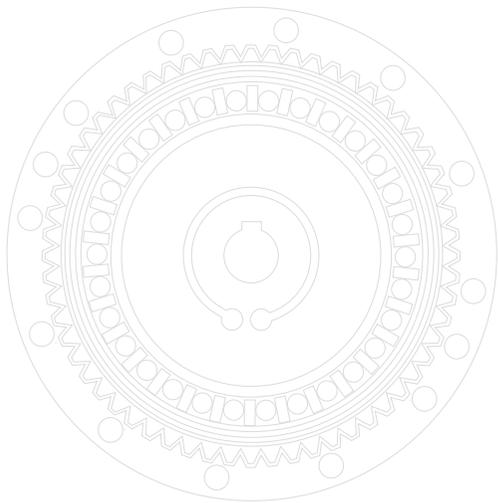


HDS REPORT 2023

Integrated Report



Introduction

The management philosophy of Harmonic Drive Systems consists of four pillars: "Respect for the Individual," "A Meaningful Company," "Coexistence and Co-prosperity," and "Contribution to Society." Atsuo Tokoro, the first president, played a key role in establishing them. "Respect for the Individual" is placed in the first place. In "Coexistence and Co-prosperity," employees are listed at the top of stakeholders. As a premise of "A Meaningful Company," it doesn't have any meaning if our employees cannot work happily. To fulfill the philosophy of "Contribution to Society," our employees' jobs must be protected. Thus, our management philosophy put employees at the core and this is the foundation of all our activities.

In the past, I had to cut staff due to deteriorating business. I thought about the departing employees and cried. I will never forget that moment. I believe the most important thing for the management is that each employee can perform at their full potential. I tell them that they need to pursue their individual happiness. As the description of "Respect for the Individual" shows, we aspire to be a company where employees come first. I worked in Germany for a long time and learned that recognizing individuality and understanding differences are keys to good management. We share our management philosophy with the heads of our group companies outside Japan. At the same time, we encourage them to establish unique identities of their own by recognizing their individualities under our global common product, HarmonicDrive®. To realize it, we need to have a solid foundation and be deeply rooted in it.

Looking back, we went through a hard time during the 1970s when we were going through repeated trial and error to promote HarmonicDrive®, the main product of our group. At the time, we thought of HarmonicDrive® merely as a speed reducer. However, we didn't realize the product's strengths. As a result, we could only sell it for limited uses. In such circumstances, one day, an engineer in a German printing machine manufacturer came to us to find whether HarmonicDrive® could be used for precise positioning. With this as a trigger, product usage started to expand. The HDS Group has a long history of advancing our business model of customizing HarmonicDrive®, our core product, by listening and responding seriously to requests from such customers. It has been firmly rooted in our corporate culture for more than 50 years since our foundation.



Chairperson of the Board of Directors
Mitsumasa Ito

A handwritten signature in black ink, consisting of stylized, flowing characters that represent the name Mitsumasa Ito.

Contents / Editorial Policy / Information Disclosure



Our website

Access our website for detailed information including financial information, such as Financial Results, Presentation of Business Results, as well as sustainability information.

[Investor Relations | Harmonic Drive Systems](#)

[Sustainability | Harmonic Drive Systems](#)

[Harmonic Drive Systems 50th anniversary](#)

Editorial Policy

This publication, HDS Report 2023, is the first integrated report issued by the Harmonic Drive Systems Group (HDS Group). It deepens the understanding of wide-ranging stakeholders, including shareholders and investors, by explaining not only the medium- to long-term economic value generated by the HDS Group, but also other factors of the Group, including the management philosophy, long-term vision, and business models, the capital and strengths forming the source of the Group's competitive edge, and the sustainability promotion system, in order to improve the Group's social and environmental value. In compiling this report, we referred to IFRS Foundation's International Integrated Reporting Framework, the Ministry of Economy, Trade and Industry's "Guidance for Collaborative Value Creation," and other relevant guidelines.

Scope of reporting

Entities reported: Harmonic Drive Systems and its Group companies included in the scope of consolidation and those accounted for by the equity method.

Period reported: this report covers mainly fiscal 2022 (from April 1, 2022, to March 31, 2023). Notes, etc., are inserted where any other period is mentioned.

Terms used to refer to the Company and its Group: In this report, "HDSI" or the "Company" refers to Harmonic Drive Systems alone, while "HDS Group" or the "Group" is used to refer to the Company and its Group companies.

Notes on forward-looking statements

Forecasts and outlook regarding future financial results indicated in this integrated report are what the Company judged as reasonable based on currently available information. Note that such forecasts contain risk and future uncertainty, and actual achievements and financial results may differ from them.

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Values and Aspirations

Unchanging goals that we want to achieve through corporate activities

Management Philosophy

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, and creates an environment where employees can maximize their abilities through work, and where abilities and performance are rewarded.

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.

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.

Contribution to Society

HDSI broadly contributes to society and industry through our corporate activities as a good corporate citizen.

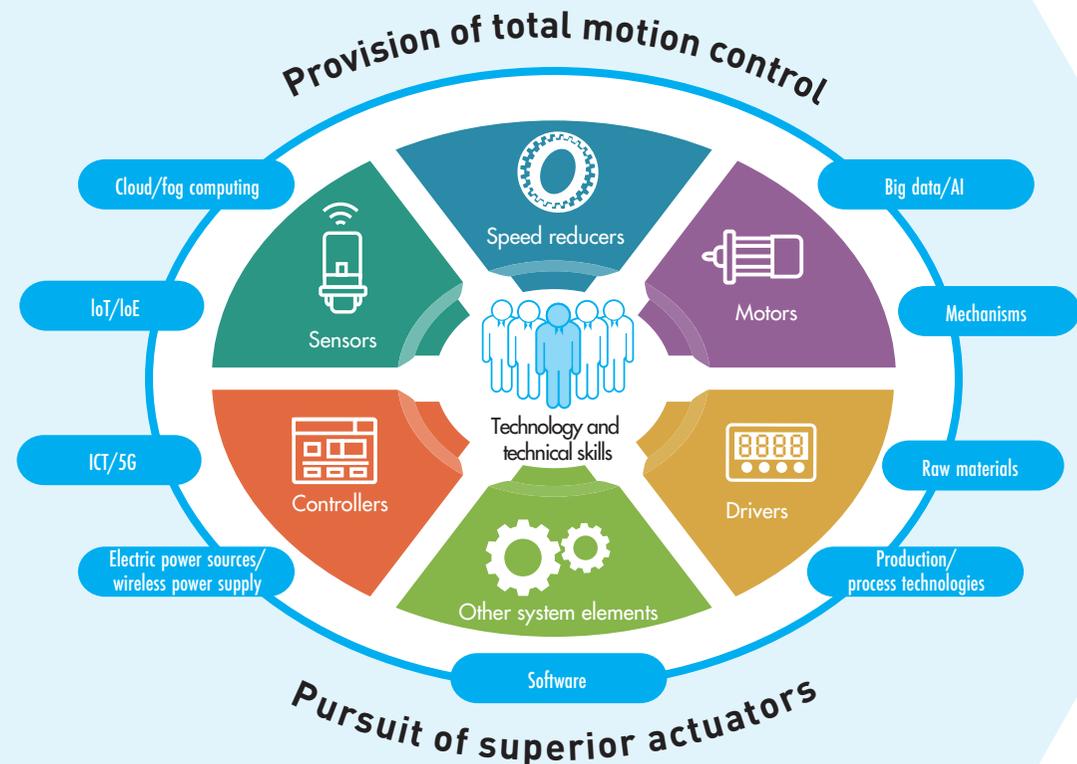
The products and services we provide directly and indirectly contribute to the betterment of society. We aspire to be a company that helps improve the environment and the quality of the communities where we are located.

The world of Motion Control Transformed by a Single Invention

The innovative idea and the unique principle of HarmonicDrive® are the brainchild of a brilliant American inventor, C. W. Musser. Making use of the deflection of metal, Musser's invention defied the conventional wisdom and instantly became the object of worldwide interest at the time as a revolutionary method of conveying motive power. Two companies stepped forward to take a chance at commercializing this concept. One was USM (United Shoe Machinery Corporation), an American company, and Hasegawa Gear Works, Ltd., the forerunner of Harmonic Drive Systems Inc. Subsequently, HarmonicDrive® was successfully commercialized for the first time in Japan. Currently, the technology fulfills the needs of various domains that require positioning accuracy. The management philosophy of Harmonic Drive Systems demonstrate our values and reflect various aspirations behind the realization of Total Motion Control.



Musser's wave-motion gearing mechanism was originally called "Strain-wave gearing" and was patented under that name. Subsequently in Japan, Harmonic Drive Systems Inc. succeeded in commercializing the technology. The technology today is generally referred to as a "wave-motion gearing mechanism," while the term HarmonicDrive® is a registered trademark that applies exclusively to the products manufactured by Harmonic Drive Systems Inc. This trademark is registered not only in Japan, but also Taiwan and South Korea.

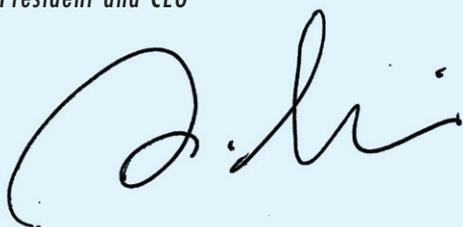


Message from the CEO

For the advancement of the Total Motion Control business, we need to break away from our monoculture and develop outside-the-box thinking.

To create new standards that define the next 50 years, we will continue to drive our effort to transform employees' mindset so that they can take on new challenges without hesitation.

President and CEO



President and CEO Akira Nagai



The connection between management philosophy, strength of our business model and our corporate culture

The management philosophy of Harmonic Drive Systems consists of four pillars: "Respect for the Individual," "A Meaningful Company," "Coexistence and Co-prosperity," and "Contribution to Society." Atsuo Tokoro, the first president, played a key role in establishing them. We don't really know what kind of aspirations our top management had when they developed these philosophies. However, today's growing awareness of SDGs (Sustainable Development Goals) shows these philosophies were truly outstanding and forward-looking.

HarmonicDrive®, a brand of strain wave gearing products, symbolizes guaranteed performance and quality

"Respect for the Individual," the most important management philosophy of all, means that HDSI aspires to be a company where the rights of every individual employee are respected and where individuals can pursue a meaningful, culturally rich, and purposeful life. We have a common payroll system for white-collar and blue-collar workers, and the concept is also applied to other internal systems and our business model. We set the retirement age at 60 as early as in the 1970s. It was raised to 65 in 2015 and 70 in 2019. Thus, employees' individuality is our top priority. At the same time, we expect them to fulfill their responsibilities as individuals and it's very important for them to understand their own roles and responsibilities.

Today, many companies aspire to be "A Meaningful Company." HarmonicDrive®, the product of the HDS Group, is capable of generating a high level of force with small motive power. It's also energy efficient and friendly to the global environment. Moreover, no industrial robots can function without it. We produce only these important components, and our corporate culture has been built around that. That means we are accustomed to ignoring other things. To put it in a

negative context, we are trapped in a monocultural environment. The HDS Group doesn't make general-purpose products. What we are good at is the customization of our original products to the individual needs of our customers. As a result of focusing on this business model, we became indispensable in society, or "A Meaningful Company."

We collaborate with our suppliers for casting and forging that are required to make our products because we are not capable of doing them internally. We know that these suppliers and intermediate processing companies are also proud of the fact that their products are used in industrial robots worldwide. Their work with this shared identity also leads to our pursuit of "Coexistence and Co-prosperity" and "Contribution to Society." I believe the HarmonicDrive® brand represents the guaranteed performance and quality of our products and the HDS Group's value and role. It is also a source our message emanates from.

We will continue to improve our business model to accomplish our mission

To achieve our mission, "To contribute to technological innovation in society through motion control technology," we need to keep improving our business model based on the management philosophy. In addition to high-precision speed reducers such as HarmonicDrive® and HarmonicPlanetary® which are our core products, we will continue to offer high-value-added products with clear advantages over competing products, including actuators made of motors, sensors, and other parts, as well as the drivers, controllers, and other system elements for drawing out their top performance.

