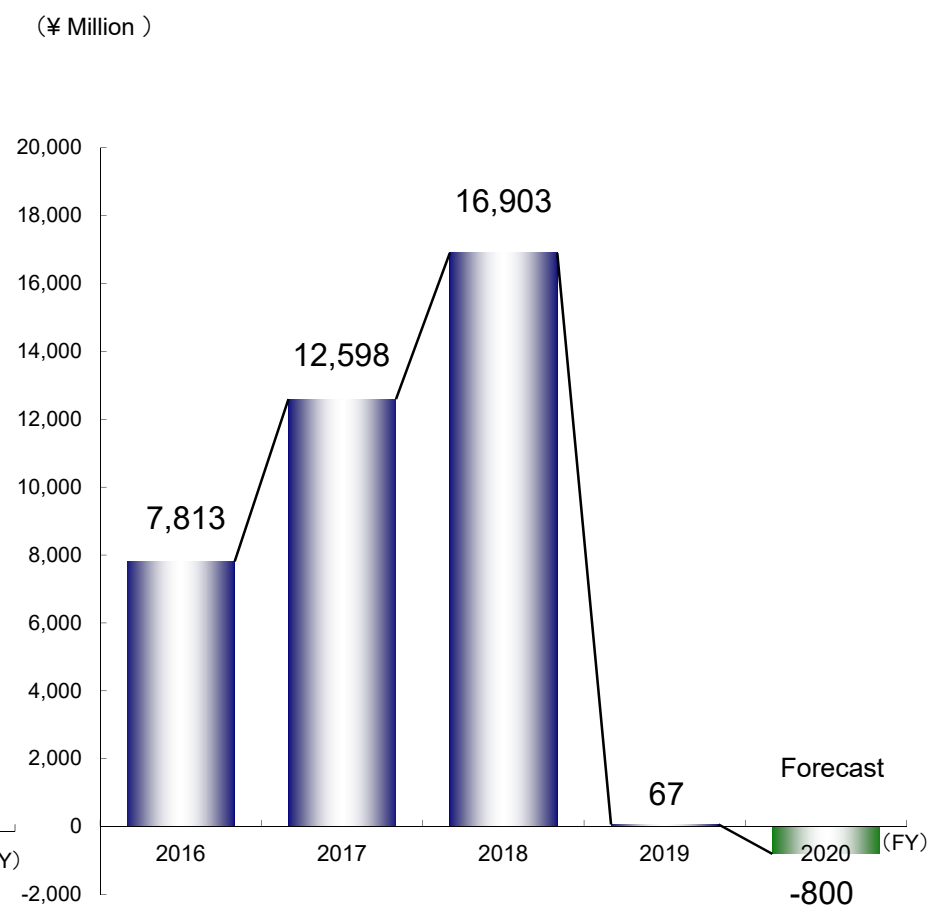
Forecast i Net Sales, Operating Income

(Consolidated basis)

