



Interview With Representative Director

Learning from past experience, we will strive to expand production capacity and secure human resources in preparation for the next demand recovery period, and the entire Company will work as one to strengthen our competitiveness and achieve our ideal state.

Representative Director and Senior Managing Executive Officer
General Manager of Corporate Planning Division
and ICT Promotion Office

Akira Maruyama

How do you foresee the future demand environment?

For the HDS Group, factory automation (FA) will be the cornerstone of our business both in the short- and medium- to long-term. In particular, industrial robots, which are indispensable for automation and saving manpower, include not only robots used for welding, etc., but also collaborative robots that support workers' operations. This is definitely pivotal for our Company, which handles speed reducers that are essential for robots. Since 2010, the industrial robot market has been growing at an annual rate of about 7%. While medium and large robots are growing at 5-6% per year, small and collaborative robots,

which are our specialty, have been growing at double-digit annual rates. In addition to industrial robots in the small size domain, there is still much room for growth in collaborative robots. Recently, there is also talk of next-generation humanoid robots. In terms of applications, demand is also expanding from handling operations in factories to service and logistics industries. In addition to worker replacement, there is also a growing need to improve processing quality and production efficiency. In forecasting the future market, in addition to demand forecasts from the International Federation of Robotics (IFR) and other sources, we take into account our growth rate from 2010 onward, and assume a 7% annual growth and more for the

demand environment. We are working on the next medium-term management plan based on this forecast. In addition, while the outlook for the Chinese market on its own remains a concern, we believe that the positive demand environment will continue in the U.S. manufacturing industry, where the need for manpower saving and automation through the use of robots is extremely strong. Although economic fluctuations will have an impact, global demand for speed reducers will probably bottom out in 2023 and gradually recover, with the next peak in demand expected around 2025.

What kind of measures do you have in mind towards the next demand recovery period, based on reflections on past experience?

We have experienced a very difficult time during the past five years, because the demand volatility was extremely large. During 2016-2017, in addition to automotive applications, strong demand for semiconductors, organic electro-luminescence, and electronic devices for smartphones and other applications became apparent, particularly in the Chinese market. In 2018-2019, demand sharply decelerated triggered by the U.S.-China trade friction. Thereafter, the new coronavirus spread globally, but there was a sharp recovery in demand between 2020 and 2022. Currently, the demand is slowing down in reaction to that. We learned the importance of production capacities and securing human capital from the past two demand cycle phases. Since our HarmonicDrive® is an important core component of robots and has a high market share, robot manufacturers, our customers, tend to place orders in advance. On top of these advance orders, the combination of stronger demand than expected, our production capacity shortage and delivery delays, as well as over-ordering resulted in longer delivery times of up to 10 months or more. Learning from this experience, we are continuing to expand our production capacity, mainly in our Ariake factory, and secure human resources. We are preparing a system to meet appropriate delivery deadlines no matter how strong the demand is, if we can secure reasonable production quotas based on production information from our major customers, meet customer delivery deadlines, and control over-ordering. However, due to the decline in net sales and the heavy burden

of fixed costs, we anticipate shifting to an operating loss for the fiscal year ending March 31, 2024.

Which fields do you expect to be the drivers of demand in the medium to long term?

I think the aerospace field will have a particularly large potential. The Company has been involved in the aerospace field from the Apollo project in 1971, and this is an area where we can continue to maximize our extensive experience and strengths. Especially in the U.S. market, we can expect to see the development and mass production of manipulators and various driving devices used for experiments in space, in addition to satellites. In addition to the development of materials and lubricants that can withstand outside temperatures of around minus 200°C, maintaining durability is also a requirement. For example, our differentiated technology is effective in the field of powder lubrication.

As for the humanoid robots that everyone is looking forward to, I feel that there are many issues to be dealt with, although there is a high possibility that they will become a great success in the medium to long term. For example, up to thirty speed reducers are used in the actuators of humanoid hands (both hands, including fingers). If servo motors, force sensors, and other components are incorporated into the robot, the hands alone become quite expensive. We have already received several inquiries, but deliveries so far have only been experimental. Although the robots will probably be used for applications such as transporting objects at first, I think there are many issues to be dealt with, including cost, before the robots can detect with sensors, think, move, carry, and assemble on their own.

We also have high expectations for eVTOL, so-called flying automobiles. However, in addition to a license to fly, stations and other infrastructure must be developed. It appears that there are many issues to be resolved, including regulations, such as how many cars an operating company can own. A test flight is planned for Expo 2025 Osaka, Kansai, Japan scheduled to be held in 2025, and a vehicle will fly from Kansai International Airport to the Expo site. The HDS Group's products are used by one of the U.S. manufacturers of eVTOLs.

The HDS Group is a component manufacturer, but do you have business opportunities to create your own demand?

HarmonicDrive®, the HDS Group's main product, is a precision speed reducer which is incorporated in industrial robots. Although there is an increase in the number of units adopted per robot due to the miniaturization of robots and an expansion in the number of newly adopting customers, our business is basically affected by the demand for robots. However, the mechatronics business, which we focus on, has nearly doubled in terms of net sales over the past ten years as a result of the value we provide in response to customer needs. We develop and manufacture special servo motors and actuators that have hollow shafts and are flat. These products are not handled by major specialized motor manufacturers. Direct drive (DD) motors compete with the Company's actuators. Compared to competing DD motors, our motor is able to offer a significantly smaller size with high torque which is why it is being used mainly by major manufacturers of semiconductor manufacturing equipment for cleaning, exposure, and other front-end processes. In the U.S., many of them are also adopted in the field of various medical devices. Although we basically offer products in which the precision speed reducers and motors are integrated, we also receive orders for motors alone. In addition, with the emergence of more intelligent robots, there is a growing need for an all-in-one function that integrates a speed reducer, motor, torque sensor and driver, and controller into the arm, giving us a competitive advantage. Our strategy for the future is to strengthen the mechanical part of our business, centering on precision speed reducers, which is one of our Group's strengths. We also aim to improve the functionality of our drivers and torque sensors, and to develop our business with an emphasis on speed, including the introduction of technology from outside through M&A and other means.

Please share your views on the next Medium-Term Management Plan and the achievement of materiality issues.

We have begun internal meetings from around September 2023 to formulate the next medium-term Management Plan. When I asked the directors and executive officers what kind

of company they want the Company to be in 2030, almost all of them answered that they want the Company in 2030 to achieve numerical targets that surpass the current medium-term management plan. We plan to announce the details of the next medium-term management plan in the financial briefing to be held in May 2024. To achieve our goals, we, including young employees, continue to discuss various initiatives in three subcommittees: Management, Development and Sales, and Manufacturing and Procurement. Matters such as the method of creating high value-added products, appropriate pricing, and how we should sell our products in each region are discussed in these subcommittees.

We are also in the process of reviewing our materiality issues. We are considering materiality items that are more closely linked to the long-term vision and the medium-term management plan than in the past and their realization, and KPI for these items, while still being in line with our management philosophy. In the next medium-term management plan, we believe that our business strategy in the Chinese market will play a key role in determining the direction of the HDS Group. In addition to a highly effective external business strategy, we intend to emphasize the strengthening of our competitiveness and customer response capabilities through the enhancement of our human capital and management foundation.





Message From Officer in Charge of Financial Affairs

By investing in automation, we will enhance our business model which generates added value through manufacturing. We will continue to use debt to lower our cost of capital and communicate our growth initiatives to shareholders and investors through dialogues.

Director and Executive Officer
General Manager of Finance Accounting, Finance
and Tax Division

Kazutoshi Kamijoh

Role as Officer in Charge of Financial Affairs and Approach to Corporate Value and Stakeholder Engagement

The HDS Group's business is greatly affected by global capital investment trends, thus, demand fluctuates considerably, and it is difficult to determine the level of production capacity that should be in place. In particular, responding to short-term demand fluctuations has not been as straightforward as we would have liked. As the person in charge of financial affairs, one of my roles is to select and implement the most appropriate method from among multiple financing methods in order to secure the funds that will make it possible to make capital investments at the appropriate time based on medium- and long-term demand forecasts.

There are many definitions of corporate value, but as a listed company, we consider the market capitalization of our stock to be the most important. Theoretically, corporate value is defined as future cash flows discounted to their present value. However, even though we are forecasting a loss in operating income for

fiscal 2023, our stock price has received a certain degree of favorable evaluation, and we consider that expectations for future growth are factored into our stock price. I also believe it is important to understand the expectations of our shareholders and investors, and it is my role to link these expectations to appropriate stock prices through engagements. We have received valuable opinions in past dialogues (e.g., designing executive remuneration using treasury stock, inviting female outside directors, etc.), and these opinions have actually been applied in our management.

Key Highlights of the FY2023 Business Forecast

The forecast for the consolidated business performance in fiscal 2023 is 55.0 billion yen in net sales, and an operating loss of 0.4 billion yen. Net sales for fiscal 2021 two years ago were 57.0 billion yen and the operating income was 8.7 billion yen. Although net sales are expected to remain at the same level, a significant decrease in income is anticipated. The main reasons for this are a decline in capacity utilization resulting from a

significant drop in net sales in the Japan segment, which is also a core segment in terms of earnings, and a rise in fixed costs due to an increase in production capacity. Meanwhile, the overseas segments of North America and Europe are expected to achieve higher net sales and income compared to fiscal 2021, and are expanding in terms of customers and applications. We are confident of medium- to long-term growth in the Japan segment as well, with promising inquiries. However, for fiscal 2023, we expect net sales to decline by more than 30% from fiscal 2022, as we are faced with a deep trough of cyclical demand fluctuation. As a result, consolidated earnings for fiscal 2023 are unfortunately expected to be less profitable due to the underperformance of the Japan segment, which is relatively profitable compared to the overseas segment. However, the Group intends to maintain and strengthen its production system and other business foundations to prepare for the period of increased demand in the next fiscal year and beyond.

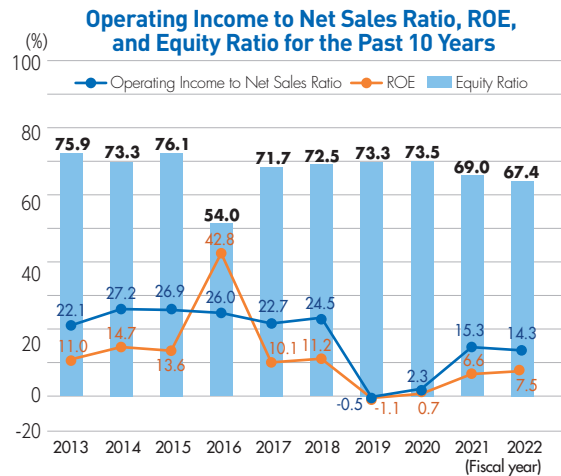
Basic Policy for the HDS Group's Financial and Capital Strategies

The Key Performance Indicators (KPI) for the financial and capital strategies are set at over 20% for operating income to net sales ratio, over 10% for ROE, and over 70% for equity ratio, in our [medium-term management plan \(FY2021-FY2023\)](#). These figures are adopted as KPIs so that they can be easily understood both internally and externally. In addition, since our Group's performance fluctuates widely, we pay attention not only to earnings indicators but also to financial stability so that we can manage our business over the medium to long term even when the business environment is challenging. Although the profitability KPI is expected to fall short of the fiscal 2023 performance forecast, we do not intend to lower the targets mentioned above from a mid- to long-term perspective.