Business environment outlook, opportunities and risks

In the HDS Group's investors' guide, a long-term sales trend of our products is presented along with those of machine tools, industrial robots, and semiconductor manufacturing equipment, the external factors that have led our sales growth. When you look at the graph, it appears as though we

have achieved growth. However, it's an afterthought, in a sense, because we don't manufacture machines and tools ourselves. Internally, I emphasize the position of the company to the employees; we are not creating innovation, but we do contribute to the people who create innovation.

Opportunities and risks in the industrial robot market where medium- to long-term growth is expected

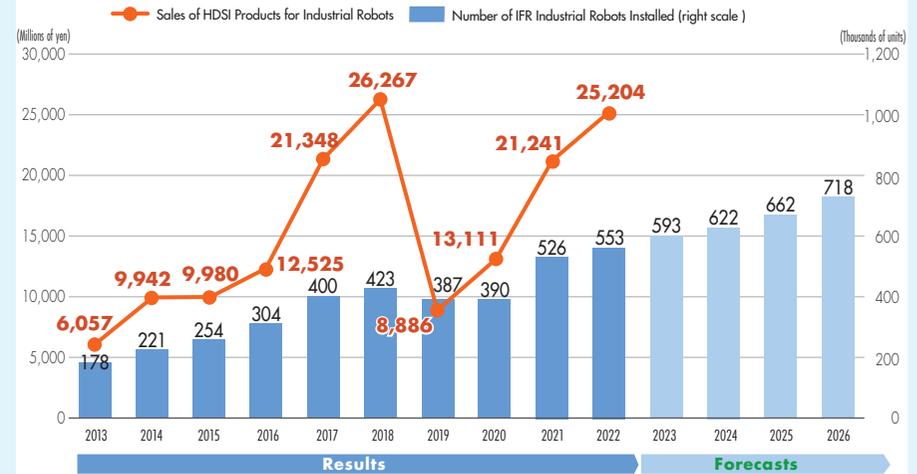
We can't just be passive, though. We need to foresee what kind of business domain will drive our growth in the future. HarmonicDrive® is small, light, and highly precise and yet can generate high levels of force. Because of this advantage, we see space industry and medical equipment as the new promising markets. In space, product durability is essential because the vacuum environment is unfavorable to lubrication. Thanks to the performance record of our products, we can expect to see the wider use and increased adoption of HarmonicDrive®. With respect to medical equipment, our products have already been adopted for surgical robots by a North American medical equipment company. This market is increasing with the recent participation of manufacturers from Japan and Europe. Our employees will keep focusing on fulfilling customers' needs every day while the management team is concentrating on making business forecasts to decide the company's future directions.

About half of our sales come from products used for industrial robots. According to the latest forecast from the IFR (The International Federation of Robotics), the number of industrial robots installed worldwide is expected to grow 7% annually on average from 2023 to 2026. China and small robots will continue to lead the growth, and demand for our HarmonicDrive® products is expected to outgrow the market average.

Within the robot market, we see humanoid robots (robots resembling the human body in shape) as a new domain. It seems almost certain that the demand for industrial robots will continue to increase with the ongoing shrinkage of global labor markets. The problem is how the speed and dexterous movements of humans can be exactly reproduced by robots. However, thanks to the evolution of AI-led autonomous driving technology, the solution is coming into sight. To make the movements of humanoid robots closer to humans, functionality of the body and the brain is the key. In terms of reproduction of human body movements, it is possible with today's robotic technologies. Seven-axis robots can reproduce the movements of human arms. However, to perform the dexterous movements of human hands, 1.5 ultra-small speed reducers are required per hand (five fingers). We have already provided our HarmonicDrive® products to be used for prototypes of humanoid robots. We see huge growth potential in this domain.

With regards to the Chinese market, how to compete with local robot manufacturers that are steadily gaining strength is an issue. Currently, among the top ten industrial robot manufacturers in China in terms of market share, six or seven are Japanese or European. Local manufacturers don't seem to have broken their dominance yet. However, we can't deny the possibility it will become like a machine tool market (there are only three or four Japanese manufacturers in the top ten companies) in the near future. To deliver our HarmonicDrive® products to leading Chinese robot manufacturers, preservation of high added value as well as reduction of the cost is required.

Sales of HDSI Products for Industrial Robots and Number of IFR Industrial Robots Installed



Source: Created by HDSI based on IFR World Robotics 2023

Our experience gained from many failures supports the performance, quality standard, and future of our customers

The HDS Group has been doing business centered around HarmonicDrive® for more than 50 years. Our products have wider applications and our mass-production system is better than those of our competitors. We don't believe apparatuses or machines equipped with HarmonicDrive® can outperform the inherent capacity of HarmonicDrive®. Although we've been doing business in this field for a long time and enjoying a commanding market share, we are always aware of the potential danger posed by competitors that are capable of gathering strength in a short period of time.

As the basic patent of HarmonicDrive® has already expired, our competitors can use the technology to guarantee the basic performance of their products. Moreover, by making additional efforts such as aggressive pricing, they may get a chance to steal business from us. The difference between us and the competitors is that HarmonicDrive® is the result of our learning from failures over the past 50 years. And this experience is reflected in our efforts to make better products such as making the product more compact and improving the design, materials, and production. That's why we are confident that the performance and quality of our products is guaranteed for many years to come. It is supported by our customers' words we hear from time to time that the lifespan of HarmonicDrive® is longer than that of their equipment.

Break away from the monoculture and challenge change

The HDS Group is focusing on the business of manufacturing HarmonicDrive® products and customizing them for each customer. We have no intention to change this business model. With HarmonicDrive® at the core, we will develop compatible motors and drivers to drive the diversification of our product lineup for the provision of Total Motion Control. This is the mission given to the top management.

We have gained knowledge of electronic technology as well as mechanical technology to deal with new customer needs

It would be ideal if we can keep growing just by manufacturing HarmonicDrive®. However, the business environment surrounding us has been changing rapidly in the past few years. Until recently, most orders could be handled with mechanical technology and we could simply concentrate on making defect-free speed reducers for our customers. Today, we are required to use electronic technology in addition to mechanical technology to meet the needs of customers who are using speed reducers consistently for their services and facilities. We don't dismiss the possibility of M&A as a way to deal with the new technology but we will stick to our core domain and stay away from new technologies we don't understand very well.

Transformation of mindset – taking on new challenges through outside-the-box thinking – is required to break away from the monoculture

We recognize the importance of sticking to our core domain, but at the same time, the prevalence of certain monocultural practices is a problem for the Group. I think, if we can take care of only HarmonicDrive® properly, it may be enough for us to survive. The problem is the lack of strong will in the company to change the monoculture. The reality is, it is difficult to expect an immediate transformation because our workers are so accustomed to making HarmonicDrive® products faithfully to the specified sizes and selling them.

Our customers will drive our changes. When we were listed on the stock market in March 1998, we adopted the corporate slogan, "Seeking harmony with the future." Our society and our customers have been evolving by designing new innovations for the future; we, too, have been evolving toward the future along with them. Just as Darwin said, "It is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the



one that is able best to adapt and adjust to the changing environment in which it finds itself." The reason why we could have survived for 50 years with our monoculture is that we have been responding seriously to the changing business environment and customers' needs. While we are sticking to our peculiar monoculture, our development and product domains are expanding, with an increasing number of engineers who are well versed in both electric and electronic technologies. This is something we can be proud of.

To break away from what we might call a Harmonic syndrome, or excessive reliance on HarmonicDrive®, we are searching for new technologies that can potentially replace our existing technology in the future through partnership with SRI, a research institute in the U.S. Abacus® speed reducer, a theoretically high-efficiency technology, is one of the breakthrough technologies that may be incorporated to complement our product lineup.

Results and challenges of the Medium-term Management Plan, toward the next 50 years

The current medium-term management plan covers a period from April 1, 2021 to March 31, 2024. On April 1, 2024, a new medium-term management plan will be in force. A review of the current medium-term management plan reveals that the biggest achievement in these three years was the expansion of production capacity, although we may have to face difficulties in the final year, including a disappointing operating margin. From 2017 to 2018, monthly production capacity of the company (non-consolidated) was only around 50,000 to 60,000 units. Ultimately, it was increased to 100,000 units per month, but we put many of our customers to much inconvenience due to delays in delivery. Based on lessons learned, we incorporated forward-looking measures into the previous medium-term management plan; we decided to construct the new Ariake Plant to increase our monthly production capacity to 200,000 units, including the output from the Hotaka Plant.

Management policy on the production system; more speed is required to tackle the next issues

Management policy on our production system has also changed. Until recently, we focused on profit and stable profitability. As a result, when order volume decreased and temporary workers' workload was reduced, we tried to cut costs by not extending their contracts. However, this does not allow us to respond to an increase in order volume because temporary workers cannot be hired in such a case. So, we have changed the way we see things and set a different policy. Since we train temporary workers as well as employees to make them valuable resources for us, we will think twice before letting them go in a downturn. Due to this policy change, the decline in our profitability looks relatively large. However, we are determined to continue the policy because it is vital to the survival of the company. In parallel with keeping the necessary number of workers in the production area, we are aggressively driving automation and labor-saving efforts.

The next issue to address in the new medium-term management plan that will be put into force on April 1, 2024 is how to operate the enhanced production system in the Hotaka Plant and the Ariake Plant in full capacity. To achieve this, we need to receive more orders. For this purpose, we will expand our business domain to supply our products other than industrial robots, strengthen the vertical integration of each product group, and introduce a full lineup of mechatronics products, that is Total Motion Control.

Add mindset transformation of speed and change to customer-oriented quality standards

As a manufacturer, we aim to improve on Quality (Q), Costs (C), Delivery (D), Service (S), and additionally, Speed (S). The business of the HDSI Group is neither BtoC nor BtoB. We call it BtoE. That is, our target customers who ultimately decide the specification for product customization are engineers (E) in the customers' organizations. For our product development, understanding what kind of product they need and what kind of movement they want to reproduce is most important. As a result, more than 99% of our products are customized products. On the other hand, we knew we had a problem with the speed required to respond to the requests from the customers' engineers in a timely fashion.

To address this, we introduced an emergency response (ER) approach as practiced in medical services. That is, if we receive a request from a customer, the relevant department needs to suspend any ongoing work and hold a team meeting to discuss the matter, even if it's only 15 minutes. It's similar to an emergency room where doctors make a prompt diagnosis when a patient is brought in. I believe our employees' awareness of speed will increase, if gradually, through this kind of effort.

As a clear effect of the ER approach, the company's direction has always matched the customer-oriented approach. The definition of our quality standards is not simply to satisfy the requirement for product sizes and functions in full, but also to satisfy all our customers' expectations. Timing of delivery is one of them. Responding to the customer's request if a customer asks us to deliver products by tomorrow also leads to satisfying customer expectations.

Whether we can break away from our monoculture and how we transform ourselves will lead to "create new standards that define the next 50 years (2021 should be regarded as the ground zero, rather than the 51st anniversary) through outside-the-box thinking," described as one of the basic policies of the medium-term management plan, the key phrase of which is "Toward the Next 50 Years: Moving to a Solid Growth Stage."

Sustainability activities and stakeholder engagement efforts

We established the Sustainable Committee in April 2023, but my personal view is that the degree of our employees' commitment to sustainability is still low. In fact, we introduced a management program compliant with ISO 14001 in 1998. Based on this, we have set departmental goals for not only business issues, regular operations, and challenges, but also compliance issues and human resource development, and created a system where specific measures to achieve the goals, by whom, by when, etc., are determined. Thus, an internal system is almost ready but it is also important to have external reviews of effectiveness. I think it offers a good opportunity to strengthen our sustainability efforts.

Governance: Discussion in the Board of Directors on whether effective measures are chosen to carry out the management plan is also important

Related to sustainability, "Establishment of a management foundation that adapts to the times" is one of the material issues. In this respect, governance is particularly important, because it is not only about the supervision function of the Board of Directors but also about discussing whether effective measures are chosen to carry out the management plan. For our way of thinking and execution process, outside directors' objectivity and the skills supported by their expertise play an important role in providing awareness-raising advice to us. They also attend monthly Executive Officer meetings and give appropriate advice on operational matters.