Net Sales

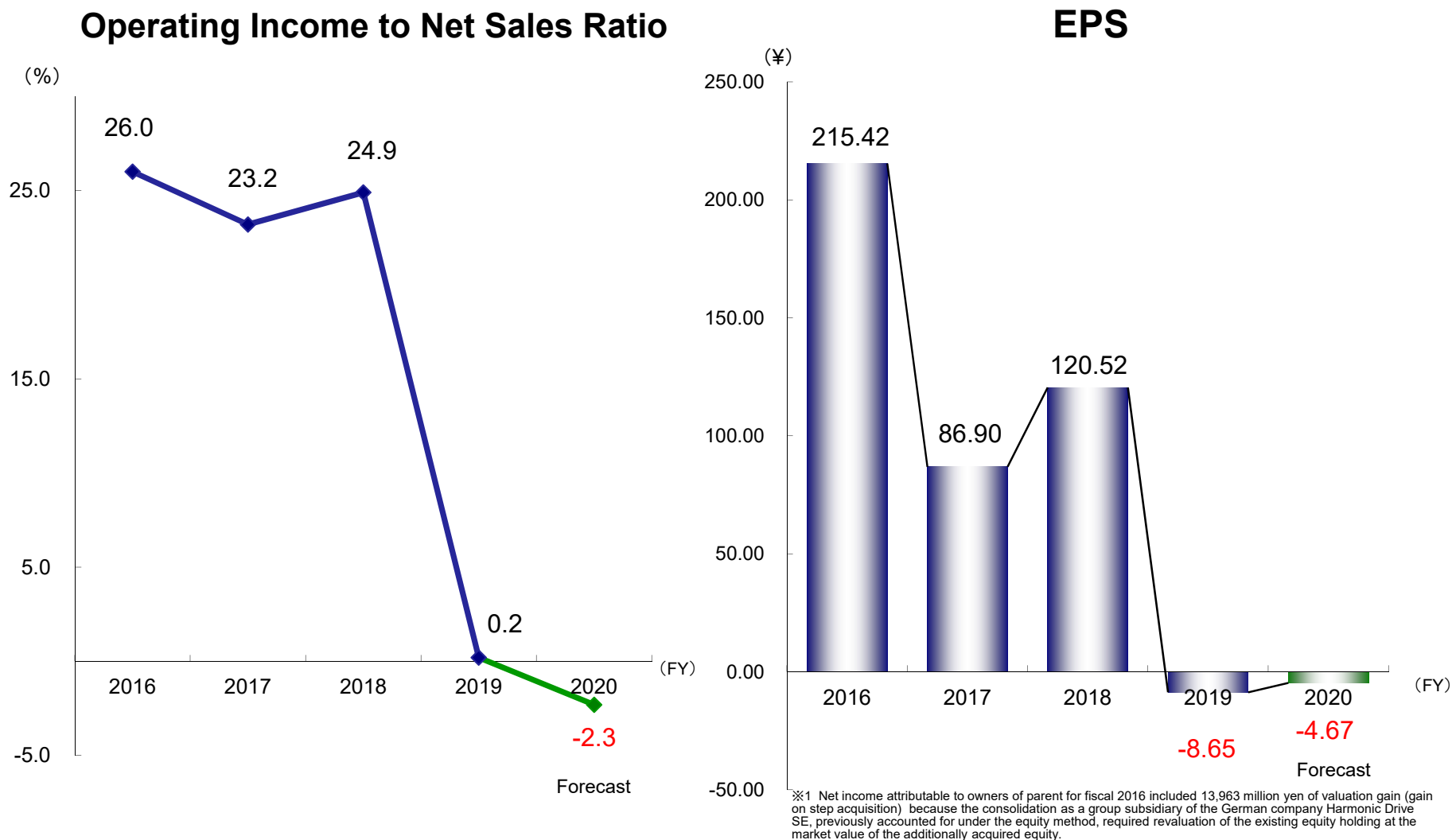


Operating Income



Forecast ii Operating Income to Net Sales Ratio, EPS

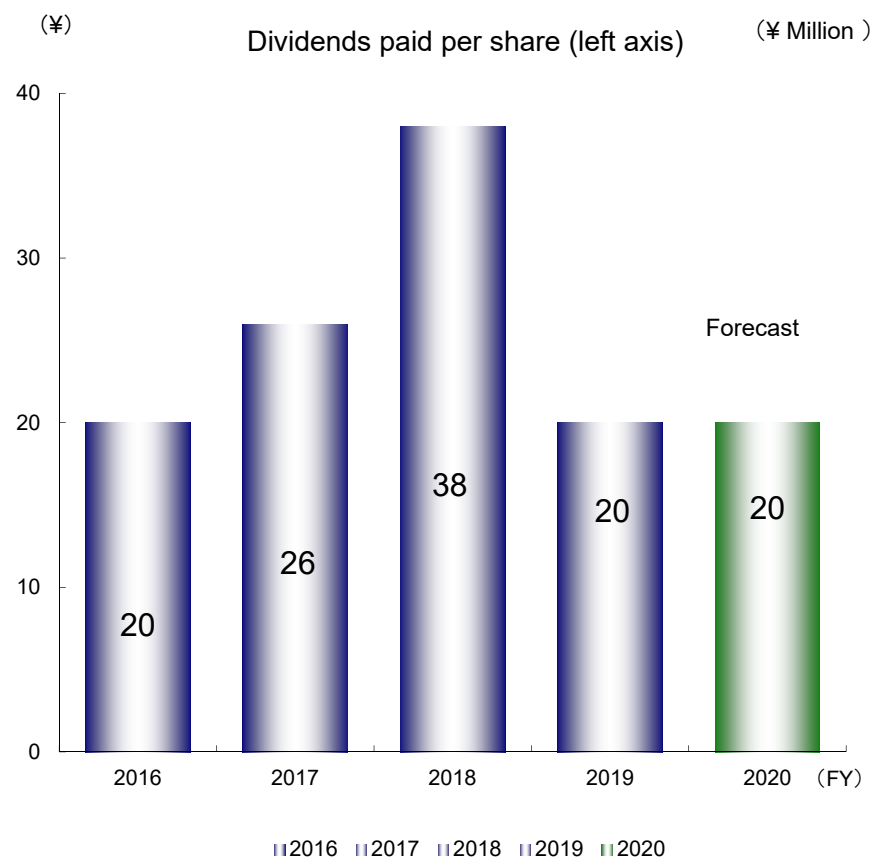
(Consolidated basis)