The cost of shareholders' equity is regularly monitored and shared with our board of directors, and we recognize that our figure, as calculated using the Capital Asset Pricing Model (CAPM), is around 8%. On the other hand, when making capital investment decisions, the DCF method is used to evaluate investment economics, with a discount rate of 10%, exceeding the cost of capital, as the hurdle rate. Although managers and employees involved in important capital investment projects are expected to base their plans on finance theory in this way,

the concept of cost of capital has not yet become widespread among all employees. One reason for this is that, in the past, increase in net sales naturally led to profits and investment efficiency, so there was not much need for employees to be aware of the cost of capital. I believe that more employees need to be made aware of the cost of capital. Since capital expenditures have been increasing over the past few years, I also feel the need to incorporate performance evaluations that take into account capital efficiency and cost of capital.

For shareholder returns, our policy is to link dividend payments to business performance, and we aim for a dividend payout ratio of at least 30%. This is based on our belief that we can meet the expectations of our shareholders and investors by reinvesting 70% of the profits we generate in capital investment and other activities to achieve a return that exceeds our cost of capital, since we recognize that we are still a company with room for growth. At the same time, however, we will pay attention to the execution of a flexible capital policy based on a careful observation of the changing business environment.



Changes in Cash Allocation

Regarding the cash allocation for the medium-term management plan, we anticipate the underlying operating cash flows (OCF) to total about 34.0 billion yen over the three years. The OCF for

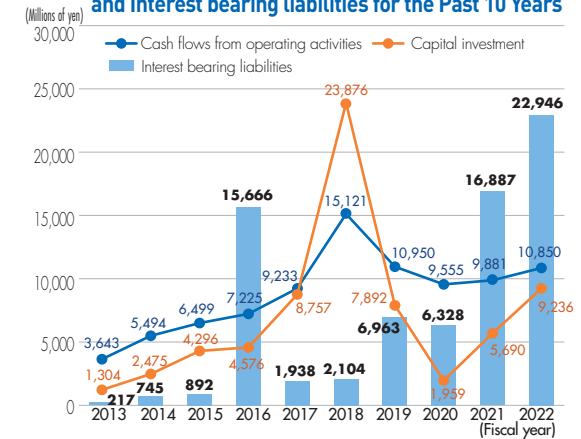
the previous medium-term management plan (FY2018-FY2020) was 35.6 billion yen, so the forecast is to earn the same level of cash. The other source of funds is debt financing. Interest bearing liabilities increased by 13.0 to 14.0 billion yen from the end of fiscal 2020 to the end of fiscal 2023. This is due to the low interest rates and the need to reduce Weighted Average Cost of Capital (WACC), but even with increased debt, the Company maintains an equity ratio of approximately 70%, thus its financial soundness is well maintained. Considering these factors, the total cash inflow for the Group is around 48.0 billion yen for the current medium-term management plan and is expected to be at the same level as the previous medium-term management plan.

For cash outflow, on the other hand, capital investment is around 21.0 billion yen (acquisition base) for the current medium-term management plan, and is expected to be a significant decrease from the 33.7 billion yen in the previous medium-term management plan. However, it is expected to be above the 15.0 billion yen plan we had at the beginning of the period. The additional 6.0 billion yen is a result of installation of a new production line in our Ariake Factory. The investment to increase production of speed reducers at the Ariake Factory is intended to increase production by 40,000 units/month for general industrial applications and 30,000 units/month for automotive applications in order to respond to the recent increase in emerging demand. R&D expenses, the Group's lifeline, are also expected to exceed the initial plan of 9.0 billion yen, and we continue to invest for future growth. In addition, we also recorded a cash outflow of 14.7 billion yen as a result of making Harmonic Drive SE in Germany a wholly-owned subsidiary, increasing our stake from 75% to 100%.

We expect a significant increase in shareholder return to around 12.5 billion yen from 6.3 billion yen in the previous medium-term management plan. The increased amount of around 6.0 billion yen is a result of share buyback.

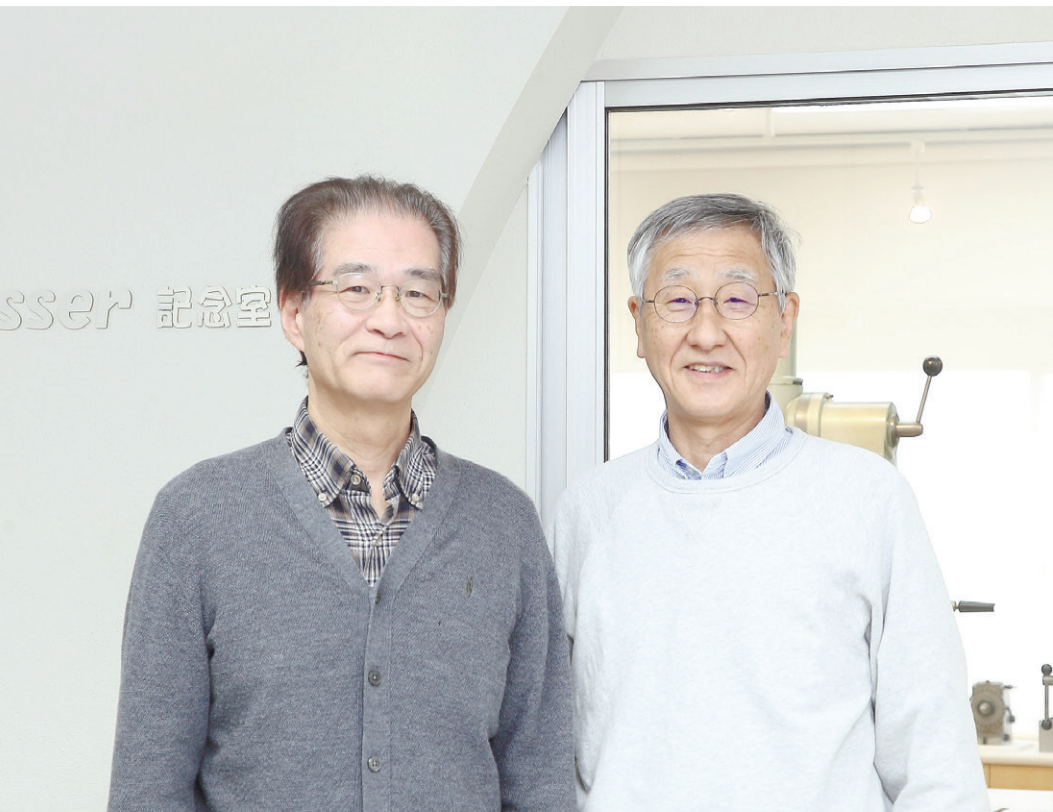
As a result, the forecast of cash allocation for the current medium-term management plan is approximately 44% for capital investment, around 30% for subsidiary shares, and approximately 26% for shareholder returns. There are three key points. First, we were able to make investments in preparation for the next phase of growth. Second, we expanded the use of debt (including lowering the cost of capital), and third, we maintained our financial soundness in spite of the first two points.

Cash flows from operating activities, Capital investment, and Interest bearing liabilities for the Past 10 Years



Approach to Balance Sheet for Next medium-term Management Plan

Our approach to utilizing debt in the event of a shortfall in OCF inflow will remain unchanged for the next medium-term management plan starting in fiscal 2024. We believe that our financial soundness will be maintained even if the current equity ratio of around 70% is lowered to around 60% in the next medium-term management plan. With respect to current assets, while semiconductors and other assets are currently being strategically accumulated in inventories due to difficulties in procurement, we expect to be able to lower the turnover period as procurement normalizes in the future. For tangible fixed assets, we intend to make aggressive capital investments that are expected to be necessary in order to ensure a stable supply to customers and not miss out on business opportunities, based on an assessment of future demand trends and expansion of applications. In doing so, we expect to increase our investment in order to further promote automation, labor saving, and digital transformation. However, we intend to allocate management resources with priority in order to further enhance our ability to create added value in terms of production.



Interview With Officer in Charge of Intellectual Capital

When faced with a task set by a customer, our strength is to embrace the challenge always thinking “how we can do this” and making HDS’s unique technological proposals even if their implementation is difficult, to “turn the unconventional into the conventional”.

*Director and Executive Officer
General Manager of Development and Engineering Division*

Yoshihiro Tanioka

*Executive Fellow Officer (Chief Technical Officer)
(In Charge of Engineering and Quality),
General Manager of Quality Assurance Division*

Yoshihide Kiyosawa

What is the HDS Group’s basic policy on intellectual capital?

The HDS Group advocates for the pursuit of total motion control as our long-term vision. We aim to meet our customers’ demands by combining our unique motors and actuators in addition to speed reducers. We never refuse our customers’ requests, no matter how difficult they are, we consider them and even if they cannot be realized, we can offer unique proposals. This attitude has nurtured our strengths. When people hear the name, HarmonicDrive®, many would probably imagine a speed reducer for industrial robots. However, we have commercialized this product for various application areas including oil drilling equipment and automobiles. Our experience of turning the unconventional into the conventional, ability to produce products from hints, and mindset of never

giving up development are the sources of our strengths and comprise the HDS Group’s basic policy on intellectual capital.

What types of intellectual capital do you have?

Harmonic Drive Systems Inc. in Japan is mainly in charge of R&D. Its R&D organization consists of three divisions: the Development and Engineering Division that develops standard catalogue products and develops and designs products based on customer requests; the New Mechanism Principle Laboratory that freely explores new principles and mechanisms beyond the boundaries of existing products; and the Harmonic Drive Laboratory that investigates deeply the basic technology supporting HarmonicDrive® to find possibilities for enhancing its performance. In addition, we have an office in Silicon Valley in the United States, a region where the world’s most advanced IT and robot technologies are concentrated, to conduct studies

and research on next-generation products such as humanoid robots.