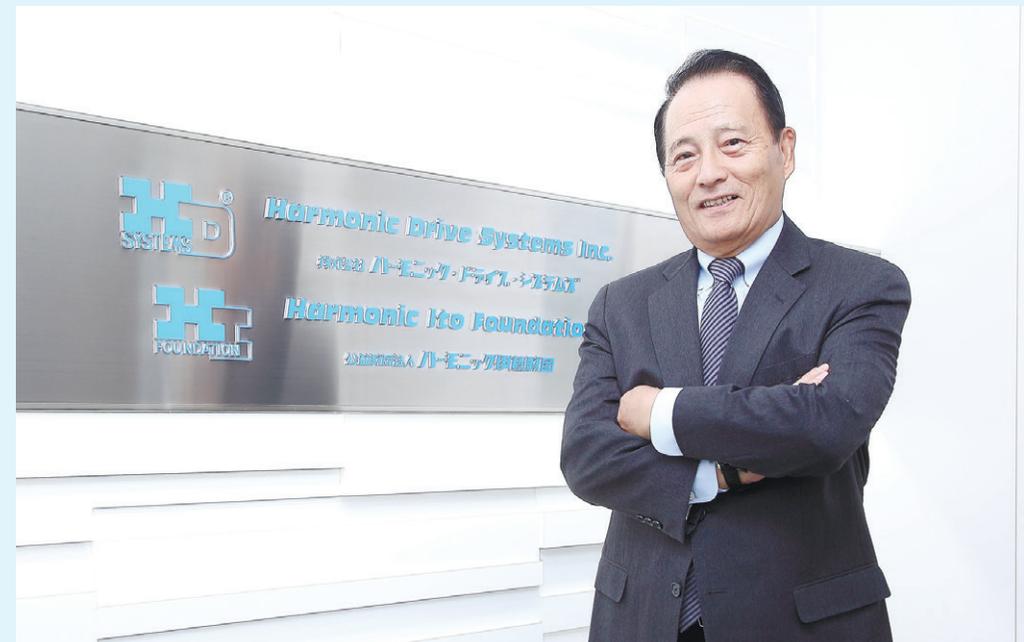
Responsibility of top management for engagement with stakeholders

Engagement with our stakeholders is important for the enhancement of corporate value on a medium- to long-term basis. In this regard, my responsibility is to accurately explain the current status and future outlook of the HDS Group for our stakeholders' understanding. Therefore, my communication capability is very important.

Within our stakeholders, we regularly engage with the customers through daily operations because most of our products need to be customized for them. With the employees, it is relatively

easy to engage because we share the common objective of making good products. However, I want to change, as my initiative, their culture of "the company rules and nothing more." With respect to our suppliers, a group has been formed by 38 Tier 1 companies, called the HDS Kyoryokukai (HDS Cooperative Association) and we keep in close contact with them through workshops and get-together events to share management issues. A proper understanding of the HDS Group by our shareholders and investors is essential. At the same time, we always strive to be aware of external views of us. We don't have a corporate culture that we deal with the market simply for the sake of the share price, but we stay vigilant so that our market value doesn't go below their original investment. With regards to the recruitment candidates who may become our stakeholders in the future, our employees provide an accurate pictures of the HDS Group, including our business and products, to technical colleges and high schools as visiting lectures.

In conclusion, we will continue to take on various new challenges for the advancement of the Total Motion Control business and manage our business to meet the expectation of our stakeholders.



Materiality to Achieve Aspirations

Based on our management philosophy, we aim to bring a sustainable society into reality and grow our business by achieving our mission of "To contribute to technological innovation in society through motion control technology."

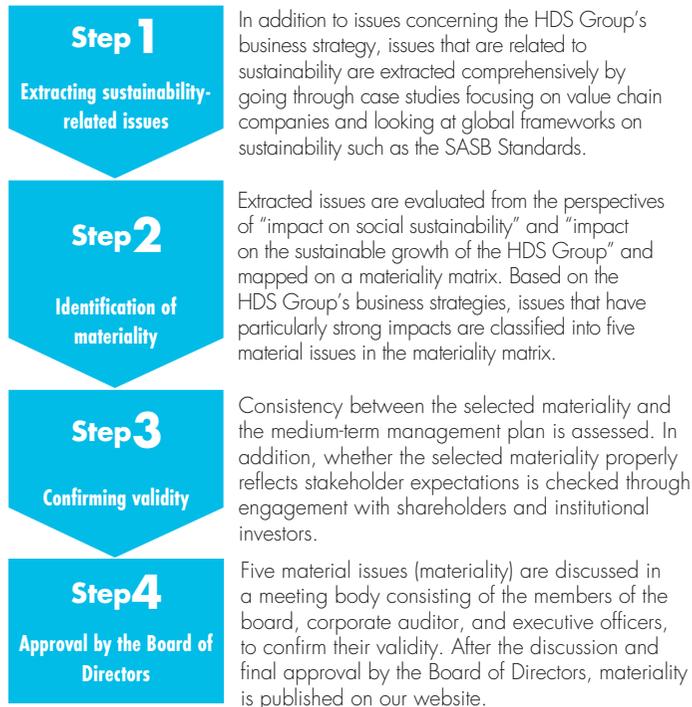
In modern society where things are changing rapidly and all kinds of social issues have been brought to the fore, it is becoming increasingly more critical to build a sustainable management foundation that can flexibly respond to short-, medium-, and long-term opportunities and risks in the future and to contribute to the solution of social issues. To achieve this, we need to identify our priorities to be addressed for the sustainable growth of the HDS Group. As part of this effort, we have identified material issues (materiality) for our business. It is important to incorporate them into

our business strategy and work on it with a medium- to long-term view.

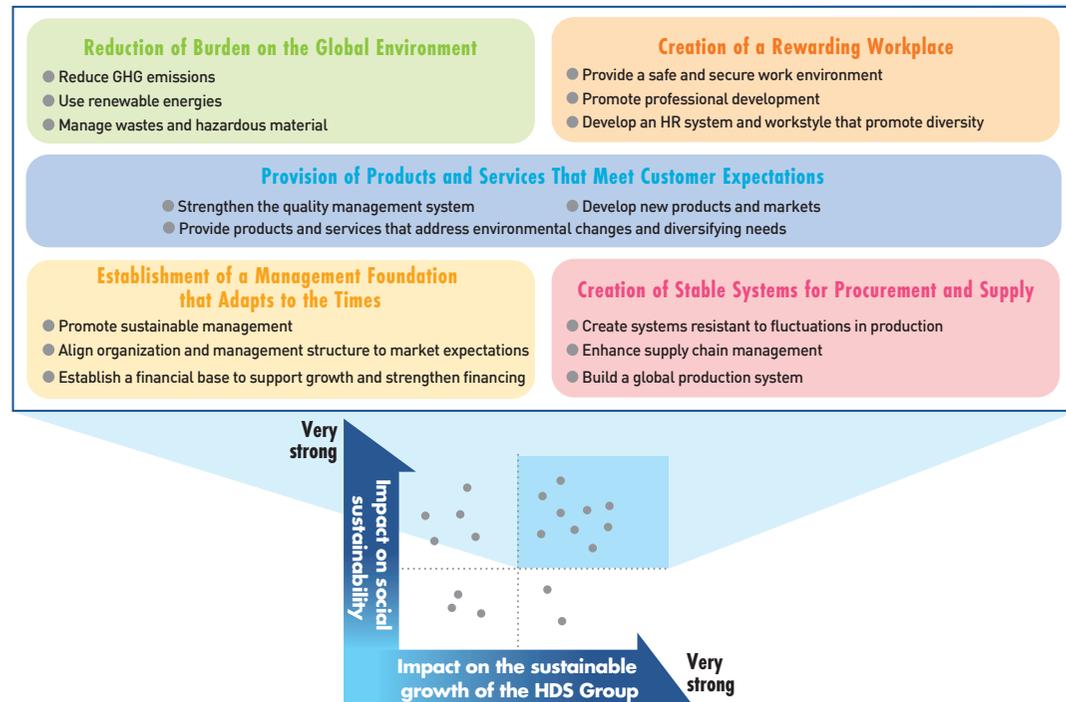
In identifying materiality, we focused on ensuring consistency with SDGs as well as management philosophy and business strategies. For evaluation, we look at it from the perspective of social sustainability and sustainable growth of the HDS Group.

Furthermore, in preparation for the formulation of the new medium-term management plan that will be in force from FY2024, we are reviewing current materiality, developing specific measures to deal with materiality, and setting KPIs (key performance indicators) through repeated discussions in the Sustainable Committee that was established in April 2023.

Process of extraction and identification of materiality



Materiality Matrix



Among the five material issues, "Reduction of burden on the global environment" has a big impact on social sustainability. Similarly, "Creation of a rewarding workplace," "Provision of products and services that meet customer expectations," "Creation of stable systems for procurement and supply," and "Establishment of a management base that adapts to the times" have a strong impact on the sustainable growth of the HDS Group.

For "Reduction of burden on the global environment," the HDS Group will make efforts to work together with the purchasers of our products to reduce GHG emissions (through the use of renewable energies and other ways). We will also address the issue by controlling water usage, reducing wastes, and developing recyclable products. HarmonicDrive® is an environmentally friendly product. Thanks to its strong point of "small and light," devices equipped with it can be miniaturized. As a result, energy efficiency is improved in their usage and the environmental burden they create throughout their product life cycle from extraction of resource to disposal can be reduced. We will

continue to improve its performance and quality. "Creation of a rewarding workplace" is strongly related to "Respect for the individual," the most important of our management philosophy. We will strengthen our human capital by providing a safe and secure work environment, encouraging capacity development, and developing an HR system and workstyle that promote diversity. With respect to "Provision of products and services that meet customer expectations" and "Creation of stable systems for procurement and supply," we will strive to further improve our Total Motion Control business to meet diversified customer needs for performance, quality, and other aspects of our products. Concerning the enhancement of our supply chain, we need to build a strong system, including improvement in the accuracy of our forecasts to deal with the large fluctuation of demand of the HDS Group's business. In respect of "Establishment of a management base that adapts to the times," we need to strengthen the sustainability of our management system in addition to financial support to address the material issues.