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

November 11, 2020

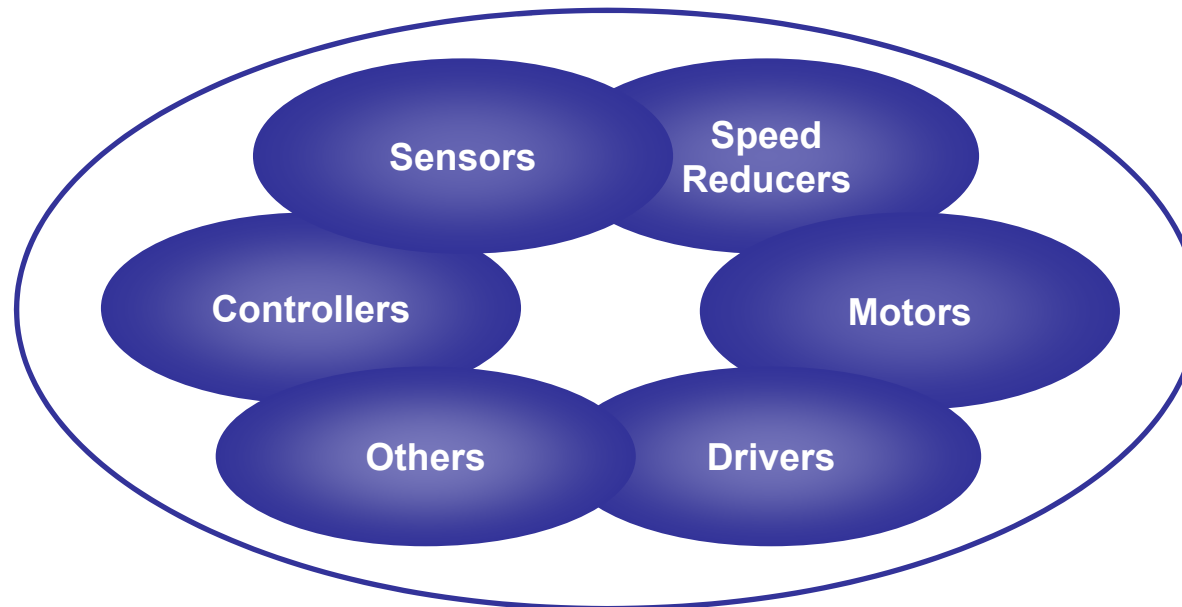
Total Motion Control

Our business Domain

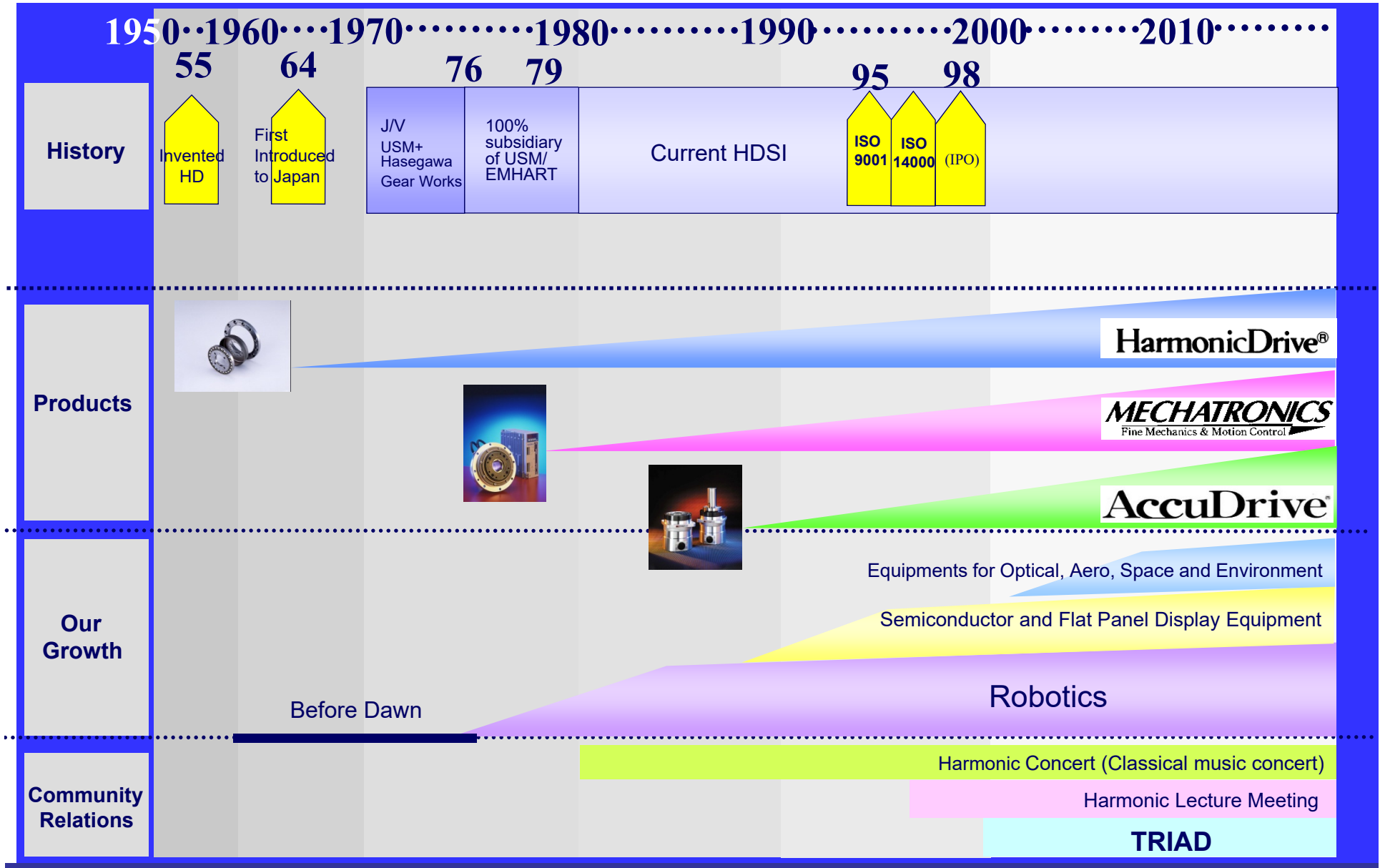