In the fiscal year 2022, we spent ¥3.2 billion in R&D expenditure, an increase of 8.7% year on year. Its ratio to net sales was approximately 4.6%. In comparison with the fiscal year 2018 when we posted a record operating income, our R&D expenditure rose about ¥0.8 billion. Over the past five years, we spent a cumulative total of roughly ¥13.4 billion on R&D. We have 137 people working on R&D, making up 10.3% of the total headcount of the entire consolidated group. The number rose by eight from the fiscal year 2018. As for patents, we have a total of 1,004 patents including 255 in Japan and 749 overseas. We will more actively apply for patents going forward. Our U.S. subsidiary has in the past developed products to meet the local market needs. Our European subsidiary has also developed products to meet the



Kiyosawa

demands of local users. In recent years, however, we have shared issues and development themes globally to prevent the overlapping of development projects. This has enabled us to facilitate a more efficient global joint development effort.

What are the characteristics of R&D in the HDS Group?

The HDS Group processes highly specialized products on the scale of microns. It is therefore normal for us to have discussions at the level of a few microns. While the machines we work on are general-purpose equipment, our products are delicate items whose performance is affected by a difference of a few microns. This means that the machining tolerance of our products differs from that of other companies. We develop products under main themes based on the development roadmap prepared in line with our medium-term business plan. The three sections choose several main themes and conduct specific development activities for their respective themes. The development projects to meet specific customer demands, however, have different timelines. For instance, in the development project of a bent sub for oil drilling (directional drilling control module), we spent eight years for development and a total of 12 years before its actual application. We also spent five years on a development project for a steering and stabilizer project for a major carmaker. Our products are also often used for space projects and their development periods

are likewise long due to their special specifications. While the Development and Engineering Division sometimes directly receives requests for major development projects, the sales and design sections are basically our windows for customers to request major development work. Another characteristic of HDSI is the large number of experiments we carry out. The Development and Engineering Division has a team that evaluates our development projects. They conduct various experiments and evaluations together with customers in our laboratory designed to test durability before the actual use of our products.

Will the spread of AI impact the competitiveness of your intellectual capital?

AI is an effective tool in, for instance, combining various materials. In areas where there is no knowledge, however, it does not generate new thoughts or answers. AI cannot know what we do not know. It is therefore important that we take the lead in solving various challenges and experience both failures and successes. With the appearance of such tools as 3D printers and various measuring equipment, in the current era, it may only take five years to give shape to what the HDS Group has accomplished in our history spanning over 50 years. However, even if products look identical on the surface, it is impossible to copy "the depth rooted in experience." This is where a large difference between us and our competitors lies. In particular, HarmonicDrive® achieves high reduction ratios using a simple three part mechanism where balls in ball bearing and a flexible metal gear produce controllable elastic deformation. This is literally "a product that has turned the unconventional into the conventional." Product life normally ends when development stops. We remain committed to continuing development that is beyond conventionality while adding our own unique twists.

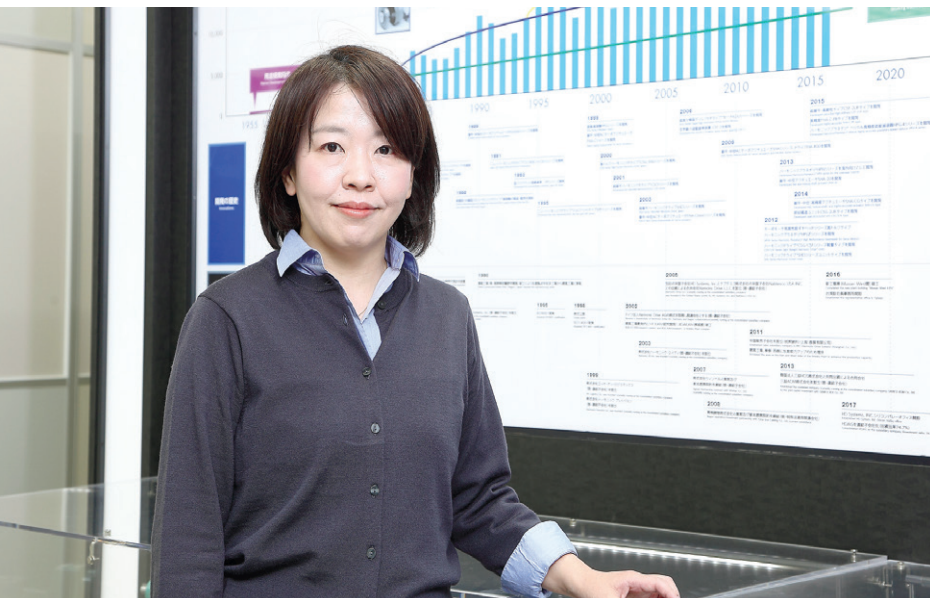
Where do your strengths, risks and business opportunities exist?

The HDS Group's strength is that our customers consult with us about their issues and requests. I believe that this demonstrates their appreciation of our serious efforts on R&D and problem

solving. As for our risk, due to the limited range of product types we offer, there is a concern that the potential arrival of a new speed reducer with a breakthrough mechanism that could replace HarmonicDrive® could make us lose our market. Another concern is the potential appearance of affordable products with high quality and performance. Our greatest business opportunity lies in the development of speed reducers with new mechanisms such as Abacus®. In the immediate future, however, our focus will be on lubricants. While we develop solid lubrication, in our joint development project with the Japan Aerospace Exploration Agency (JAXA), we have focused on powder lubrication and have achieved a lubrication mechanism that secures long life even at an extremely low temperature at around minus 200 degrees Celsius. Going forward, if lubrication oil for speed reducers becomes unnecessary, oil seals will become redundant and significant efficiency improvement will become possible. In addition, we have recently seen our competitors entering the speed reducer market. We consider that the emergence of competitions proves long-term business opportunities of the speed reducer market and will provide opportunities for all of us to grow from healthy competition.



Tanioka



Interview With Chief of Harmonic Drive Laboratory

With R&D on motion mechanisms at the core, we focus on developing technologies to solve problems faced by our customers as well as products and next-generation mechanisms to adapt to changes in the market while facilitating development collaboration with our overseas Group companies.

Executive Officer
Chief of Harmonic Drive Laboratory

Shizuka Yata

What is the role of the Harmonic Drive Laboratory and your background?

The Harmonic Drive Laboratory (HD Laboratory) was created in August 2014. Its role is to further cultivate the basic technology behind HarmonicDrive® and it aims to find solutions through enhancing our ability to develop fundamental technologies for improving our products' competitiveness and contributing to the development of new products. 70% of what HD Laboratory currently does is the development of speed reducers centered on the existing HarmonicDrive®. The remaining 30% is dedicated to the development of new speed reduction mechanisms. We take a bird's-eye view of developing speed reduction mechanisms. At the same time, we conduct R&D on various motion mechanisms to realize total motion control. HD Laboratory has eight members including myself.

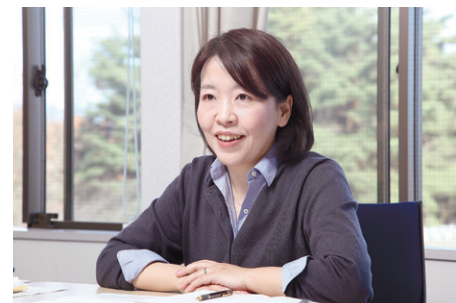
I joined HDSI in July 2014, one month before the establishment of HD Laboratory, as a mid-career engineer. I was appointed as the Chief of HD Laboratory in 2021 and then as the Executive Officer in June 2023. I studied mechanical engineering and began my career as a CAE

development engineer of automotive parts in the technology development center of a textile material maker. I then moved to an electric appliance maker that developed and sold robots. As an engineer, I was in charge of mechanical designing of robots and other prototypes, evaluation of prototypes, CAE analysis, among other things, in development and production technology. Looking back, I was always interested in motion through my work. When the electric appliance maker sold the business where I worked, I decided to approach HDSI which had good technology on motion control and started working for them. At HDSI, I develop next-generation technologies centered on CAE analysis, which is a core technology. I am also currently involved in a customer's project to create new solutions.

What types of development staff do you have? Do you collaborate with overseas offices in development?

HDSI supports its employees in obtaining academic degrees such as MBAs and PhDs while working by paying part of their costs. Our Fellow and Chief Technical Officer Kiyosawa was the first employee to gain a doctorate (Doctor of Engineering)

while working for the company. Some of HD Laboratory's staff are working toward a doctorate on their own volition or acquiring knowledge by enrolling in a one-year technology seminar. Furthermore, HDSI has a system to provide full support to employees' overseas language studies for those who wish to improve their English skills. I believe HDSI is a very attractive company for those who are motivated to take on challenges to further their expertise. Global development collaboration with our overseas Group companies is also progressing. In fact, we are soon going to visit a Japanese research institution that



has new technologies, with the development members of our German subsidiary. This was arranged through an invitation from the German team. We are excited that we can try interesting, new technologies.

What development themes are you working on?

Our R&D is based on themes that are chosen in accordance with HD Laboratory's policy. In particular, we try to choose themes related to speed reducers that will contribute to the development roadmap of the Development and Technology Division. This development roadmap is updated at the beginning of each fiscal year for the following three to five years. In the fiscal year 2022, we worked on the "pursuit of highly efficient HarmonicDrive[®]," in addition to the ongoing theme from the previous fiscal year, which was the "establishment of a lifespan estimation method for HarmonicDrive[®]," as our main themes. In recent years, we have been especially stepping up our efforts on the lifespan of HarmonicDrive[®]. We need to regularly review the lifespan estimation method to estimate how long and under what conditions HarmonicDrive[®] can be safely used from the so-called state-of-the-art perspective. This initiative will not only help reduce environmental footprints on the earth but will also result in greater cost competitiveness. Given the growing energy saving needs, raising the efficiency of speed reducers is an essential factor for industrial robots. With the expansion of the market for HarmonicDrive[®], we are working on R&D factoring in a sustainability perspective such as power saving so that our customers can continue using our products safely.

Do you also run development projects linked to profitability or business strategy?

The current model of HarmonicDrive[®] consists of three components. Flexspline, a thin, cylindrical cup-shaped elastic metal body with external teeth, which is formed by machining heat-treated forged components. Under the current medium-term business plan, we began looking into different methods to manufacture Flexspline as one of our business strategies for the Chinese market. Development and application for mass

production including production automation are progressing daily. As we need production technology that suits product shapes, HD Laboratory, which is in charge of fundamental technologies, is preparing for what might happen when shapes or materials are changed. In addition, to avoid excessive quality, it is ideal to offer HarmonicDrive[®] that is compatible with the lifespan of solutions, such as robots, in which it is used. On this point, I think it will be possible to control lifespan and cost (= profitability) through the above research themes. And there are solution proposals beyond this. Another task given to HD Laboratory is to make proposals to create new demand beyond customers' requests while maintaining a structure that can solve issues our customers face.

Are you also developing next-generation speed reduction mechanisms?