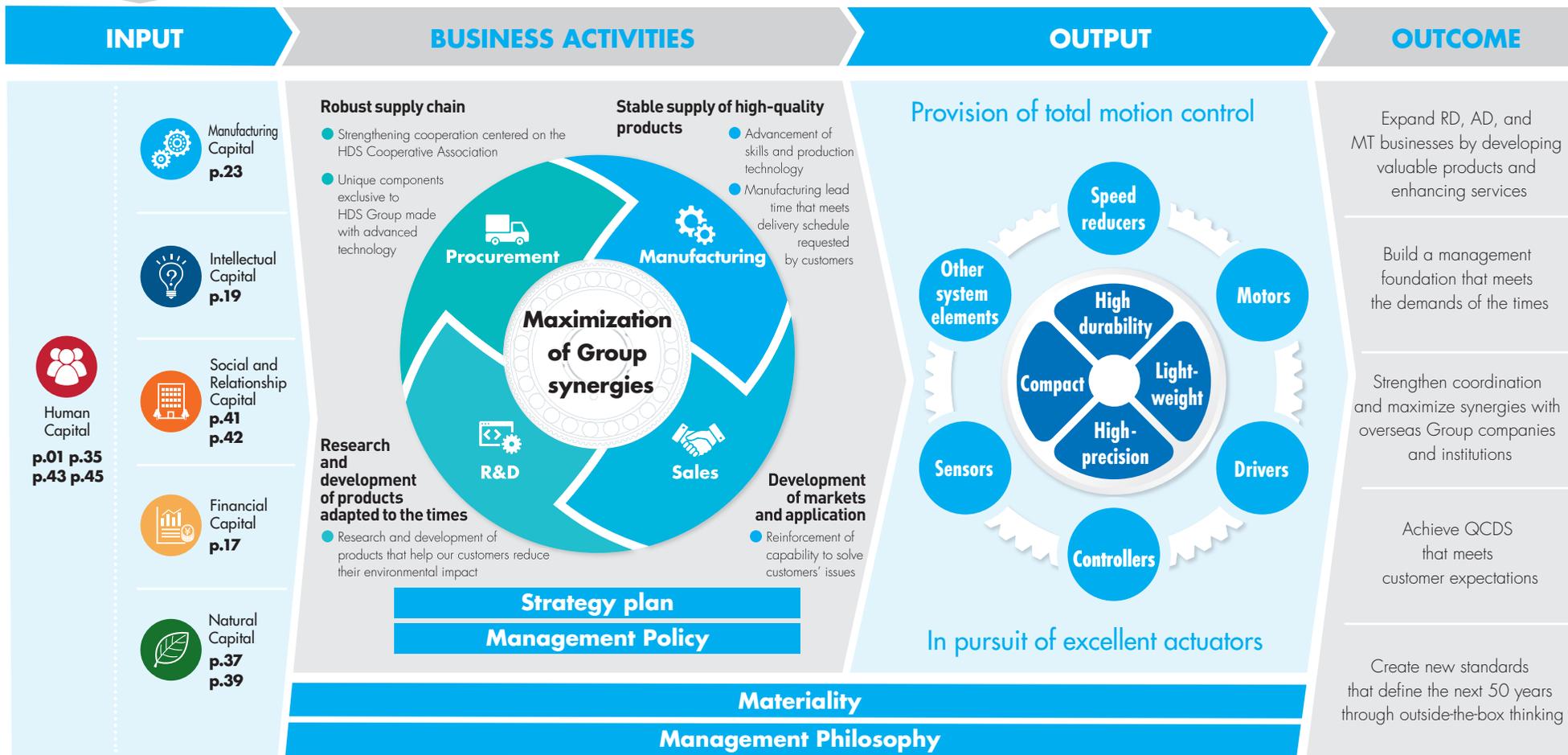
Materiality of the HDS Group

Materiality	Key Measures	Relevant SDGs	Refer to:
 Creation of a Rewarding Workplace	<ul style="list-style-type: none"> ● Provide a safe and secure work environment ● Promote professional development ● Develop an HR system and workstyle that promote diversity 	    	p.43, p.45
 Provision of Products and Services That Meet Customer Expectations	<ul style="list-style-type: none"> ● Strengthen the quality management system ● Provide products and services that address environmental changes and diversifying needs ● Develop new products and markets 	  	p.15, p.19, p.21 p.23, p.25, p.26 p.41
 Creation of Stable Systems for Procurement and Supply	<ul style="list-style-type: none"> ● Create systems resistant to fluctuations in production ● Enhance supply chain management ● Build a global production system 	 	p.42, p.66
 Reduction of Burden on the Global Environment	<ul style="list-style-type: none"> ● Reduce GHG emissions ● Use renewable energies ● Manage wastes and hazardous material 	  	p.37, p.39
 Establishment of a Management Foundation that Adapts to the Times	<ul style="list-style-type: none"> ● Promote sustainable management ● Align organization and management structure to market expectations ● Establish a financial base to support growth and strengthen financing 		p.17, p.49, p.52

Value Creation Process

Mission To contribute to technological innovation in society through motion control technology

External environment/
Risks and opportunities



From Input to Outcome in Our Value Creation Process

In order for the HDS Group to achieve sustainable growth, it is important for us to accurately identify the surrounding social issues and business environment, recognize risks and opportunities, and produce outcomes that lead to increased corporate value. These outcomes will be created from our inputs that are our strengths and through our unique business activities based on our management philosophy. This process will enable us to achieve our mission.

External environment/Risks and opportunities

- Reduction of global environmental burden and realization of a decarbonized, recycling-oriented society
- Decrease in workforce and skilled workers
- Increased interest in sustainability
- Establishment of supply chain

Global environmental issues such as decarbonization and resource recycling are global social issues, and our Group's suppliers are increasingly paying attention to these issues, including requests for information disclosure. Delays in addressing these issues may lead to a decrease in business opportunities for the HDS Group. On the other hand, the decline in the working population and the number of skilled workers will lead to an increase in demand from robot manufacturers and others, who are our customers, and the Group will also need to strengthen its production system and establish a sustainable supply chain.

INPUT

Management foundation to refine strong business activities and expected effects from inputs



[Human Capital]

Number of employees (consolidated): 1,324 (including 574 overseas)

→ Appropriate evaluation of each individual and work environment based on the management philosophy, "Respect for the Individual"



[Manufacturing Capital]

Ratio of property, plant and equipment to total assets: 31.7%, capital investment: ¥9.2 billion

→ 6 domestic and 3 overseas production bases, and a build-to-order system that creates competitiveness



[Intellectual Capital]

R&D expenditure: ¥3.2 billion, 137 R&D personnel

→ Quality standards that meet customer expectations and realization of total motion control



[Social and Relationship Capital]

HDS Cooperative Association: 38 companies, 28 global sites in 12 countries

→ Supply chain structure that supports competitiveness and an enhanced global presence



[Financial Capital]

Total assets: ¥154.3 billion, net assets: ¥103.9 billion

→ High financial stability, growth investments, including use of interest-bearing liabilities



[Natural Capital]

Energy input: 47,595 MWh, water usage (withdrawals): 31 ML (megaliter)

→ Promotion of environmentally friendly business activities

OUTCOME

Management capital and time-conscious initiatives that lead to outcomes and value creation

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

To expand business by strengthening competitiveness, it is essential to develop products that cannot be imitated in precision speed reducers. In mechatronics, it is necessary to develop products that enable customers to bring their vision to life and that competitors would want to imitate. We believe that these two approaches will lead to the expansion of financial, manufacturing, intellectual, and social and relationship capital.

Build a management foundation that meets the demands of the times

To promote sustainable management, it is necessary to develop human resources capable of leading business expansion, establish personnel systems and work styles that enhance diversity, and shift away from a homogeneous corporate culture. In addition, we believe that execution of IT enhancement strategy, establishment of a financial base to support growth, and strengthening fundraising capabilities are vital as they will lead to the enhancement of financial, human, and intellectual capital.

Strengthen coordination and maximize synergies with overseas Group companies and institutions

To pursue value by regional optimization and global optimization, we need to utilize management resources at each site, promote proactive coordination with overseas research institutions, and establish a global production system. We believe that fulfilling this will lead to the growth of manufacturing, human, intellectual, and social and relationship capital.

Achieve QCDS that meets customer expectations

QCDS stands for quality (Q), cost (C), delivery schedule (D) and service (S). We aim to achieve QCDS through zero non-conformances and zero complaints (Q), improved productivity (C), commitment to delivery schedule requested by customers (D), and accelerating the speed of activities (S). We believe that this approach will result in enhanced manufacturing, human, and social and relationship capital.

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

In this approach, which will be conducted over a long period of time, our business activities will directly result in outcomes. Proactive challenges leveraging the strengths of the Group's products—compactness, light-weight, and high precision—are important to boost the value of the Group. This requires fostering a culture that is sensitive to changes in society and accepts variant perspectives. We believe that this approach will lead to the expansion of human, intellectual, and natural capital.

Mission

To contribute to technological innovation in society through motion control technology



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.

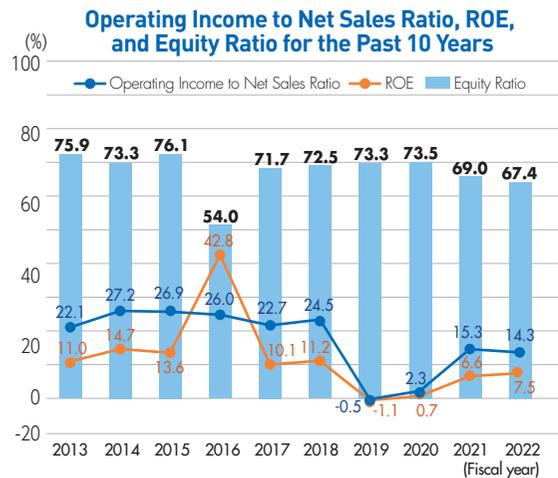
Basic Policy for the HDS Group's Financial and Capital Strategies

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

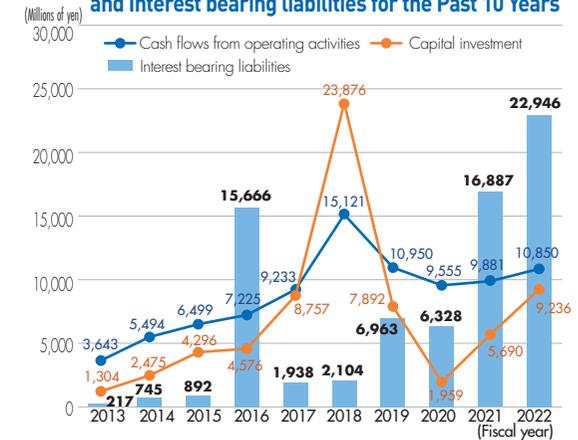
the previous medium-term management plan (FY2018-FY2020) was 35.6 billion yen, so the forecast is to earn the same level of cash. The other source of funds is debt financing. Interest bearing liabilities increased by 13.0 to 14.0 billion yen from the end of fiscal 2020 to the end of fiscal 2023. This 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.

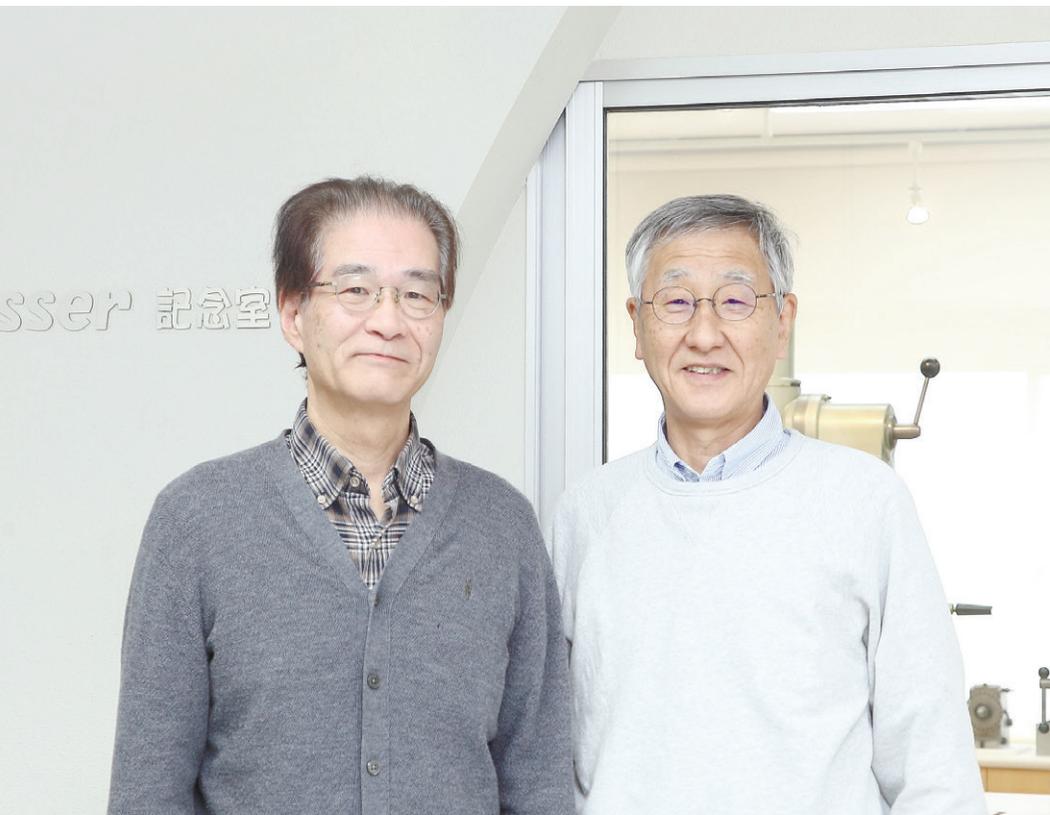
As a result, the forecast of cash allocation for the current medium-term management plan is approximately 44% for capital investment, around 30% for subsidiary shares, and approximately 26% for shareholder returns. There are three key points. First, we were able to make investments in preparation for 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.