Developing and producing Precision Control Equipment and Components for a broad range of applications, focus on “Total Motion Control”

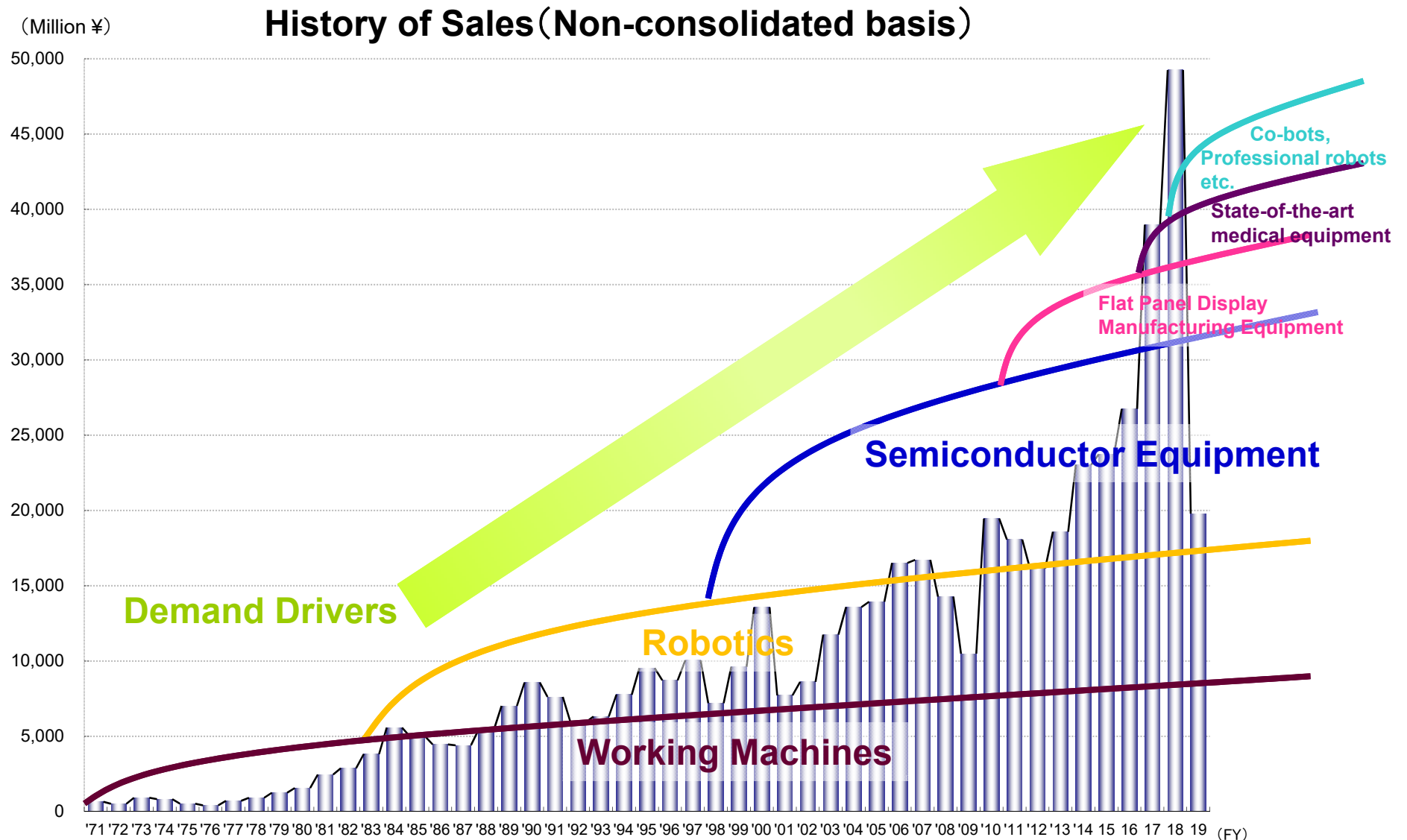
Schematic Concept of Total Motion Control