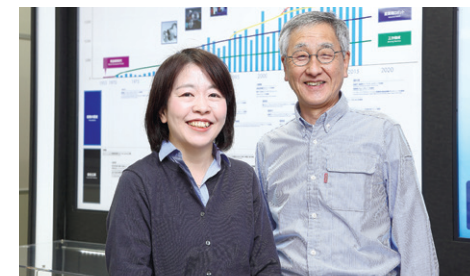
The Abacus[®] speed reducer, which we began developing together with an American research institution, SRI, in November 2015, is a product that has achieved a high level of energy efficiency at 96.6% through our effort to make rolling elements spin like abacus beads instead of a gear. This is an extremely attractive mechanism. However, we are in a quandary about its practical application in terms of its mass and weight because the product has a large number of components and its mechanism is complex. We are also looking into adopting new engineering methods or new materials for the existing HarmonicDrive[®] products. This, however, will be a thorny path considering the need to secure high quality and reliability.

When developing speed reducers, we need to pursue the following fundamental technologies: load capacity, lifespan, efficiency, stiffness, weight, accuracy, size, ratio coverage, and manufacturing cost. We are daily working on developing new speed reduction mechanisms and materials under the development roadmap we have prepared. There is, however, no clear timeline toward our goals. Abacus[®] speed reducer is said to be the first innovative invention in a few decades. It takes time to develop new speed reduction mechanisms. Having said that, we want to accelerate our activities to turn

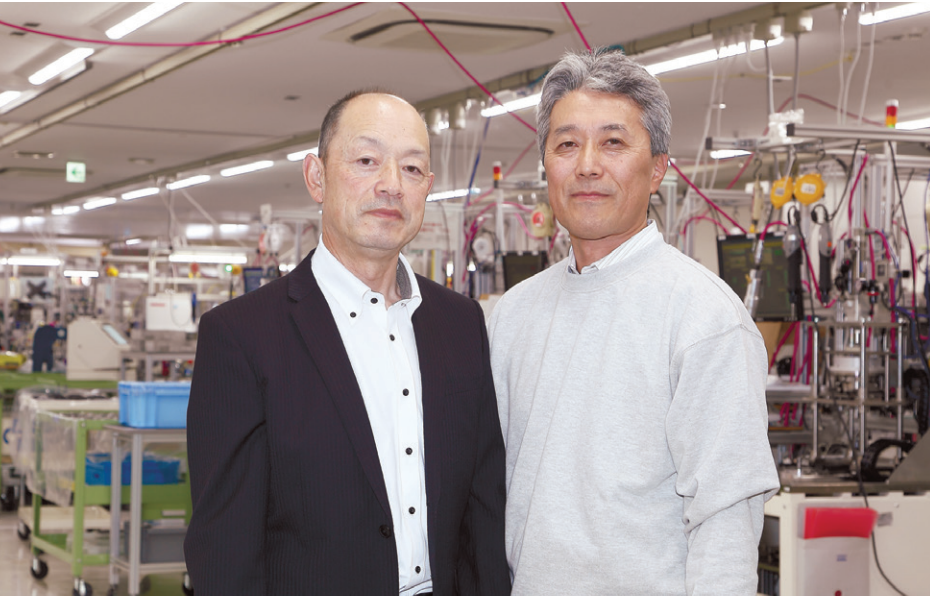
our ideas into products when we can see a clear outlook. We want to incorporate one or two new development outcomes into our products every two to three years with respect to the aforementioned fundamental technologies.

In your view, which market is promising?

Fundamental technologies and components are the sources of value creation and competitiveness in any market. I therefore want to value them. As for research themes, I want to persistently strengthen the development of fundamental technologies that are applicable across various fields. If I may dare to list the specific markets that I expect to grow, I believe that the use of speed reducers will increase in extreme environments where lubricating oil cannot be used, such as space. In addition, with the falling birth rate in recent years, humanoid robots are appearing as robots working in the manufacturing industry in addition to multi-axis robots that work with humans. In the past, I have seen humanoid robots disappear from the market because their development was extremely difficult while the purpose of their use was unclear and they were expensive to make. At present, however, robots are being developed as hardware with a clear purpose of use. Furthermore, the evolution of the high-speed processing technology of sensor signals has enabled us to simultaneously control a few dozen axes. As a result, the scope of tasks in which robots can replace humans has expanded. I sincerely hope that this area will blossom with good practical applications.



Yata and Kiyosawa



Interview With Officer in Charge of Manufacturing Capital

We are enhancing high-mix low-volume production and our production skills at the Hotaka Factory and promoting automation and DX at the Ariake Factory to meet our customers' demands by maintaining high quality and further improving productivity through the integration of analogue and digital.

*Executive Officer (In Charge of Production, Production Planning)
General Manager of First Production Division*

Tsuyoshi Awaduhara

*Executive Officer
General Manager of Production Technology Division*

Hiroki Hanaoka

What is the HDS Group's basic policy on manufacturing capital?

As the basis of our production activities, we prioritize the safety and comfort of our production sites. We therefore first aim to have zero occupational accidents. Furthermore, to have no product quality issues, no complaints from customers, and no defective documentation, we set out to have zero product non-

conformances and zero complaint under our quality reform effort which the entire company is working on. In respect of production technologies, we are working on productivity improvement and labor-saving through automation at the new Ariake Factory. We also naturally aim to maintain high quality by reducing quality variations. Moreover, we are quantifying the skills of experienced workers and reflecting them in automation to ensure production to precise measurements.

What kinds of manufacturing capital does the HDS Group have?

The Hotaka Factory is the HDS Group's mother factory which flexibly practices high-mix low-volume production while passing on advanced, expert skills. Meanwhile, the Ariake Factory is an automated factory specializing in the mass production of the same types of products through the introduction of automated and labor-saving production lines. Our current production capacity for industrial machinery is 90,000 units a month at the Hotaka Factory and 40,000 units a month at the new Ariake Factory. Combining the two factories, we have the capacity to produce 130,000 units of HarmonicDrive® each month. In addition, our German subsidiary is capable of producing

slightly less than 30,000 units a month and the U.S. subsidiary slightly less than 10,000 units a month. We therefore have the capacity to produce approximately 170,000 units of HarmonicDrive® for industrial machinery combining Japan and overseas. On top of these, we can produce 7,000 units of mechatronics products such as actuators and in the Ariake Factory, 90,000 units of products for automobiles that are produced each month. The HDS Group's global production capacity including these is thus approximately 270,000 units. Going forward, we aim to secure a production capacity of 200,000 units a month at the Hotaka and Ariake factories combined, excluding products for automobiles. If we expect demand for special, small speed reducers for humanoid robots to grow, we may need a dedicated factory depending on the level of demand.

What are the HDS Group's advantages? Where does the source of your strengths lie?

One of the strengths of the HDS Group's production technologies is our manufacturing insights which have been nurtured through the successes and failures we have experienced in our history spanning over 50 years. For



Hanaoka



Awaduhara

instance, our commitment to producing Flexspline by fine cutting at micron-level is supported by our differentiated technologies. The Hotaka Factory is an analogue factory where dimensions are measured for each phase, while the Ariake Factory is a digital factory where micron-level precision is produced on automated lines. We endeavor to improve our production technologies by having two factories with different features developing and sharing their respective technologies.

What is your view on achieving your long-term vision?

A key component of the HDS Group's products, cross roller bearings, are internally manufactured by our Group company, Harmonic Precision Inc. We also have our own specifications, inspection processes, and conditions for the component parts we purchase such as ball bearings and steel materials. By assembling those components using our differentiated alignment technology, we endeavor to supply high quality and high accuracy products. Together with the Supply Chain Division, we try to strengthen collaboration with our suppliers who are members of the HDS Cooperative Association to ensure high technological standards. Meanwhile, we have a flexible production structure that allows us to switch to internal production if it is difficult to make particular components. I believe that the source of the HDS Group's strengths is our willingness to try different methods to satisfy the requests of each of our customers, constantly thinking about how we can do it.

At the Hotaka Factory where we produce custom-ordered products in small volumes, we put efforts into developing human resources and promote the multi-skilling of workers to eliminate bottlenecks and to distribute workloads evenly at the time of production increases. In addition, we are rolling out the production technologies of the automated Ariake Factory to the Hotaka Factory to improve the latter's skill levels that are reliant on experienced workers and to facilitate the automated and labor-saving production phases. When I visited our German subsidiary the other day, they were trying a new method of high-mix low-volume production, different from ordinary methods. The Ariake Factory currently mass produces products with the same model numbers. By adopting the new method, the German subsidiary will be able to produce a mixture of a number of different products and to monitor production process progress in real time. We are also accumulating various data including the dimensions measured to visualize the production capacity of each production phase. Going forward, we plan to use big data to stabilize processing accuracy through the management of the wearing of tools and coolant temperatures and to discover and rectify bottlenecks. In the medium- to long-term, we aim to create a smart factory by raising the level of automation. We are currently ranking the levels of automation of each phase to understand the automation status. The ultimate goal is an unmanned factory. We aim to achieve automated, mixed-flow production ensuring high quality, while promoting data visualization and the introduction of various systems.



Hotaka Factory

Main factories producing HarmonicDrive®

Japan	Hotaka Factory	Ariake Factory
Production line	High-mix low-volume production	Mass production of one type
Characteristics	Mother factory with advanced expert skills	Fully automated manufacturing
Monthly production capacity	90,000 units for industrial machines	40,000 units for industrial machines 90,000 units for automobiles
Power	—	No CO ₂ emissions

Overseas sites	HDSE (Germany)	HDLLC (U.S.)
Business activities	Development/Production/Sales	Development/Production/Sales
Monthly production capacity	Nearly 30,000 units	Nearly 10,000 units
Power	No CO ₂ emissions	—

Group companies	Production items
Harmonic Winbel Inc.	Mechatronics products
Harmonic Precision Inc.	Cross roller bearings
Harmonic AD, Inc.	Precision planetary speed reducers
SAMDICK ADM CO., LTD. (South Korea)	Precision planetary speed reducers



Ariake Factory



Interview With Officer in Charge of Domestic Sales

We aim to refine our unique solution sales style that goes beyond what our customers demand from us and strengthen our capabilities to support our customers through system reforms and other measures to improve customer satisfaction.

*Executive Officer (In Charge of Marketing and Sales)
General Manager of Domestic Sales Division*

Naomi Shirasawa

What is the HDS Group's basic policy on domestic sales?

To become a company desired by our customers, the basic policy of our domestic sales is to increase our capabilities to respond to our customers as the entire company. We will do so by sharing customer feedback with the entire company based on the lessons we learned in the past from our long delivery lead times.

What types of sales capital do you have?