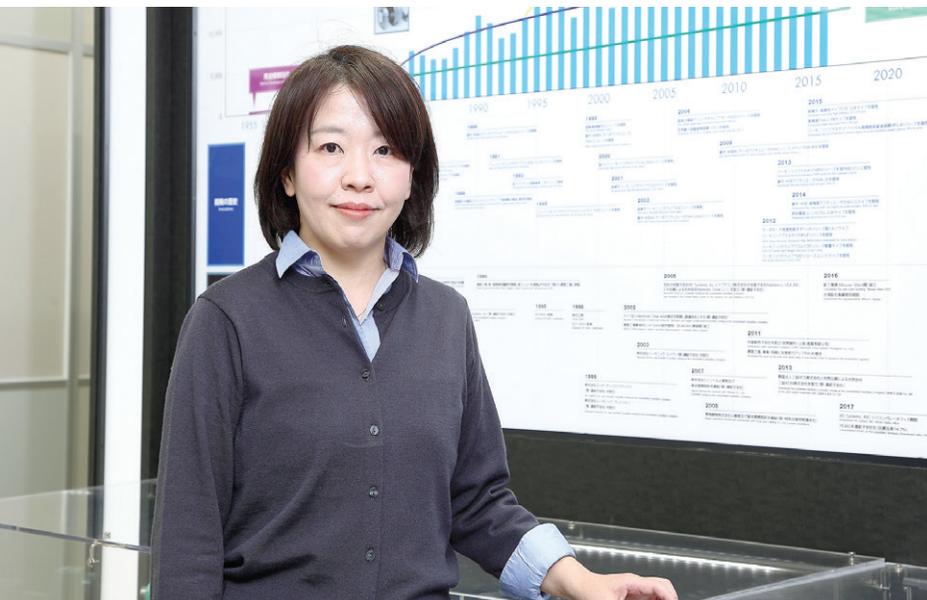
Where do your strengths, risks and business opportunities exist?

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.

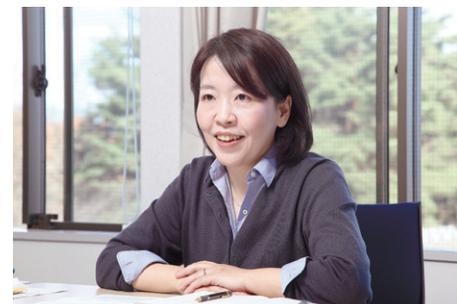
I joined HDSI in July 2014, one month before the establishment of HD Laboratory, as a mid-career engineer. I was appointed as the Chief of HD Laboratory in 2021 and then as the Executive Officer in June 2023. I studied mechanical engineering and began my career as a CAE

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?

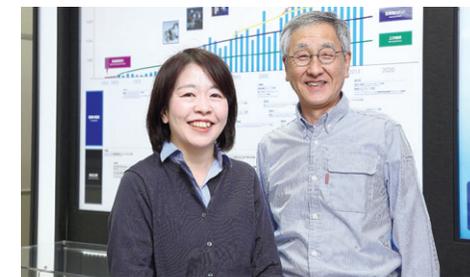
The Abacus[®] speed reducer, which we began developing together with an American research institution, SRI, in November 2015, is a product that has achieved a high level of energy efficiency at 96.6% through our effort to make rolling elements spin like abacus beads instead of a gear. This is an extremely 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

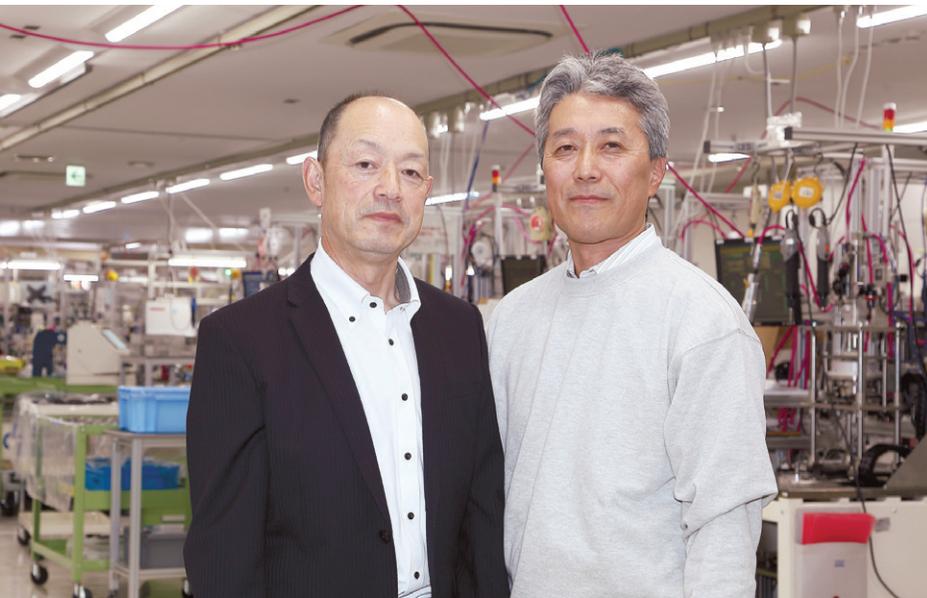
our ideas into products when we can see a clear outlook. We want to incorporate one or two new development outcomes into our products every two to three years with respect to the aforementioned fundamental technologies.

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)	HDLC (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

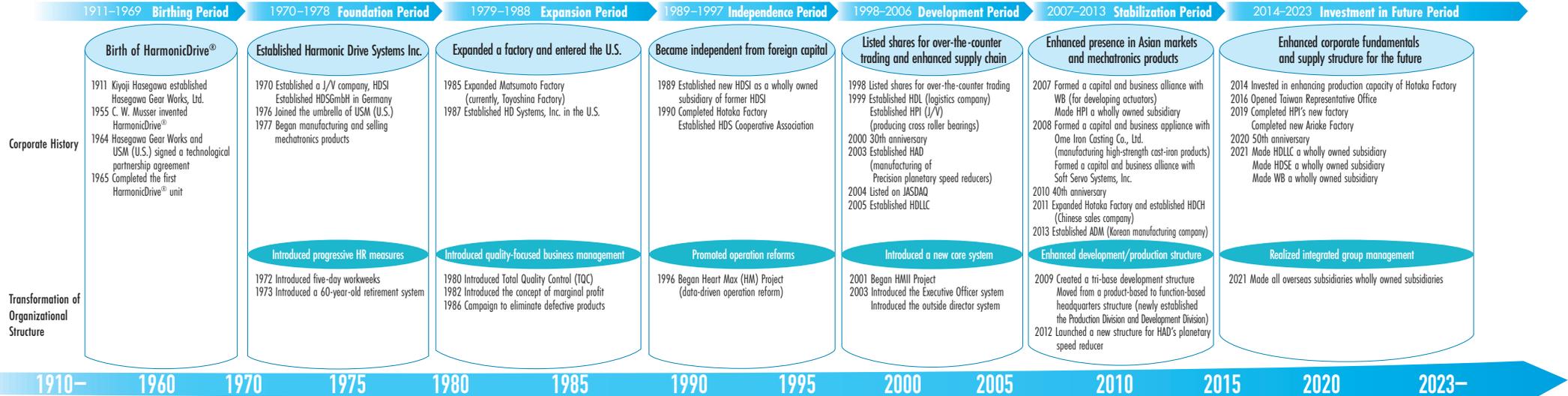
—Transformation of Organizational Structure, Development of Diverse Products—

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-UIW

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

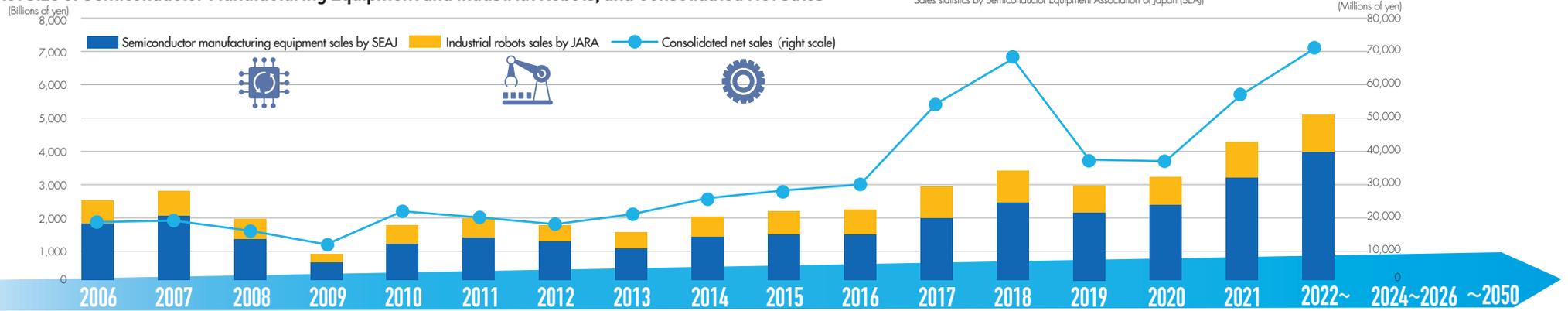
2017 • Launched HPN series

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

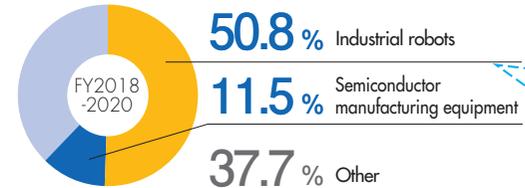
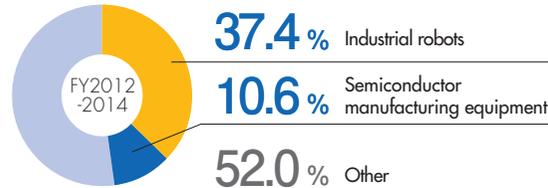
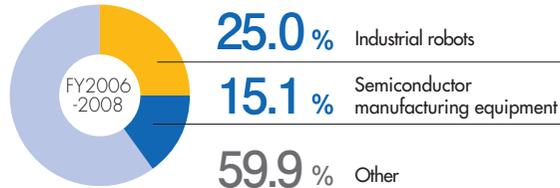
Strengthening Competitiveness
of Three Main Products

Expanding
Capacity

Towards the Next
50 Years

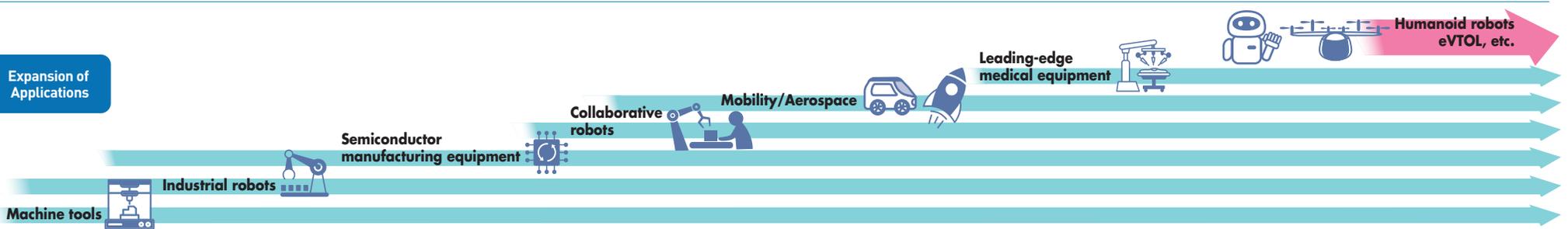
Achieving
Long-term
Vision

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

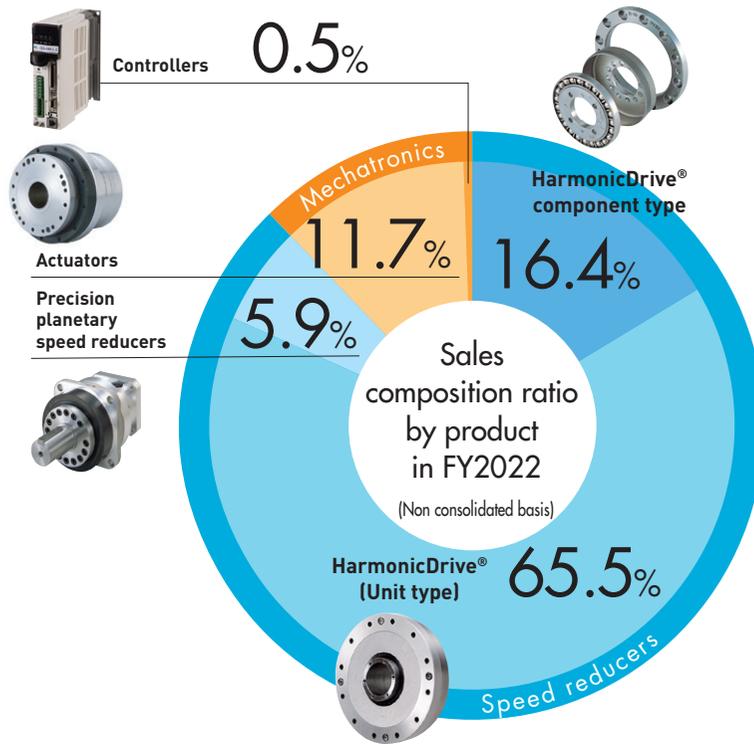


History of Growth Strategies

	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%

Net sales of Reducers expanded 2.5X in the last 7 years
Net sales of mechatronics products expanded 2.4X in the same period