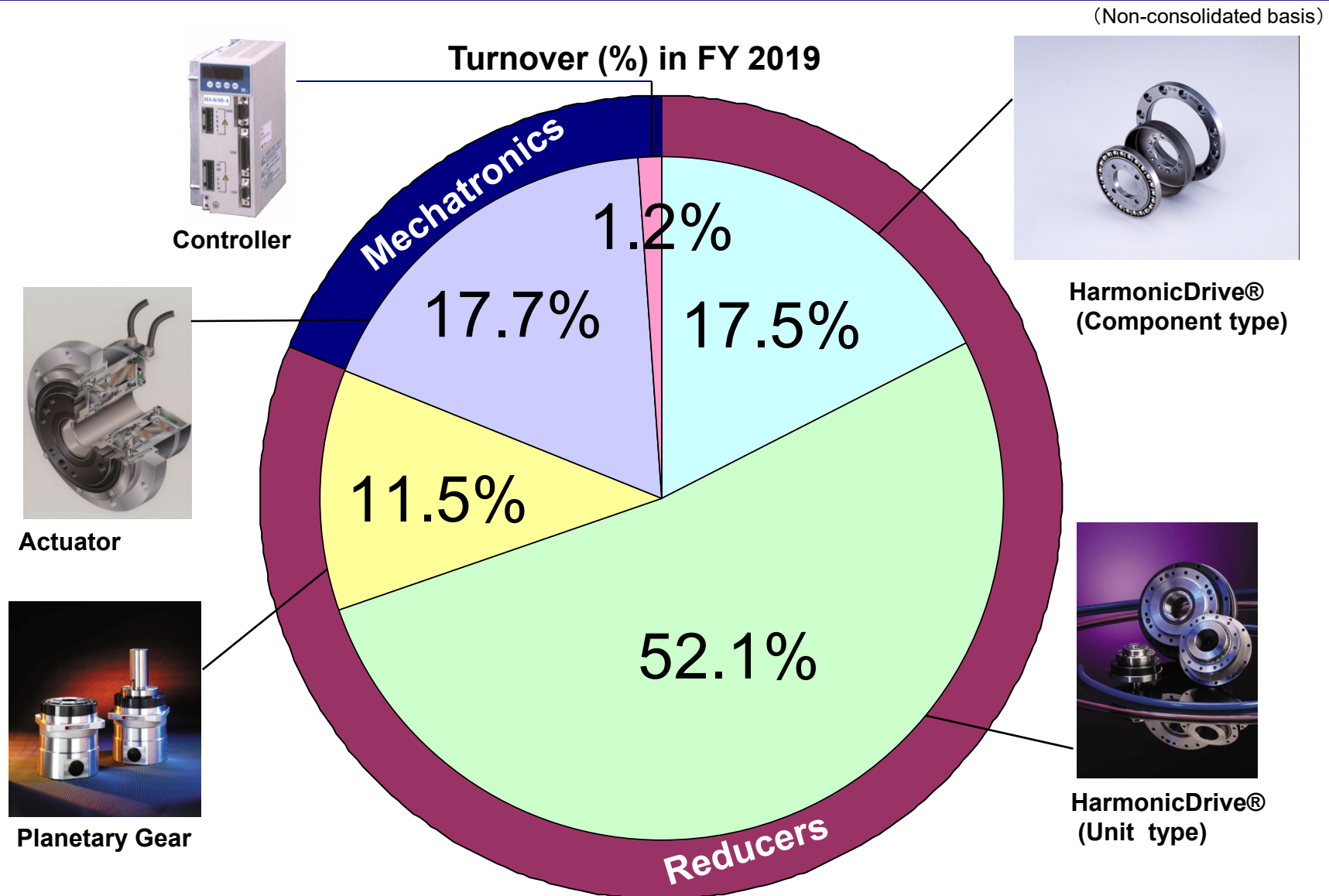
History of Harmonic Drive Systems Inc.