We have five sales offices in Japan, namely the Tokyo Office, Kohshin Office, Chubu Office, Kansai Office, and Kyushu Office. While there are some customers we directly deal with, we make sales through our sales agents for major industrial robot makers to mitigate the impact of demand fluctuations. The Domestic Sales Division has 42 staff members excluding myself, while the key sales offices in Kanto and Kansai each have ten members. We recruited four and three career-track employees in 2022 and 2023, respectively. We basically develop our human resources through training in factories, on-the-job-training in each office where new employees are paired up with experienced sales staff, and various group training programs, among others.

What are the strengths of your domestic sales?

We endeavor to conduct our sales activities with the aim of growing ourselves, while strengthening our capabilities to support our customers. In cooperation with the Motion Control Development Department in the Sales Administrative Division that conducts solution sales activities, we research in advance

the themes that our customers will seek next and endeavor to propose solutions that will meet our customers' demands. Building a strong relationship with our customers is also our strength. When customers who have strong views about quality and delivery timing ask to tour our factory, we show them where we are taking on new challenges such as production automation and multi-skilling. This gives them strong confidence and a sense of reassurance about our supply structure including delivery schedules during the next demand recovery phase.

What measures do you take to meet delivery deadlines?

In 2017 and 2018, our supply could not keep up with the robust demand, and our delivery lead time, which was normally one to two months, was stretched to ten months, causing inconvenience to our customers who suffered from delays in their production plans. When demand grew in 2021 and 2022, our delivery lead time again extended to ten months due to the combination of a manufacturing staff shortage and an electronics component shortage. This, however, did not cause any problem to our customers' production plans thanks to close sharing of information with our customers, sales agents, and factories. As a result, a number of our customers including a semiconductor manufacturing equipment maker and industrial robot maker commended us for meeting our delivery schedule. I believe that our efforts to strengthen our capabilities based on our previous experience have led to an improvement in our customers' satisfaction. We are currently in a period of stagnant demand. To prepare for the next recovery phase in demand, we are enhancing information sharing with our factories to ensure

sufficient production capacity. In addition, we are predicting orders we will receive based on information from our top 20 customers who account for 70% of the orders we receive and managing the inventory of key agents every month to build a well-prepared structure for the next demand recovery period.

What are your challenges and initiatives toward the next medium-term business plan?

I feel that our challenges are digital transformation (DX) and computerization of our sales activities. We are therefore discussing the introduction of new systems for sales expansion. Based on the vision we want to achieve in the next five to ten years, we are working on sharing the sales data of each sales office and on data utilization as well as on management reforms to build a stronger sales structure.

With respect to the links with the medium-term business plan, so far, each sales office has accumulated their respective customer data and has individually dealt with their key customers, which are major semiconductor manufacturing equipment makers for the Tokyo Office, industrial robot makers for the Kohshin Office, and carmakers and industrial robot makers for the Chubu Office. As a result, there was no strong link with company-wide numerical targets set under the medium-term business plan. Going forward, we will set KPIs including numerical targets for each business segment and the number of new customers for sales expansion and will review how we conduct our sales activities to improve the prospects of success of the next medium-term business plan which will start in the fiscal year 2024.



Interview With Officer in Charge of Overseas Sales

We will strengthen collaboration with domestic sales sections and factories, in addition to accurate information sharing with customers and sales agents, to achieve our long-term vision.

*Executive Officer
General Manager of Sales Administrative Division and Overseas Sales Division*

Michiya Yashiro

What is the HDS Group's basic policy on overseas sales?

Our basic policy is to run optimum operations through sales support to and the sharing of sales strategy with overseas sales agents and close collaboration with factories when providing delivery schedules and price estimates to customers.

What types of sales capital do you have?

The HDS Group has a division of work structure dividing the world into four sales areas. Our U.S. subsidiary, Harmonic Drive L.L.C., is in charge of the North America region, our German subsidiary, Harmonic Drive SE, is in charge of the Europe, South America, Middle East, India and Africa region, our Chinese subsidiary, Harmonic Drive Systems (Shanghai) Co., Ltd., is in charge of the Chinese market, and HDSI is in charge of Japan, Australia and the Asia region. HDSI also manages coordination and integration of the four poles (Japan, Germany, the U.S., China). We maintain close contacts with local group companies and sales agents. For instance, HDSI's overseas sales may join in their meetings with customers. In Europe, the U.S. and China, we have a sales network of a few dozen offices underneath our Group companies, while in South Korea, our sales network consists of around ten offices. The Overseas Sales Division currently has ten staff members. We plan to further increase its headcount to enhance collaboration with overseas subsidiaries and sales agents.

What are the strengths of your overseas sales?

We basically sell HarmonicDrive® directly to our customers because 90% of our sales are specially tailor-made for each customer. In the U.S., all our HarmonicDrive® units are sold directly to customers, while we use retailers for precision planetary speed reducers. In China, we basically sell HarmonicDrive® directly to customers but also use sales agents to acquire new local customers. In Europe, we also directly sell HarmonicDrive® to major customers, but we adopt a structure where we have a distributor in each country and relation managers in our Group companies visit customers. As seen in the above, our direct sales structure that can gain strong trust from our customers is a strength of the HDS Group.

How do you understand regional strategies and demand forecasts?

We implement our regional strategies with precisely defined targets. We are focusing on state-of-the-art medical equipment, semiconductor manufacturing equipment, and the aerospace field in the U.S., semiconductor manufacturing equipment, industrial robots, and various automation and labor-saving fields in China, and industrial robots, aerospace, medical equipment, and semiconductor manufacturing equipment in Europe. Our common target across those regions is robots including humanoid robots, co-bots, and industrial robots. In recent years, there have been cases where global IT companies developed humanoid robots for specific uses, especially in logistics. We are closely monitoring this trend. With respect to demand forecasts, we endeavor to have close communication with key

customers and sales agents and keep track of the number of our speed reducers in stock for different specifications of customers to make forecasts for six to twelve months into the future in an effort to improve our order prediction accuracy.

Carmakers and European robot makers, among others, have begun asking for information on our ESG efforts in recent years.

What are your challenges and initiatives toward the next medium-term business plan?

We, as the sales section, will continue providing information in an appropriate manner at an appropriate time. In addition, we raise efficiency of the entire HDS Group including our supply chain to improve the speed of quoting and to reduce the delivery lead time so that we can more effectively achieve two of our five materialities, which are to "provide products and services that meet customer expectations" and to "establish a stable procurement and supply system."

Regarding the links to the medium-term business plan, the Overseas Sales Division sets goals based on the Group's long-term vision and management policy. Going forward, our customers will unavoidably move towards making purchases from two or more companies from the viewpoint of BCP. This will make it even more important to maintain and increase the HDS Group's market share. We need to develop our sales strategy while aiming at total optimization while closely observing the demand trend. Under the next medium-term business plan, we will prioritize the enhancement of our abilities to respond our customers with QCDS (Quality, Cost, Delivery and Service) at the core.

Corporate History and History of Value Creation

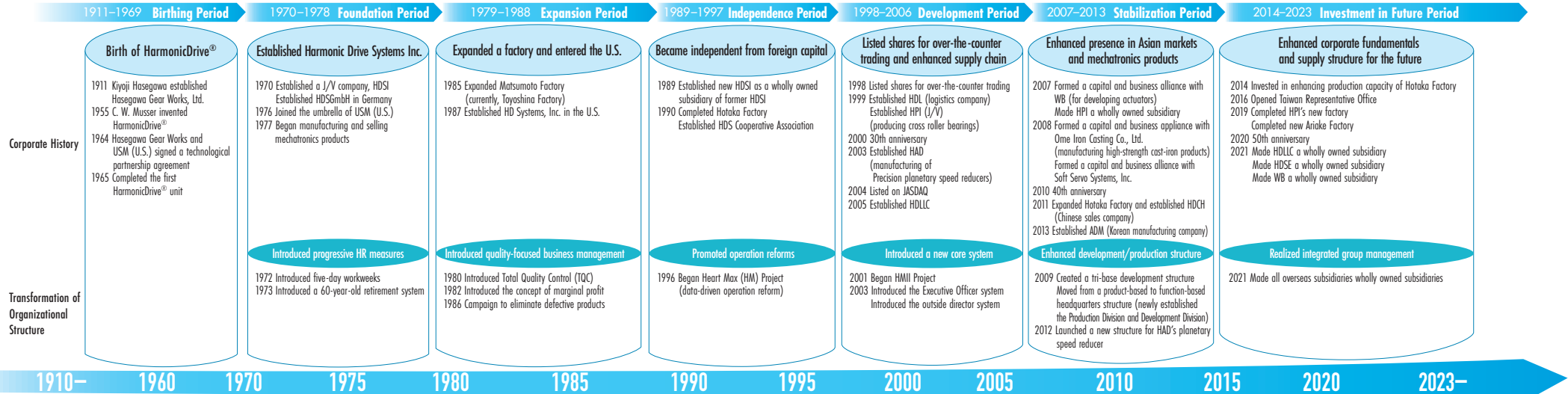
—Transformation of Organizational Structure, Development of Diverse Products—

HDSGmbH : Harmonic Drive GmbH (Germany)
(Currently, Harmonic Drive SE)
HDL : HD Logistics, Inc.
HPI : Harmonic Precision Inc.

HAD : Harmonic AD, Inc.
HDLIC : Harmonic Drive L.L.C (U.S.)
WB : Winbel Co., Ltd.
(Currently, Harmonic Winbel Inc.)