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)

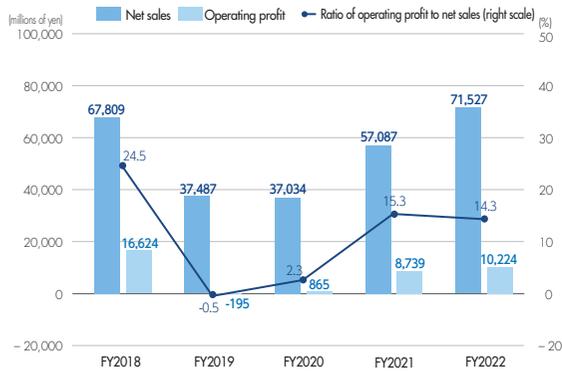
In order to take advantage of the excellent angle transmission precision and positioning precision of HarmonicDrive®, we offer total motion control, including AC, DC, and step actuators capable of ultra-high resolution and high-precision rotary motion, and linear actuators capable of ultra-fine volume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

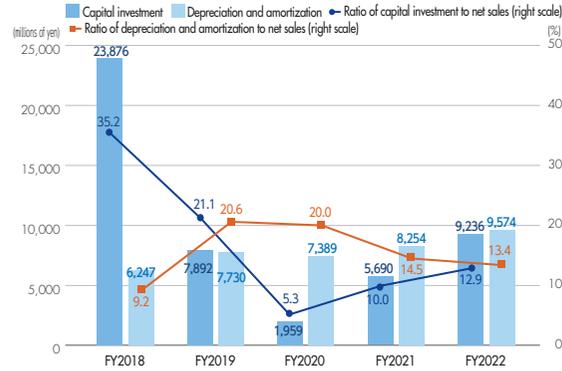
Financial Highlights

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



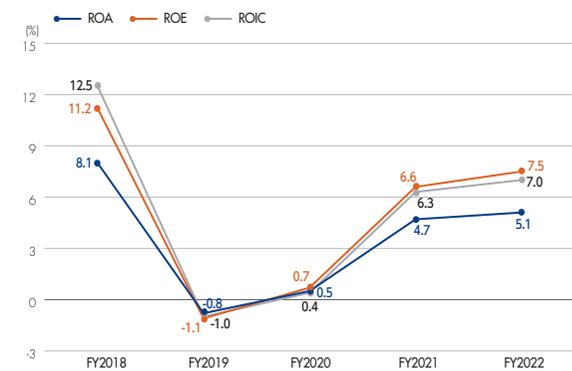
The net sales for fiscal 2022 reached a record high of ¥71.5 billion, increase of 25% from the previous fiscal year, as an abundant order backlog steadily was steadily cleared. Operating profit increased 17% compared to the previous fiscal year to just ¥10.2 billion, underperforming the all-time high 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



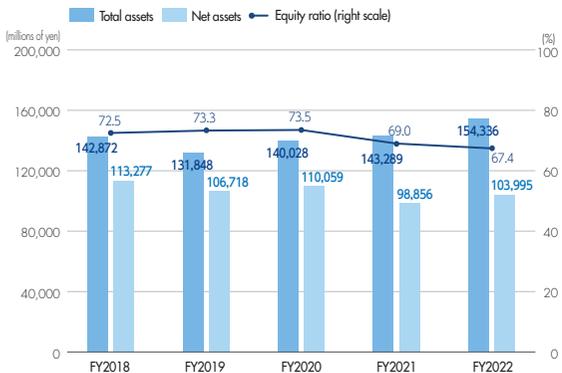
The capital investment increased 12.9% compared with the previous fiscal year to ¥9.2 billion (12.9% to net sales). The regional breakdown is ¥8.1 billion for Japan, ¥0.7 billion for North America, and ¥0.4 billion for Europe. Domestic production capacity increased 40% from the level in fiscal 2021. 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



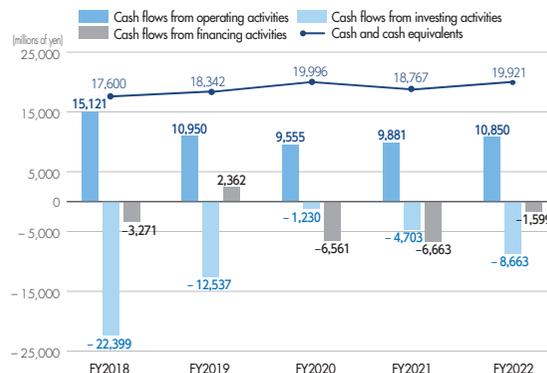
Return on equity (ROE) improved by 0.9 percentage point to 7.5%, return on assets (ROA) 0.4 percentage point to 5.1%, and return on invested capital (ROIC) 0.7 percentage point to 7.0%, all from the previous fiscal year. In relation to ROE, profit attributable to owners of parent increased 14% from the 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



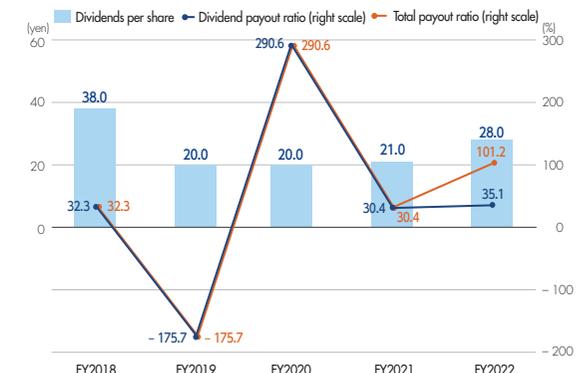
At the end of fiscal 2022, total assets increased ¥11.0 billion from the previous fiscal year to ¥154.3 billion and net assets increased ¥5.0 billion from the previous fiscal year to ¥103.9 billion yen. Equity ratio dropped 1.6 percentage points from the end of the previous fiscal year to 67.4%, which 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.

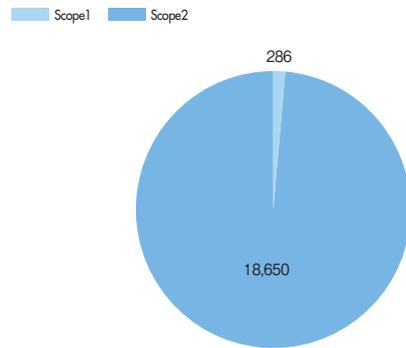
Dividends per share, Dividend payout ratio, and Total payout ratio



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%.

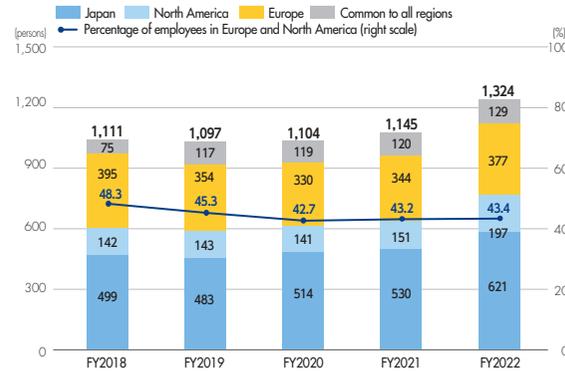
Sustainability Information Highlights

Greenhouse gas (GHG) emissions (t-CO₂)



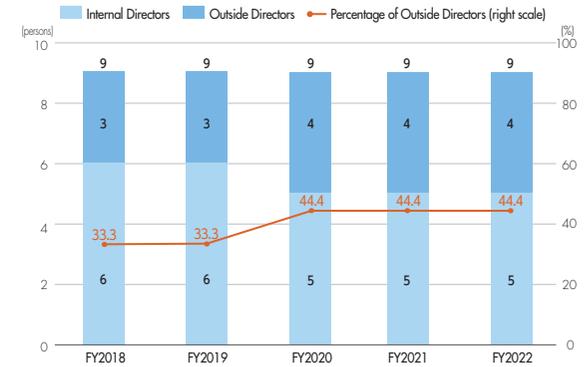
We began disclosing GHG emissions on a consolidated basis with the figure from fiscal 2022. The Scope 1 emissions totaled 286 t-CO₂, while Scope 2 emissions (location-based) totaled 18,650 t-CO₂, with a combined total of 18,936 t-CO₂. Scope 3 emissions totaled 6,595,000 t-CO₂, with emissions resulting from the use of sold products (Category 11) totaled 6,190,000 t-CO₂, 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



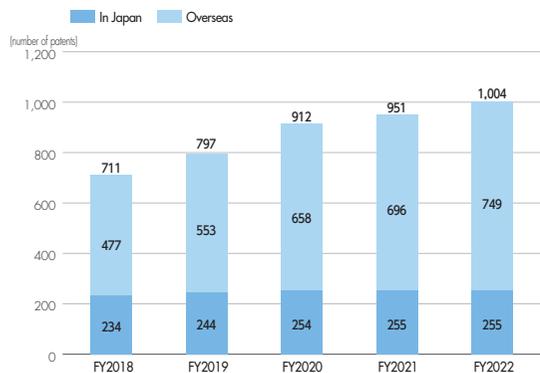
On a consolidated basis, the number of employees increased 179 from the end of the previous fiscal year to 1,324. The figure includes 621, up 91 from the previous fiscal year in Japan; 197, up 46 from the previous fiscal year in North America; 377, up 33 from the previous fiscal year in Europe; and 129, 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



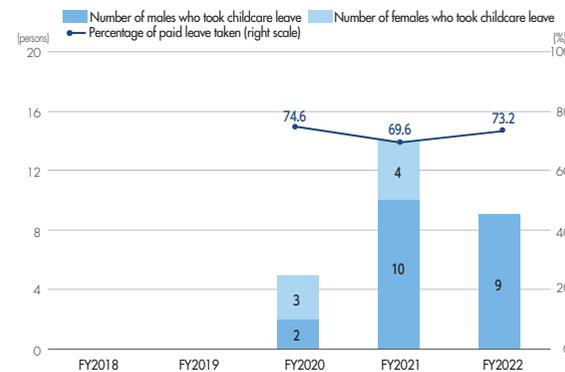
In fiscal 2022, the Company's Directors totaled nine, including four Outside Directors (all males). Outside Directors represented 44.4% of all Directors in three consecutive years to fiscal 2022. A female took office as Outside Director on July 1, 2023 and the figure rose to 50% with the addition of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

Number of patents held



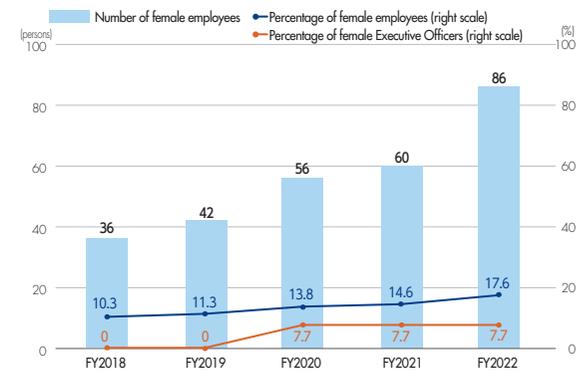
The Company held patents totaling 255 in Japan and 749 overseas totaling 1,004 at the end of fiscal 2022 on a non-consolidated basis. These numbers are up 21 in Japan and up 272 overseas from fiscal 2018.

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



Message From Person in Charge of Sustainability Promotion

Management philosophy is at the basis of formulating materiality, and key issues that need to be prioritized toward realizing the management philosophy are identified.

*Executive Officer, In Charge of Corporate Planning
and Investor Relations
(In Charge of the Sustainability Committee Secretariat)*

Makiko Ono

Our management philosophy is the basis of sustainability promotion

As stated in our basic policy of sustainability, the HDS Group's sustainability promotion is based on our management philosophy. In formulating materiality, we have assessed impact on our group business as well as on social sustainability and identified key issues that need to be addressed with priority. We are focused on ensuring consistency of materiality with our management philosophy.