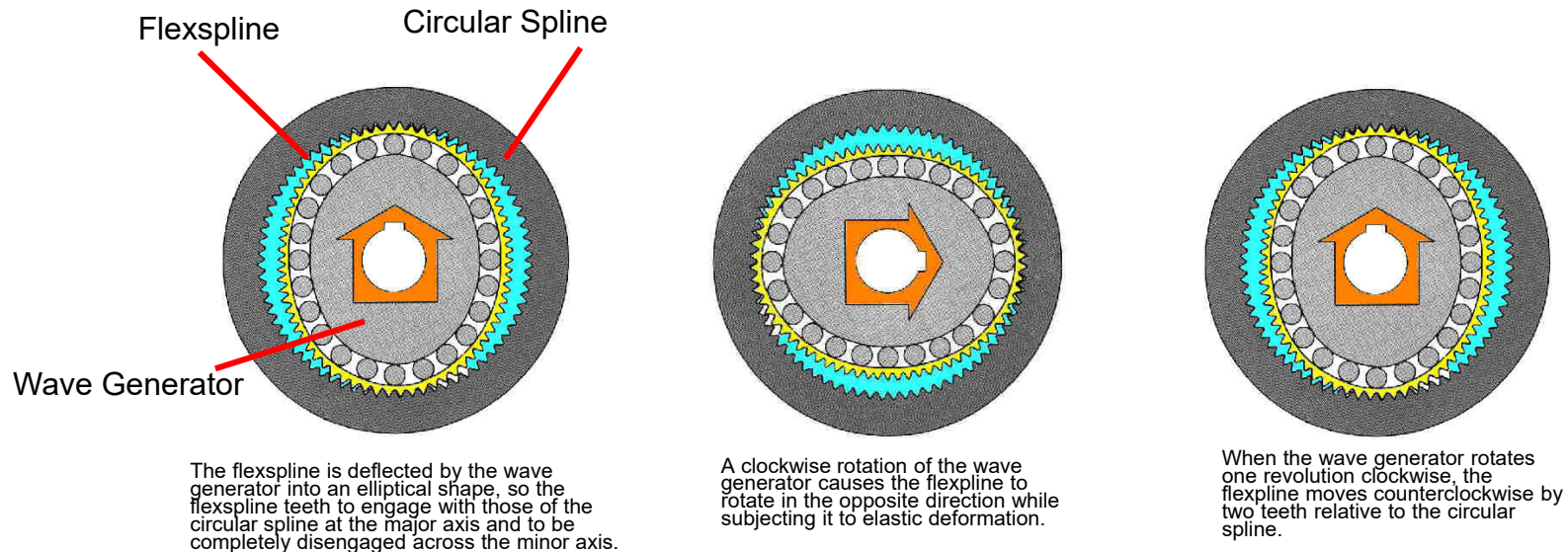
History of Sales



Sales Structure by Product Types



Principle and Advantages of “HarmonicDrive®”