HDSE : Harmonic Drive SE (Germany)
HDSI : Harmonic Drive Systems Inc.
HDCH : Harmonic Drive Systems (Shanghai) Co., Ltd. (China)
ADM : SAMICK ADM CO., LTD. (South Korea)

Corporate History and Transformation of Organizational Structure



Growing product offerings and expansion to mechatronics products

Diverse product groups

Strain-wave gearing HarmonicDrive®

- 1965 • Completed first unit made in Japan
- 1972 • Launched FD series differential unit for phase fine-tuning
- 1977 • Birth of R series (initial product)

1985 • Launched model number 5 products

1988 • Launched CSS series with a new IH tooth profile

1992 • Launched CSF series

1995 • Launched silk hat type SHF series
Established production technology of cross roller bearings

1999 • Developed units with a reduction ratio of 1/30
Launched larger torque capacity, longer life CSG series

2001 • Launched ultra-thin HarmonicDrive® CSD series

2002 • Launched larger torque capacity, longer life SHG series

2006 • Launched CSF-3 micro precision speed reducer

2015 • Launched CSF-mini ultra flat, high stiffness type (ZUP)

2020 • Launched ultra-light ULW

2023 • Launched CSD-ULW

2023 • Added model number 7 to small unit types

Mechatronics products MECHATRONICS

1978 • Commercialized H-T Drive

1984 • Launched high power DC servo actuator RH series

1987 • Launched DC servo actuator RH mini series

1989 • Launched LA-30 linear actuator

1990 • Launched FHA-25A FH2000 series servo actuator

1994 • Launched LSA-50A for laser scanners

2000 • Launched FH2000 series C type

2006 • Launched RSF-3 micro AC servo actuator

2009 • Launched new SHA series flat hollow actuator

2018 • Launched FLA series ultra flat brushless DC actuator

2018 • Launched HMA series flat and hollow AC servo motor

2023 • Added ULW type to FHA-C mini series

Precision planetary speed reducers HarmonicPlanetary®

1988 • Launched BP series

1990 • Launched HP series

1999 • Launched HPG series

2007 • Added right angle type to HPG series

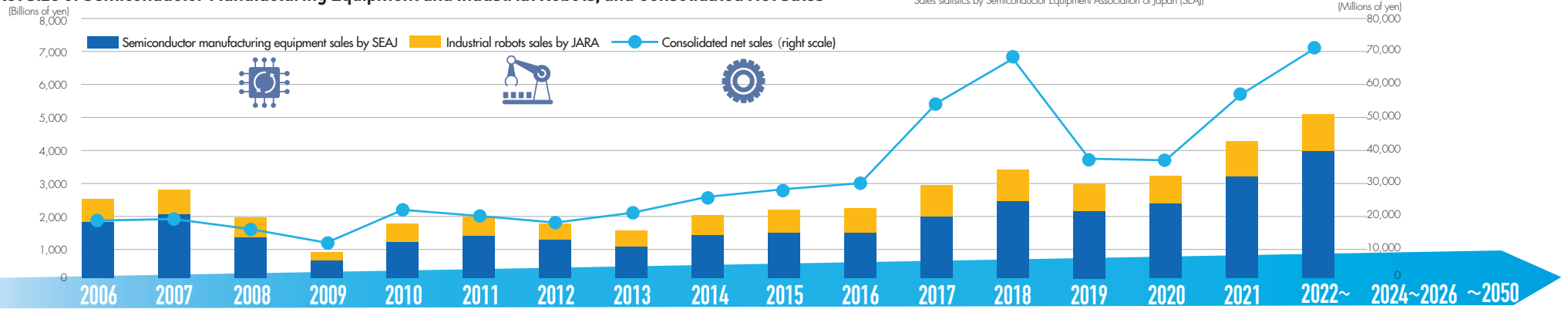
2017 • Launched HPN series

2015 • Launched HPG series helical gear type

2023 • Added model number 40 to HPG series helical gear type

Market Size of Semiconductor Manufacturing Equipment and Industrial Robots, and Consolidated Net Sales

Source: Order statistics by Japan Robot Association (JARA)
Sales statistics by Semiconductor Equipment Association of Japan (SEAJ)



Medium-Term Management Plan

Strengthening
Mechatronics
Business

Reinforcing
the Asian Market

Back on
Growth Trajectory

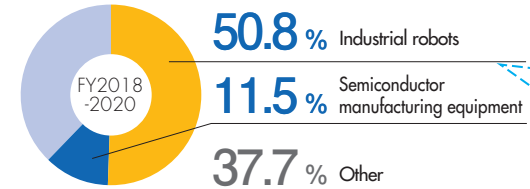
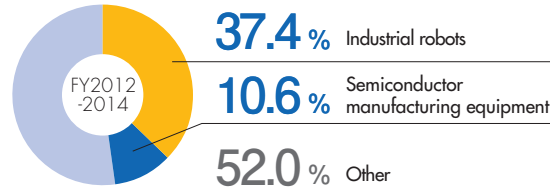
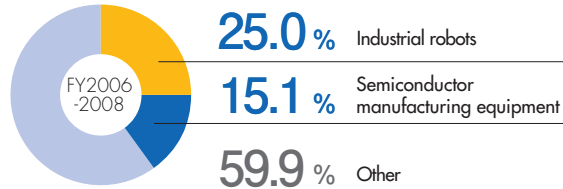
Strengthening Competitiveness
of Three Main Products

Expanding
Capacity

Towards the Next
50 Years

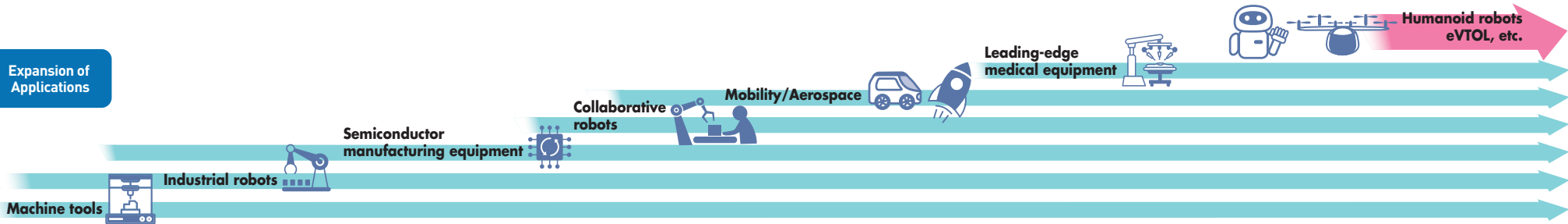
Achieving
Long-term
Vision

Net Sales
Composition
by Application
(Non-consolidated basis)



Sales ratio of industrial robots grew from 25% to 50% in the past five Medium-Term Management Plans

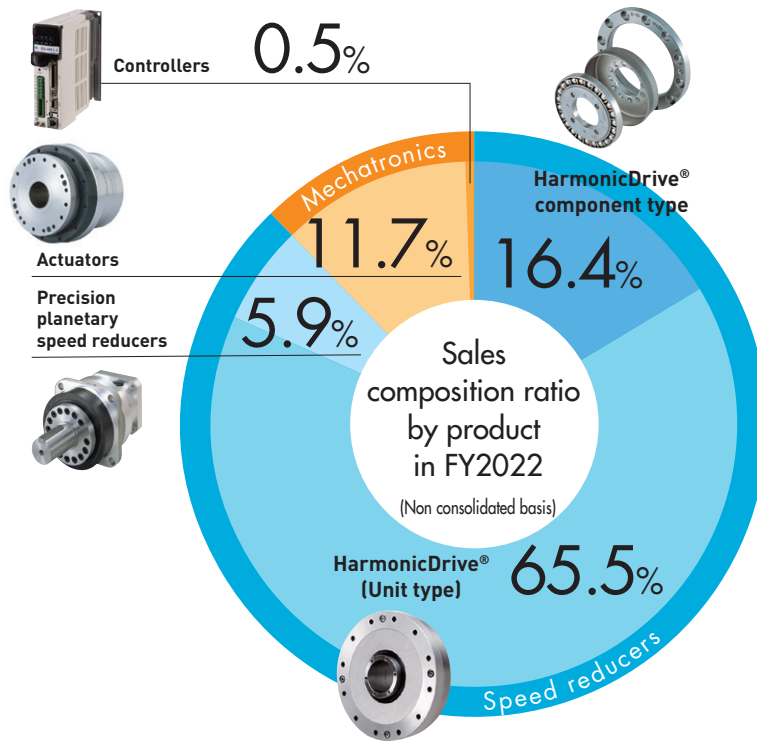
Expansion of Applications



History of Growth Strategies

	FY2009	FY2015	FY2022
Net sales by product			
Reducers	¥9.6 billion	¥22.3 billion	¥57.0 billion
Mechatronics products	¥2.4 billion	¥5.9 billion	¥14.5 billion
Composition by product			
Reducers	80%	79%	80%
Mechatronics products	20%	21%	20%

At a glance



HarmonicDrive® HarmonicDrive® Speed Reducers

Production base Hotaka Factory/Ariake Factory (Azumino-shi, Nagano)

The HarmonicDrive® consists of only three basic components. Unlike motions of ordinary gearing, the unique tooth behavior (operating principle) of HarmonicDrive® achieved nonbacklash motion, infinitesimal angular feeding (one-pulse feeding) and high positioning repeatability.



Wave Generator

The wave generator consists of a thin ball and bearing that fit into the outer circumference of the elliptical cam. The inner ring of the bearing is fixed to the cam, while the outer ring deforms elastically via the ball. Normally, this is installed on the input shaft.

Flexspline

This is the thin, cup-like, metallic, and elastic body. The outer circumference of the opening has the teeth. The bottom of the flex spline (bottom of the cup shape) is referred to as the diaphragm, and is installed on the output shaft in the normal fashion.

Circular Spline

This is the rigid and ring-shape component. The inner circumference has the teeth, and the number of teeth is higher than the flex spline by two teeth. Normally, it is fixed to the casing.

HarmonicPlanetary® Precision planetary speed reducers

Production base Harmonic AD, Inc. (Azumino-shi, Nagano)

HarmonicPlanetary® is a Precision planetary speed reducers that utilizes the accumulated precision machining expertise of HarmonicDrive® at lower reduction ratios. With a unique backlash elimination function, it achieves high rotational precision.



HPGR series Gearhead



SHA series AC servo actuator Flat hollow shaft type



RH series DC servo actuator















LA series AC servo linear actuator

MECHATRONICS Mechatronics products

Production base Komagane Factory (Komagane-shi, Nagano)

In order to take advantage of the excellent angle transmission precision and positioning precision of HarmonicDrive®, we offer total motion control, including AC, DC, and step actuators capable of ultra-high resolution and high-precision rotary motion, and linear actuators capable of ultra-fine volume and high-precision linear motion.

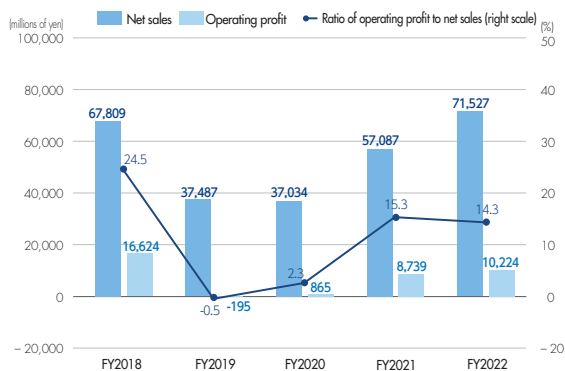
 <p>Net sales</p> <p>¥71.5 billion</p>	 <p>EBITDA</p> <p>¥18.7 billion</p>	 <p>Profit attributable to owners of parent</p> <p>¥7.5 billion</p>	 <p>Earnings per share</p> <p>¥79.67</p>	<p>ROE</p> <p>7.5%</p>
 <p>Total assets</p> <p>¥154.3 billion</p>	<p>Equity ratio</p> <p>67.4%</p>	 <p>Cash flows from operating activities</p> <p>¥10.8 billion</p>	 <p>Capital investment</p> <p>¥9.2 billion</p>	<p>Ratio of R&D expenditure to sales</p> <p>4.6%</p>
 <p>No. of employees</p> <p>1,324</p>	 <p>Percentage of male employees taking childcare leave</p> <p>56.3%</p>	 <p>No. of patents held</p> <p>1,004</p>	 <p>GHG emissions (Scope 1+2)</p> <p>18,937 t-CO₂</p>	 <p>Ratio of Independent Outside Directors</p> <p>50.0%</p>

Note 1: The data shown above are actual results for the fiscal year ended March 31, 2023, excluding the ratio of Independent Outside Directors.