Our management philosophy consists of four pillars, outlined in order of importance. The first pillar is "Respect for the Individual." It is stipulated that HDSI aspires to be a company where the rights of every employee are respected, and where a cultural life and meaningful work can be pursued. HDSI will support employees' independent activities, create an environment where they can maximize their abilities, and be a company where competence and performance are rewarded. Though drafted half a century ago, the management philosophy already emphasized at the time the importance of human capital management. The other three pillars, "A Meaningful Company," "Coexistence and Co-prosperity," and "Contribution to Society," also align with the concept of sustainability management that values multiple stakeholders. Based on this management philosophy, HDSI has grown through sharing Coexistence and Co-prosperity with various stakeholders since its founding. Materiality is positioned for as to realize our management philosophy.

Basic Policy of Sustainability

As a technologies and skills-based organization in pursuit of Total Motion Control, the HDS Group aims to enhance corporate value and realize a sustainable society by contributing to technological innovation for the betterment of society. We intend to achieve these goals based on our management philosophy comprising four pillars: Respect for the Individual, A Meaningful Company, Coexistence and Co-prosperity, and Contribution to Society.

Internal sharing and spreading of the management philosophy and basic policy of sustainability

Individuals joining HDSI are given an explanation of the management philosophy at the outset. So that they can be reread at any time, the management philosophy, [charter of corporate behavior](#), and code of conduct are distributed as a booklet to all employed at HDSI. All sustainability study sessions conducted internally begin with a review of the management philosophy and an explanation of the basic policy of sustainability based on the management philosophy. We also strive to share these concepts with the suppliers who make up our supply chain. Given the growing interest among customers in recent years regarding the HDS Group's response to climate change, human rights, and human capital, study sessions are being routinely held for the sales and development divisions. Two young employees from the

Sustainability Committee Secretariat have also taken the lead since December 2020 in contributing articles as sustainability lectures in the "HD.Times," the internal newsletter issued every two months. Beginning with ESG and SDGs, they have explained climate change, biodiversity, human capital, human rights, etc., in relation to topics relevant at the time such as the Olympics or shareholders' meeting. They also communicate concepts surrounding the HDS Group's sustainability and specific relevant initiatives.

A company is as good as its people - the material issue with the greatest impact on future financial information is "Create a rewarding work environment."

As mentioned at the beginning, HDSI places particular emphasis on people, with "creating a rewarding work environment" positioned first among the five current material issues. The management strategy for realizing the management philosophy and mission is, after all, being carried out by people, or the employees. Creating an appealing work environment where employees can feel rewarded is a priority issue for management. Upskilling and career development are a given, to which initiatives linked with management strategy are needed as human resource strategy going beyond personnel affairs, such as reskilling, optimal positioning, evaluation system, etc. Also, an environment in which employees of the manufacturing division, as successors to skills in the manufacturing industry, can play an active role for a long time is essential.

With half a century having passed since our founding, opportunities to learn directly from our predecessors who embody the history of the HDS Group are diminishing. As such, human resources are needed who possess business development capability without losing their ability to keep thinking, in order to be able to meet the diverse needs of our customers. Growth and development of the HDS Group have been a result of employees boldly taking on challenges, without fear of failure. As we create an environment where human resources who inherit such spirit and are able to forge a new era can play an active role, we believe it is essential for sustainable enhancement of the HDS Group's corporate value to focus on initiatives that maximize the value of human capital.

Discussions surrounding management strategy taking materiality into account

The latest status of initiatives for sustainability including materiality is reported at executive officer meetings, where directors and corporate auditors are also in attendance. Robust discussions are held in which questions and feedback from various perspectives arise. Being in charge of Corporate Planning and Investor Relations, I am in receipt of questions, advice, and suggestions from domestic and international institutional investors regarding the HDS Group's initiatives on governance, materiality, climate change, human capital, and supply chain management including human rights, and I try to ensure that our discussions take account of the perspectives mentioned above, and also the perspective of the capital market.

The monitoring of sustainability management by the Board of Directors and activity of the Sustainability Committee

The HDS Group's sustainability management is being carried out by the Sustainability Committee, consisting of five executive directors and chaired by the President and CEO. Corporate Planning and Investor Relations, as the secretariat of the committee, makes recommendations to the committee for addressing key issues, risks, and opportunities related to sustainability. The committee holds discussions accordingly,

mainly focused on integration and consistency of sustainability with management strategy. Matters discussed are routinely reported at Board of Directors' meetings, and there is a system in place for matters such as basic policies to be proposed to the Board of Directors as an agenda item and deliberated on before being approved. Most recently, the current materiality has started to undergo review in line with formulation of the new medium-term management plan set to begin on April 1, 2024. I believe that the opinions received from audit & supervisory members who attend the Board of Directors' meetings, and various matters pointed out by outside directors and outside audit & supervisory board members with expertise on sustainability management, along with discussions held, fully satisfy the monitoring function of the Board of Directors and Audit & Supervisory Board.



Initiatives on climate change

Climate change initiatives have become an urgent issue for companies, and the HDS Group is aiming for a long-term goal of achieving Net Zero by 2050. We are already making efforts to reduce GHG emissions, and are currently in the process of formulating new measures, including a transition plan, and KPIs. As many customers are declaring net-zero emissions and carbon neutrality, response to climate change by the HDS Group, as a provider of parts, is becoming an extremely important matter from a sales strategy perspective as well. In addition to reducing GHG emissions, we will focus on efforts that are even more effective going forward, such as reinforcing product development so that less environmental burden shouldered by customers can be achieved.

In closing

Having experience engaging with institutional investors through being in charge of Corporate Planning and Investor Relations, I came to be concurrently responsible for sustainability promotion at HDSI from 2021. Serving concurrently all started with a customer request for response to an external evaluation body. While addressing the request, I came to realize that sustainability is in itself a long-term management strategy. Currently, demands on companies to address biodiversity and a growing obligation for disclosure both in Japan and overseas, such as by dealing with customers regarding these issues, are increasing and accelerating globally. In viewing sustainability as a long-term management strategy, putting laws and regulations aside, I believe the right path is integrating it with the HDS Group's medium- to long-term management strategy, rather than merely responding passively or in response to extraneous pressures. At present, we are undertaking a review of materiality and formulating specific measures and KPIs. We will promote sustainability from the perspective of enhancing corporate value in a sustainable manner, after determining consistency between social demand regarding sustainability and the HDS Group's management strategy.

Efforts on Global Environment



Basic Policy on Global Environmental Initiatives

Deeply aware of our corporate social responsibility regarding the global environment, the HDS Group is committed to implementing global environmental protection policies. Through our business objective of pursuing total motion control, we provide society with superior technologies and services that will slow the pace of the destruction of nature.

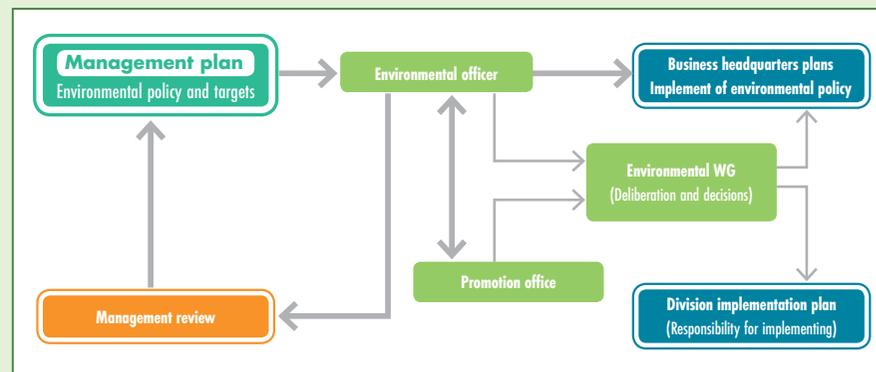
Environmental Policy

1. By assessing the environmental impact of all production processes from development to recovery and disposal, and by working to develop technologies that will act as a brake on environmental destruction, we create and provide products in harmony with the environment.
2. By observing laws and ordinances related to the environment, setting our own voluntary management targets, and reviewing our environmental action plans, we continue to raise our level of environmental management.
3. We aim to reduce the environmental impact of our products and activities through more efficient use of resources and energy and by reducing and recycling wastes and discharges.
4. We make sure our environmental policy is known to employees as well as to our affiliates and partners.
5. We take part in the environmental protection efforts of local communities and endeavor to coexist with them.

Environmental Management Organization

Based on our environmental policy, every fiscal year we set areas of focus and targets to be achieved by each division and develop a management program, thereby encouraging each organization to carry out its own environmental actions and making operation of the environmental management system more efficient.

Environmental Management Organization chart



ISO 14001 Certification Status

We have established ISO 14001 certification for environmental management systems, in order to fulfill our corporate social responsibility regarding the environment. Recognizing protection of the global environment to be an important part of our business management, we are working to achieve further improvements.

ISO 14001 Certification Status (as of March 31, 2023)

Name	Location	
Harmonic Drive Systems Inc.	Head Office	Shinagawa-ku, Tokyo, Japan
	Hotaka Factory	Azumino-shi, Nagano, Japan
	Ariake Factory	Azumino-shi, Nagano, Japan
	Tokyo Office	Shinagawa-ku, Tokyo, Japan
	Kohshin Office	Azumino-shi, Nagano, Japan
	Chubu Office	Nagoya-shi, Aichi, Japan
	Kansai Office	Osaka-shi, Osaka, Japan
	Kyushu Office	Fukuoka-shi, Fukuoka, Japan
	Harmonic Precision Inc.	Head Office Factory
Kanbayashi Factory		Matsumoto-shi, Nagano, Japan
Harmonic AD, Inc.	Azumino-shi, Nagano, Japan	
Harmonic Winbel Inc.	Komagane-shi, Nagano, Japan	

Note: Changed the company name from Winbell Co., Ltd. to Harmonic Winbell Inc. as of April 1, 2023.

● Measures to Address Water Security

In recent years, with droughts and large-scaled flooding stemming from global climate change, a growing population, changes in consumption patterns, prospective increase in demand for freshwater in line with economic growth, etc., the impact of water security has on the HDS Group's business activities cannot be ignored. In Japan, impact on both procurement and sales of materials in particular is growing, such as with breaks in the supply chain due to typhoons, heavy rains, and flooding, decreased production capacity resulting from damage to production facilities, and effects of confusion within the value chain on delivery and sales. Water security is thus being seen as a serious environmental issue that companies need to address along with climate change.

Since FY2022, the HDS Group has been making efforts to reduce water withdrawal and wastewater amounts by setting specific targets. Water risk analysis is also being conducted at each site using water risk assessment tools AQUEDUCT, provided by the World Resources Institute, and Flood Navi from the Ministry of Land, Infrastructure, Transport and Tourism, and steps taken when there are risks.

● Reduction of Industrial Waste and Promotion of Recycling

The total amount of waste (intensity) in FY2022 was 21,699 kg, a 13.2% reduction compared to the previous year. The recycling rate improved by 0.5 points from the previous fiscal year to 99.8%, achieving the annual target of a recycling rate of 99% or higher. (Coverage: Hotaka Factory, Harmonic Drive Systems)

Total amount of waste (intensity)



Note: Recyclable materials = scrap metal and chips, discarded motor parts, electrical wire scraps, electronic parts, office machines, development prototypes, etc.
Waste = wood chips, plastic waste, magnetic powder, etc.

Break
down

99.8%
(FY2022)

0.2%
(FY2022)

Water withdrawal and water discharge

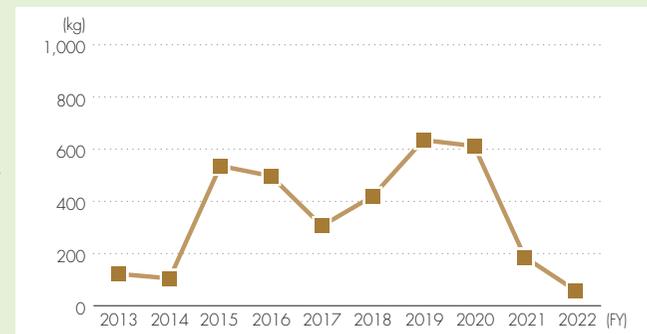
Items	Water withdrawal / wastewater location	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023	Unit	Scope covered
Total water withdrawal	Water supply	23	31	ML (megaliters)	Consolidated
	Groundwater, etc.	0	0		
	Total	23	31		
Total water discharge	Sewage	23	31	ML (megaliters)	Consolidated
	Rivers, etc.	0	0		
	Total	23	31		

Note: Scope covered in fiscal year ended March 31, 2022 is on a non-consolidated basis

Recycling



Waste



Measures to Address Climate Change

Information Disclosure Based on the TCFD Framework

The HDS Group recognizes the impact climate change has on society, and Net Zero by 2050 has been set as a long-term goal that must be addressed as a serious social issue for management.