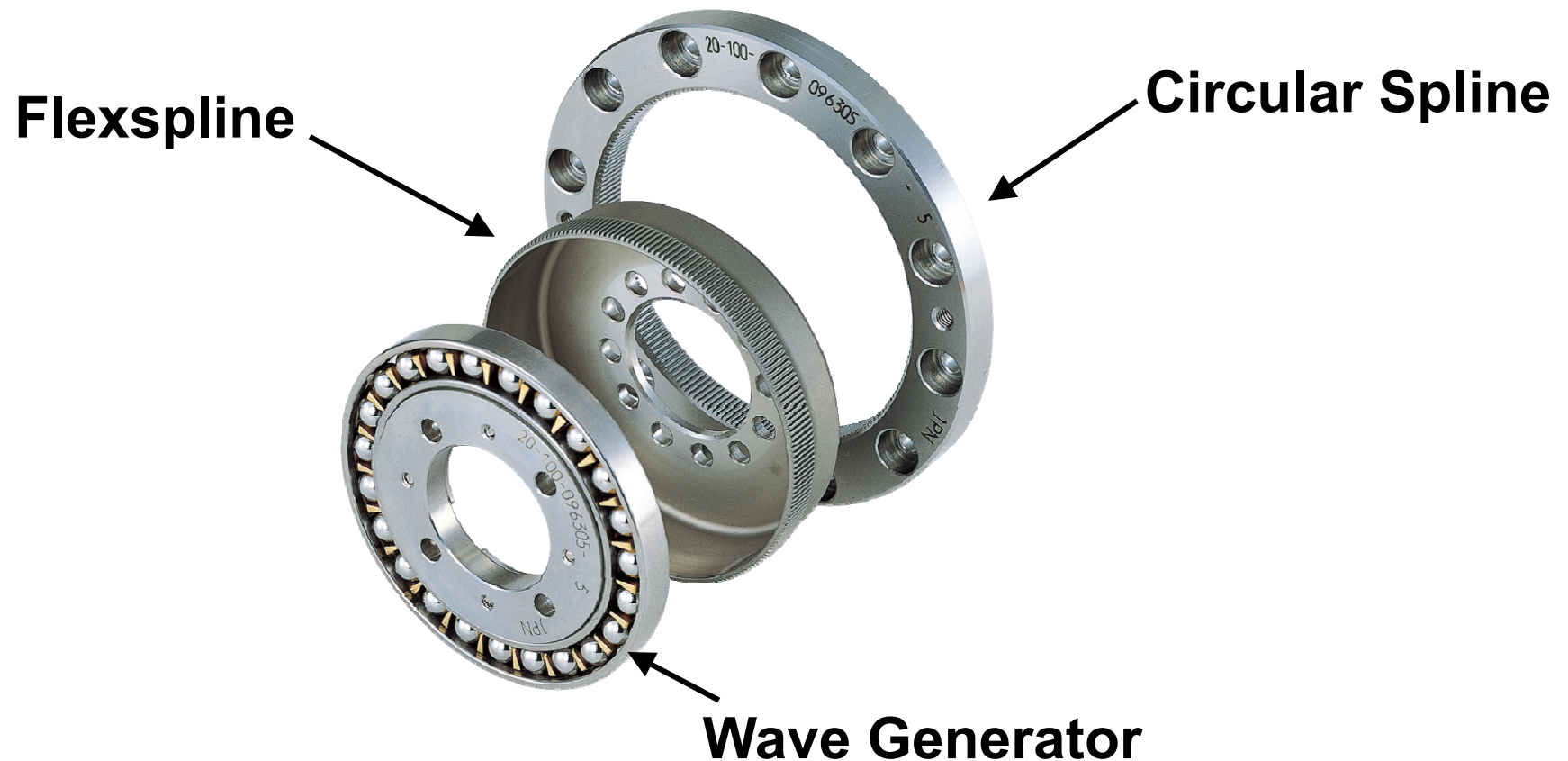
Advantage of “HarmonicDrive®”

- 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

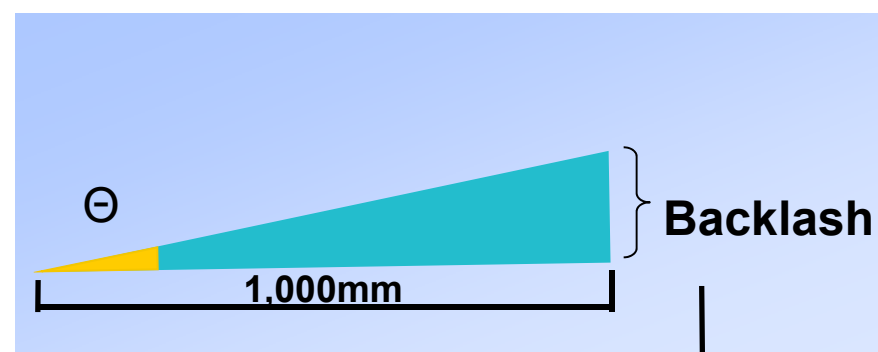
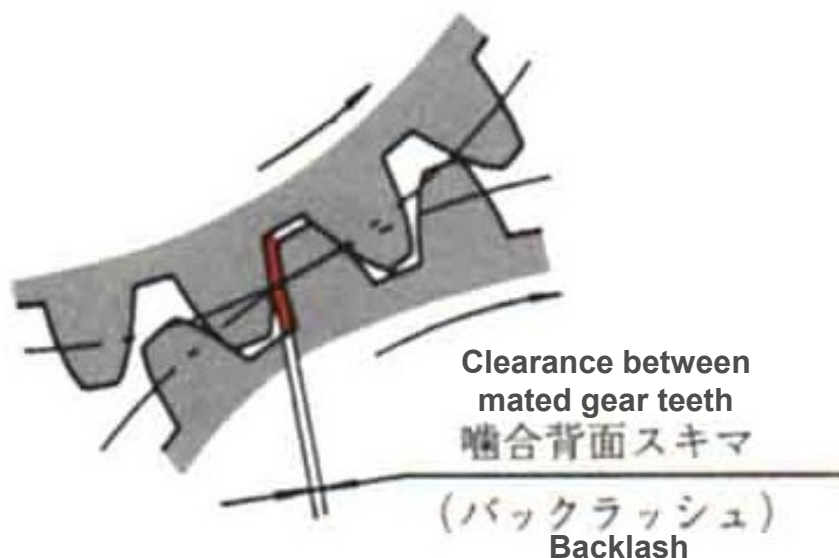


Features and Benefits “ Compact and Lightweight”