Note 2: Percentage of male employees taking childcare leave is on a non-consolidated basis.

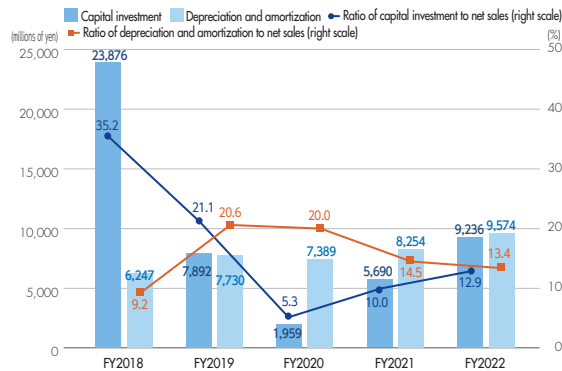
Financial Highlights

Net sales, Operating profit, and Ratio of operating profit to net sales



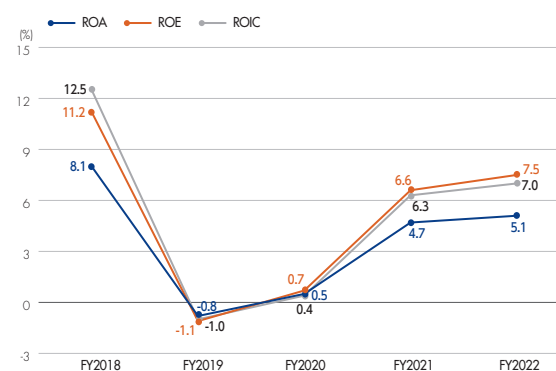
The net sales for fiscal 2022 reached a record high of ¥71.5 billion, increase of 25% from the previous fiscal year, as an abundant order backlog steadily was steadily cleared. Operating profit increased 17% compared to the previous fiscal year to just ¥10.2 billion, underperforming the all-time high reached in fiscal 2018. Meanwhile, the ratio of operating profit to net sales came to 14.3%, down 1.0 percentage point from that of the previous fiscal year. This was mainly attributable to an increase of ¥3.3 billion in depreciation and amortization compared to the level in fiscal 2018 as a result of aggressive capacity expansion investment.

Capital investment, Depreciation and amortization, Ratio of capital investment to net sales and Ratio of depreciation and amortization to net sales



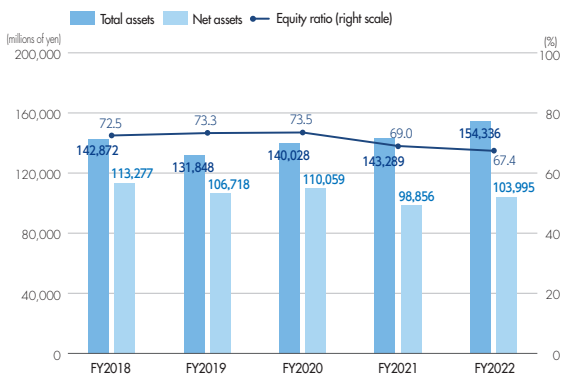
The capital investment increased 12.9% compared with the previous fiscal year to ¥9.2 billion (12.9% to net sales). The regional breakdown is ¥8.1 billion for Japan, ¥0.7 billion for North America, and ¥0.4 billion for Europe. Domestic production capacity increased 40% from the level in fiscal 2021. Depreciation and amortization, including intangible, increased by ¥1.3 billion to ¥9.5 billion (13.4% to net sales). For fiscal 2023, we plan ¥6.3 billion in capital investment and ¥9.9 billion in depreciation and amortization.

ROA, ROE, and ROIC



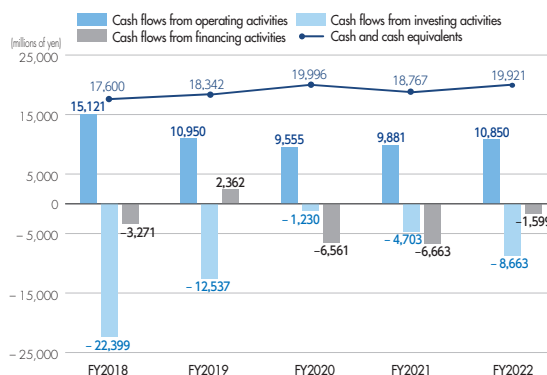
Return on equity (ROE) improved by 0.9 percentage point to 7.5%, return on assets (ROA) 0.4 percentage point to 5.1%, and return on invested capital (ROIC) 0.7 percentage point to 7.0%, all from the previous fiscal year. In relation to ROE, profit attributable to owners of parent increased 14% from the previous fiscal year to ¥7.5 billion, while equity over the past two fiscal years averaged just ¥101.4 billion, a 0.5% increase from the previous fiscal year.

Total assets, Net assets, and Equity ratio



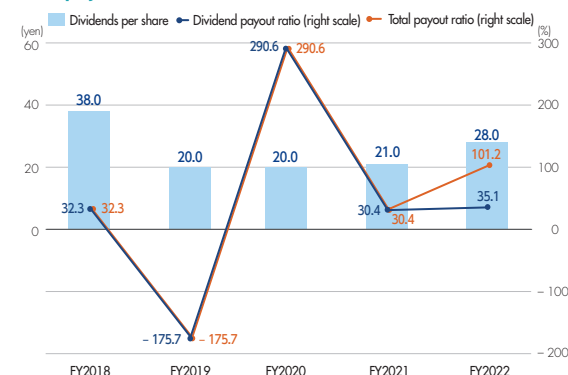
At the end of fiscal 2022, total assets increased ¥11.0 billion from the previous fiscal year to ¥154.3 billion and net assets increased ¥5.0 billion from the previous fiscal year to ¥103.9 billion yen. Equity ratio dropped 1.6 percentage points from the end of the previous fiscal year to 67.4%, which was a 6.1 percentage points decrease from the level in fiscal 2020. This was mainly attributable to a decrease in capital surplus resulting from acquisition of shares in a consolidated subsidiary and a decrease in equity resulting from factors including a decrease in valuation difference on available-for-sale securities.

Cash flows, and Cash and cash equivalents



In terms of cash flows, operating activities provided net cash of ¥10.8 billion, increasing by ¥0.9 billion from the previous fiscal year, investing activities used net cash of ¥8.6 billion, up ¥3.9 billion from the previous fiscal year, and free cash flow came to a positive ¥2.1 billion. Financing activities used net cash of ¥1.5 billion for purchase of treasury shares, etc., and cash and cash equivalents at fiscal yearend came to ¥19.9 billion.

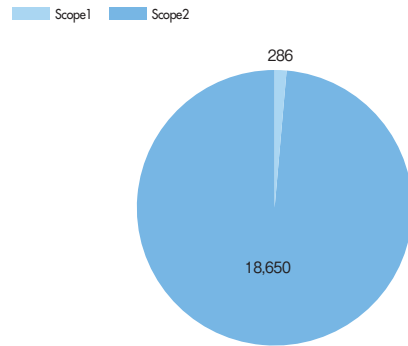
Dividends per share, Dividend payout ratio, and Total payout ratio



Dividends per share increased ¥7 from the previous fiscal year to ¥28 (¥11 interim and ¥17 yearend), and dividend payout ratio was 35.1%, while ratio of total amount of dividends to net assets was 2.6%. As we purchased treasury shares worth ¥5.0 billion (1,215,400 shares), total payout ratio reached 101.2%. Our dividend policy is to take capital measures flexibly, targeting a dividend payout ratio of about 30%.

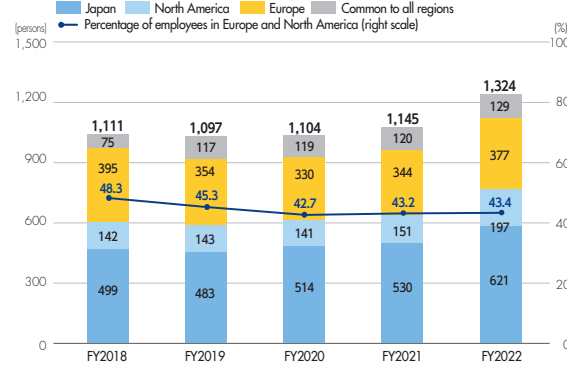
Sustainability Information Highlights

Greenhouse gas (GHG) emissions (t-CO₂)



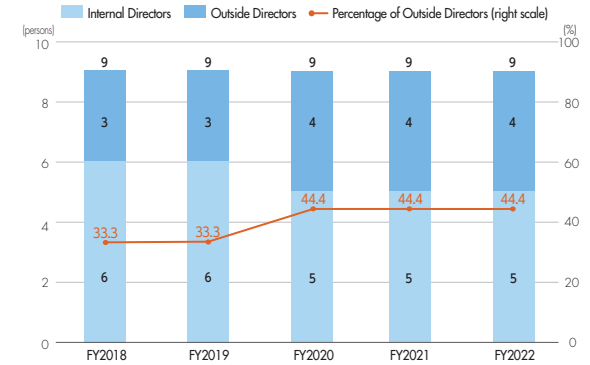
We began disclosing GHG emissions on a consolidated basis with the figure from fiscal 2022. The Scope 1 emissions totaled 286 tCO₂, while Scope 2 emissions (location-based) totaled 18,650 tCO₂, with a combined total of 18,936 tCO₂. Scope 3 emissions totaled 6,595,000 tCO₂, with emissions resulting from the use of sold products (Category 11) totaled 6,190,000 tCO₂, or 93.8% of the overall Scope 3 emissions.

Number of employees on consolidated basis by region and Percentage of those in Europe and North America



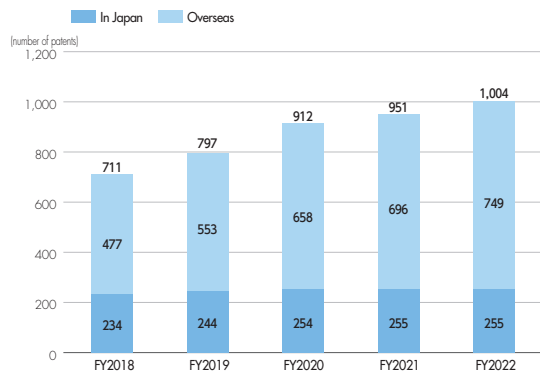
On a consolidated basis, the number of employees increased 179 from the end of the previous fiscal year to 1,324. The figure includes 621, up 91 from the previous fiscal year in Japan; 197, up 46 from the previous fiscal year in North America; 377, up 33 from the previous fiscal year in Europe; and 129, up 9 from the previous fiscal year for employee common to all regions. The combined total of the numbers in North America and Europe increased 79 to 574, representing 43% of all employees on a consolidated basis.

Historical numbers of Directors



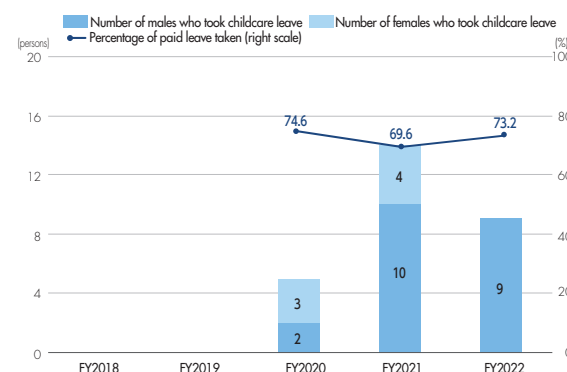
In fiscal 2022, the Company's Directors totaled nine, including four Outside Directors (all males). Outside Directors represented 44.4% of all Directors in three consecutive years to fiscal 2022. A female took office as Outside Director on July 1, 2023 and the figure rose to 50% with the addition of one in fiscal 2023.

Number of patents held



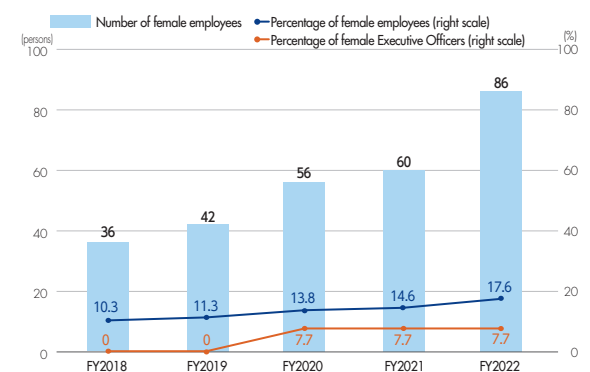
The Company held patents totaling 255 in Japan and 749 overseas totaling 1,004 at the end of fiscal 2022 on a non-consolidated basis. These numbers are up 21 in Japan and up 272 overseas from fiscal 2018.

Number of employees who took childcare leave and Percentage of paid leave taken



The number of employees who took childcare leave on a non-consolidated basis was 14 (four females and 10 males) in fiscal 2021 and nine males in fiscal 2022. Male employees who took childcare leave represented 56.3% on a non-consolidated basis. Percentage of paid leave taken on a non-consolidated basis represented 73.2%, a 3.6 percentage point improvement from the previous fiscal year. We are improving the workplace environment of the Company and encouraging employees to actively use our leave system.

Number and percentage of female employees, and Percentage of female Executive Officers



The number of female employees on a non-consolidated basis increased 26 from the end of the previous fiscal year to 86, representing 17.6% of the non-consolidated total employees of 490. The Company has one female Executive Officer, representing 7.7%, and two females in managerial positions, representing 2.4%. The Company's target is to increase the number of women in managerial positions to five by fiscal 2024.

Past Medium-term Management Plans

Medium-term Management Plan (FY2012-FY2014)

Management Policy

- Position quality and safety as the foundation of business operations
- Reflect needs of the market (customers) in product development and expand sale of new products
- Become a group that faces the needs of the market (customers) head-on and responds accordingly
- Bolster business of all major products

Business Strategy

- Continuously upgrade technologies and skills (strengthen core technologies)
- Enhance product appeal with technologies and skills (expand product variation)
- Raise competitiveness of actuators
- Implement sales expansion strategy in the Asian market

Achievements and Challenges

Net sales for industrial robots showed significant growth, and net sales for Asia rapidly increased roughly three-fold over the three-year period. Results fell slightly short of numerical targets, but net sales, operating income, and operating income to net sales ratio all reached all-time highs, with operating income to net sales ratio achieving 27.2%. Also, ROE stood at 14.7%.

Items	FY2014 Management targets	FY2014 Results
Net sales	¥26.0 billion	¥25.9 billion
Operating income	¥7.5 billion	¥7.0 billion
Operating income to net sales ratio	28.8%	27.2%
Dividend payout ratio and dividends per share	–	27.2% (¥29/share)
Capital investment (3-year total)	–	¥5.1 billion
Depreciation and amortization (3-year total)	–	¥3.5 billion
R&D expenditure (3-year total)	–	¥3.6 billion

Medium-term Management Plan (FY2015-FY2017)

Management Policy

- Aim for a business foundation supported by the three products
- Reinforce the competitiveness and business foundation of the three main products
- Develop the Asian market and create a business foundation

Business Strategy

- Find new applications for Harmonic Drive® Speed Reducers and launch new products in the market
- Actively launch new mechatronics products
- Capture overseas markets for precision planetary speed reducers
- Actively expand sales in the Asian market
- Improve organizational strength and develop human resources

Achievements and Challenges

Net sales and operating income have cleared numerical targets by a wide margin and set new records. A rapid growth in demand globally for industrial robots and the conversion of a German affiliate company into a subsidiary were contributing factors. However, the operating income to net sales ratio figure ended short of the plan. This was mainly attributable to the fact that against a three-year plan for aggregate capital investment of ¥10 billion, the actual figure reached ¥17.6 billion, and the burden of depreciation and amortization expanded from the planned ¥6 billion to ¥9.1 billion. Issues remained with regard to production capacity and stable supply.

Items	FY2017 Management targets	FY2017 Results
Net sales	¥35.0 billion	¥54.3 billion
Operating income	¥9.5 billion	¥12.5 billion
Operating income to net sales ratio	27.1%	23.2%
Dividend payout ratio and dividends per share	–	31.5% (¥26/share)
Capital investment (3-year total)	¥10.0 billion	¥17.6 billion
Depreciation and amortization (3-year total)	¥6.0 billion	¥9.1 billion
R&D expenditure (3-year total)	¥4.8 billion	¥4.9 billion

Medium-term Management Plan (FY2018-FY2020)

Management Policy

- Significantly raise global production capacity
- Raise capabilities of group companies to strengthen all-around abilities
- Increase customer satisfaction by raising QCDS capabilities
- Strengthen management foundation to support future growth
- Lay groundwork for growth in the future

Business Strategy

- Raise production capacity and achieve improvements in productivity
- Carry out greater investment in the main production bases and bolster comprehensive capabilities
- Normalize and reduce production lead times, launch new products, and strengthen the support system for technology proposal capability
- Secure and develop human resources, utilize IT, promote management that takes ESG into account

Achievements and Challenges

In steadily implementing the business strategy, cutbacks in capital investment worldwide for manufacturing industry due to factors such as US-China trade friction, in addition to declining advance orders as a result, and further, a sharp decline in capital investment with the global spread of COVID-19 became evident, resulting in considerably underperforming against numerical targets. While keeping the capital investment plan under restraint, the groundwork for growth looking toward 2030-2050 is being firmly laid.

Items	FY2020 Management targets	FY2020 Results
Net sales	¥100.0 billion	¥37.0 billion
Operating income	¥26.0 billion	¥0.8 billion
Operating income to net sales ratio	26.0%	2.3%
Dividend payout ratio and dividends per share	–	290.6% (¥20/share)
Capital investment (3-year total)	¥71.0 billion	¥33.7 billion
Depreciation and amortization (3-year total)	¥25.5 billion	¥21.6 billion
R&D expenditure (3-year total)	¥9.4 billion	¥7.1 billion

Overview of Current Medium-term Management Plan

Basic Policy

- We will aspire to provide products and services that exceed customer expectations, toward realizing our long-term vision -

In November 2020, the HDS Group celebrated its 50th anniversary. To make even greater strides, the three-year Medium-term Management Plan for FY2021 (fiscal year ending March 31, 2022) to FY2023 (fiscal year ending March 31, 2024) was formulated under the slogan "Toward the Next 50 Years: Moving to a Solid Growth Stage." High growth is anticipated medium- to long-term in the market for precision speed reducers and mechatronics, in which we participate, due to automation and labor-saving investments in the manufacturing industry of emerging countries, as well as growth expected in demand for industrial robots and co-bots in developed countries for measures to address labor shortages and productivity increase. No matter how dynamic the circumstances, we will aim to realize a sustainable society and management, continuing our challenge for new technologies and skills that capture changes in the external environment, and provide products and services that meet customer expectations. For the enhancement of corporate value in the medium- to long-term, our policy is to respond flexibly to short-term changes in the business environment, while carrying out a management strategy that takes into consideration finding a balance between offense and defense to implement the strategies stated in our long-term vision and medium-term management plan.

Current Medium-term Management Plan (FY2021-FY2023)

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

Business Strategy

(1) Achieve QCDS that meets customer expectations

- Q: Quality control (zero non-conformances and zero complaint)
- C: Improve productivity and further enhance Value Analysis / Value Engineering
- D: Commit to delivery schedule requested by customers
- S: Enhance ER activities with speediness

(2) 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 visions to life and further improve problem-solving capabilities

(3) Build a management 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
- Build a financial base to support growth and strengthen financing capabilities

(4) 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

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

- Proactively take on the challenges 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

Items	Previous Medium-term Management Plan	Current Medium-term Management Plan			
	FY2020 Results	FY2021 Results	FY2022 Results	FY2023 (Final Year of Medium-term Plan) Management Targets	
Net sales	¥37.0 billion	¥57.0 billion	¥71.5 billion	¥70.0 billion, 24% CAGR	Tie market expansion to our growth
Operating income	¥0.8 billion	¥8.7 billion	¥10.2 billion	¥15.0 billion	Improve profitability by providing high value products
Operating income to net sales ratio	2.3%	15.3%	14.3%	20+%	
ROE	0.7%	6.6%	7.5%	10+%	ROE > Cost of equity
Equity ratio	73.5%	69.0%	67.4%	70+%	Build a financial base that balances growth and stability
Dividend payout ratio	290.6% (¥20/share)	30.4% (¥21/share)	35.1% (¥28/share)	30+%	Maintain stable dividends
Capital investment	¥33.7 billion (3-year total)	¥5.6 billion	¥9.2 billion	¥15.0 billion (3-year total)	Lay out capital investments to support our growth
R&D budget	¥7.1 billion (3-year total)	¥3.0 billion	¥3.2 billion	¥9.0 billion (3-year total)	Create new technologies and skills