Comprised of just three basic components → Compact and Lightweight



Features and Benefits “Zero Backlash”



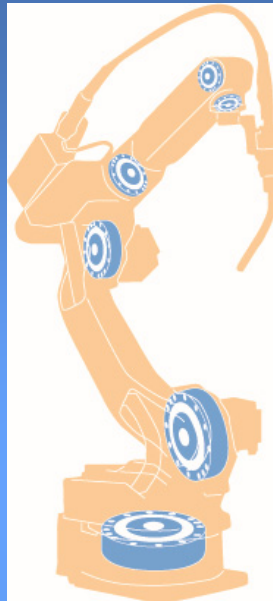
Applications	Backlash	Backlash after 1m	Our Products
General Industrial Machinery	0.5 degrees	8.7mm	None
Transporters and Processing Machinery	0.05~0.25 degrees	0.9mm~4.3mm	AccuDrive [®] HarmonicPlanetary [®]
Robotics and Semiconductor Equipment	0~0.02degrees	0~0.3mm	HarmonicDrive [®]

Feature Applications

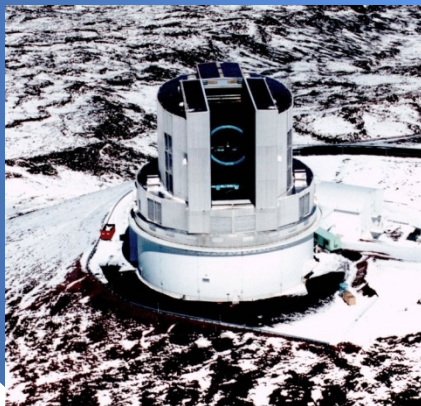
Hayabusa 1. 2 Photograph courtesy of Japan Aerospace Exploration Agency (JAXA)



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



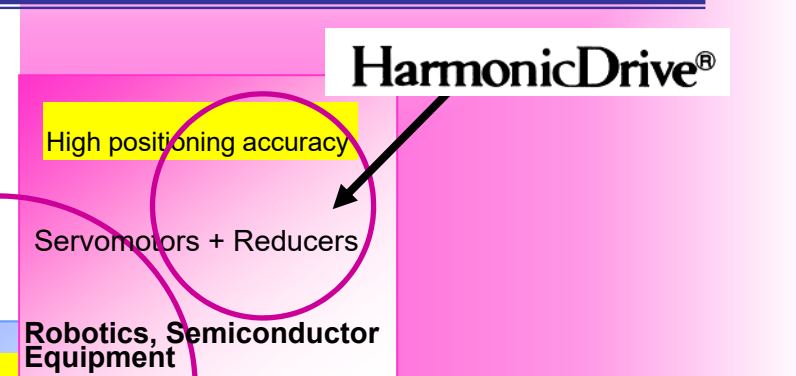
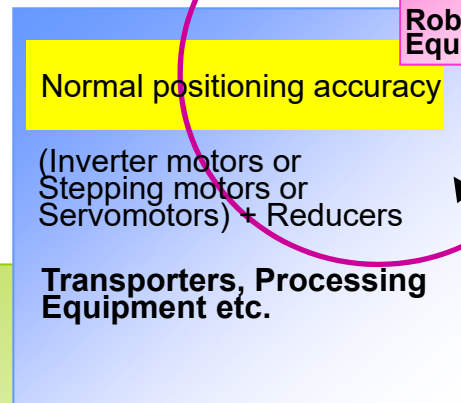
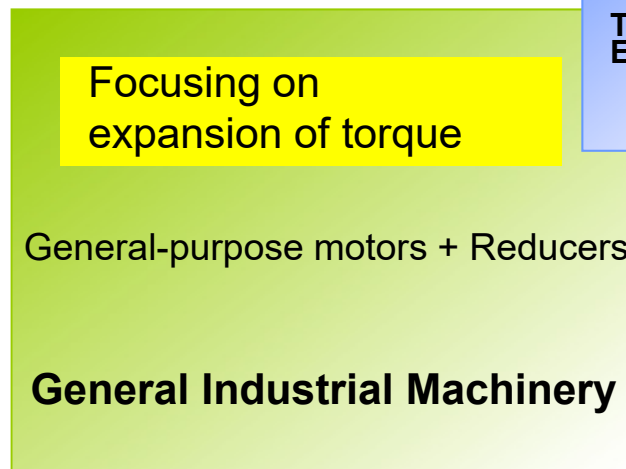
Cobot Photograph courtesy of Techman Robot Inc.



Robotic Surgical System

Target Segment Image

Price



AccuDrive®
HarmonicPlanetary®

Accuracy

Note: This graph is conceptual. The shape, size, and position of images used do not accurately reflect market size or product positioning.