1. Governance

The HDS Group's governance on climate change is incorporated into the governance for sustainability overall. Please refer to the message from the person in charge of sustainability promotion (pages 35 to 36).

2. Strategy

Risks and opportunities related to climate change that could potentially affect the HDS Group's business were identified, then a scenario analysis was conducted to analyze the degree of impact and timeframe for conceivable emergence of each risk and opportunity on a medium- to long-term timeline.

Based on the results of this scenario analysis, we will promote efforts for opportunity creation and risk mitigation.

3. Risk Management

HDSI has established a system to be able to identify, assess, and respond to risks and opportunities related to climate change in accordance with the "Crisis and Risk Management Regulations." Risks are categorized into company-wide risks and risks by business process, with risk assessment conducted once a year.

The Executive Office in Charge of Corporate Planning and the corporate planning division grasp, analyze, and assess company-wide risks, while each of the divisions extracts and identifies risks by business process. The Internal Control and Audit Office conducts risk assessment with a short-, medium-, and long-term timeline from the perspective of frequency and scale of damage, and formulates policies from the perspective of law and of human life. In addition, comprehensive risk assessment is conducted putting all of the above together, and the Executive Officer in Charge of Human Resources and Administration, who is in charge of risk management, prioritizes them based on assessment results, for the President and CEO to approve. Risk mitigation activity is conducted based on policies formulated from the perspectives of legal compliance and prioritizing human life, with division leaders setting management targets for each of the risks and determining the response such as avoid, accept, mitigate, and transfer, according to the risk. Progress of such activity being conducted is reviewed by the Executive Officer in Charge of Human Resources and Administration annually. Based on such review, the President and CEO decides on policy for the following fiscal year, which is deployed to the divisions.

4. Metrics and Targets

The HDS Group has set Net Zero by 2050 as a long-term goal in relation to climate change. Specific short- to medium-term targets for reducing GHG emissions are currently being set taking into consideration the HDS Group's management strategy, business expansion, etc.

GHG emissions

Scope 1 and 2 emissions

(t-CO₂)

Country/region	Fiscal year ended March 31, 2022		Fiscal year ended March 31, 2023	
	Scope 1	Scope 2	Scope 1	Scope 2
Japan	80	13,394	81	15,418
Asia	16	416	14	264
Europe	197	2,349	47	2,494
US	205	783	145	474
Total	498	16,942	286	18,650

Note: Scope 2 is location-based emissions

Scope 3 emissions

(t-CO₂)

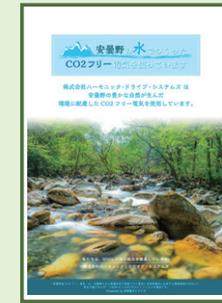
Category	Category name	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023
1	Purchased goods and services	198,899	358,792
2	Capital goods	17,054	11,237
3	Fuel- and energy-related activities not included in Scope 1 or Scope 2	899	18,329
4	Upstream transportation and distribution	3,951	8,466
5	Waste generated in operations	455	1,322
6	Business travel	104	702
7	Employee commuting	212	613
8	Upstream leased assets	0	0
9	Downstream transportation and distribution	-	3,837
10	Processing of sold products	-	0
11	Use of sold products	-	6,190,129
12	End-of-life treatment of sold products	-	1,398
13	Downstream leased assets	-	23
14	Franchises	-	0
15	Investments	-	0
16	Other (upstream)	-	0
17	Other (downstream)	-	0
	Total	221,574	6,594,846

Note 1: Range covered in Categories 1, 4, 5, 6, and 7 in fiscal year ended March 31, 2022 is on a non-consolidated basis

Note 2: Categories 9, 11, 12, and 13 are newly calculated for data in fiscal year ended March 31, 2023

Main activity and results for reducing GHG emissions in FY2022

- ① Switched power source to 100% renewable energy at HDSI Ariake Factory and German subsidiary
- ② Introduction of renewable energy at a rate of 28.2% (as of the end of FY2022)
- ③ Renewable energy utilized in FY2022 was 12,412,718 kWh, achieving an annual CO₂ reduction of 5,299.8 tons
- ④ Switched company cars at domestic group companies to EVs
- ⑤ Reduced electricity consumption with air leak inspections at production facilities, use of low pressure in compressors, operating air conditioning at energy-saving settings, and switching to energy-efficient production facilities
- ⑥ Discontinued use of aging compressors, improved operating efficiency of air conditioning by performing maintenance



Scenario analysis Referenced scenarios: IEA NZE2050 (1.5°C scenario), RCP 8.5 (4.0°C scenario) Timeline definitions: short-term 0-3 years, medium-term 3-10 years, long-term 10-30 years

Value chain	Scenario	Risk / opportunity	Relevant business activity	Risk / opportunity factor	Details	Timeframe in which it may emerge	Probability of occurrence	Magnitude of impact	
Upstream	4.0°C	Risk	Procurement/Transportation and distribution	Flooding, heavy rains, etc.	Supply chain disruptions due to more intense and frequent natural disasters (typhoons, heavy rains, etc.) cause delays and halt in procurement of raw materials	Short-term	Medium	Medium	
		Opportunity	Procurement/Transportation and distribution	Reputation	Gain greater trust from customers with transport and distribution more resilient to natural disasters by diversifying suppliers	Short-term	Low	High	
Risk		Technology / Production	Water shortage	Changes in precipitation patterns cause a decline in available water. Restricted water withdrawal, etc. cause halt in operations Increase in production costs due to surge in water prices	Medium- to long-term	Low	Medium		
Risk		Technology / Production	Flooding, heavy rains, etc.	Increase in flooding damage at coastal operation sites due to elevation in sea level	Extremely long-term	Low	Low		
Risk		Technology / Production	Flooding, heavy rains, etc.	Damage to operating sites, halt in operations, and lower production amounts occur due to more intense and frequent natural disasters	Short-term	Medium	Medium		
Risk		Technology / Production	Rising temperatures	Labor productivity falls due to rising temperatures	Medium-term	Low	Low		
Risk		Technology / Production	Rising temperatures	Costs increase to add / replace air conditioning equipment at operating sites and their running costs increase due to rising temperatures	Medium-term	Medium	High		
Downstream		Opportunity	Procurement/Transportation and distribution	Reputation	Gain greater trust from customers with transport and distribution more resilient to natural disasters by dispersing manufacturing sites	Short-term	Low	High	
Upstream		1.5°C	Risk	Procurement/Transportation and distribution	Surge in energy prices	Surge in energy prices due to introduction of renewable energy	Short-term	Low	Medium
			Risk	Procurement/Transportation and distribution	Surge in raw material prices	Surge in raw material prices for electrification and decarbonization (steel materials, aluminum, steel, rare earth elements, etc.)	Medium-term	Low	High
	Risk		Technology / Production	Development of low-carbon technology	If the competition to develop low-carbon products intensifies and the response is delayed, the competitiveness of products will be reduced	Medium-term	Low	High	
	Risk		Technology / Production	Tightening regulations	Increase in burden to respond to broadening and stricter regulations related to sustainability, and possibility of failure to comply resulting in restriction on transactions and penalties	Short-term	Medium	High	
	Risk		Technology / Production	Spread of energy-saving technology	Increase in burden of capital investment to reduce emissions and of energy-saving measures	Short-term	Medium	High	
	Risk		Technology / Production	Tightening regulations	Increase in expenditure with carbon pricing for emissions (tax)	Medium-term	High	High	
	Risk		Technology / Production	Development of low-carbon technology	Increase in costs for technology development to switch to low-carbon materials (green materials, recycled materials)	Short- to medium-term	Low	High	
	Opportunity		Technology / Production	Spread of energy-saving technology	Reduced energy costs and lower burden of carbon taxes as a result of switch to low emission facilities	Medium-term	Medium	High	
	Opportunity		Technology / Production	Spread of low-carbon technology	Increase in sales related to low-carbon products (EVs, etc.) due to promotion of low-carbon trend in society	Medium-term	High	High	
	Opportunity		Technology / Production	Development of low-carbon technology	Increase in demand for low-carbon materials	Medium-term	High	High	
	Risk		Technology / Production	Decrease in demand for existing technologies	Decline in sales of products for applications related to petroleum, natural gas, and paper due to decrease in demand for such material	Medium-term	Low	Low	
	Risk / Opportunity		Sales/ Reputation	Reputation	Reputational risk of response to climate change being deemed inadequate (society, consumers, employees)	Medium-term	Medium	High	

Provision of Products and Services That Meet Customer Expectations



A shift in the source of power for industrial machinery, from hydraulics to electrification, has triggered a rapid expansion of applications for HarmonicDrive® into new fields, such as machine tools, industrial robots, semiconductor manufacturing equipment, and surgical assistance robots. We believe such expansion for new applications is a major result of the HDS Group's rapid adaptability to the dynamic business environment and our continued provision of products and services that meet customer expectations.

Five strengths of the HDS Group that serve in meeting customer expectations

(1) Accumulated technologies and skills related to HarmonicDrive®

Prompted by our fateful encounter with HarmonicDrive®, we have been pursuing the endlessly expanding potential of speed reducers for more than 50 years, since our company was founded. Development technologies, production technologies, processing and assembly technologies and skills, and production systems that we have built up over time are irreplaceable assets of the HDS Group, and we believe they are also our greatest strength.

(2) A product lineup providing compact size, light weight, and high accuracy

The mechatronics products and speed reducers we manufacture and sell are being chosen by customers who seek advanced levels of motion control and more compact, lightweight

equipment. Among these products, the HarmonicDrive®, with its compact size, light weight, and high precision, has won a high worldwide market share as a speed reducer built into the joints of industrial robots, which are used in manufacturing processes of automobiles, digital equipment, semiconductor wafers, and flat panel displays. Moreover, in wide-ranging applications such as machine tools, measuring and test equipment, space satellites, advanced medical equipment, and in vehicles, it is providing differentiated added value that would be difficult to achieve with any other mechanism.

(3) Core technology enabling the provision of total motion control

The HDS Group has built up total motion control technologies and skills through R&D and production of mechatronics products that integrate speed reducers, motors, sensors, drivers, controllers, and other system elements. The resulting tangible and intangible technologies and skills related to core technology are essential for providing the advanced motion control our customers demand, and are the source of the competitive advantage of the HDS Group.

(4) Business operations integrating sales, manufacturing, and development

In order to reflect customer needs in our product development and manufacturing, in the HDS Group's business operations the sales, manufacturing, engineering, and development divisions work closely together. For example, these main functions are

concentrated in Azumino City, Nagano Prefecture; and a speedy and efficient workflow operates from the initial contacts with customers to technical reviews, prototyping, order-taking, manufacturing, and shipment. A strength of the HDS Group is the system in place to quickly reflect customer needs and ideas of engineers in production and to provide products that meet customer expectations.

(5) Global business expansion

The HDS Group has operation sites in Japan, Germany, the US, South Korea, China, and Taiwan. Business strategies that conform to characteristics of each region are promoted and each site mutually cooperates to provide optimal products and services to customers around the world.

Providing QCDS+S with an awareness of the HDS Group's role in the industry

We provide QCDS+S as part of our business policy to improve customer satisfaction. Q stands for quality, and we strive to achieve quality reform for zero non-conformances and "Sigma Zero." D is for delivery. We are working to maintain stable production capacity, while improving accuracy of delivery timelines by monitoring the manufacturing progress status in real time.

Customer testimonials

Naka Manufacturing Division, Hitachi High-Tech Corporation

Certificate of Appreciation (2022)

We were presented with a certificate of appreciation for working to ensure a stable supply of products amidst difficulties in procuring raw materials and parts, and helping to keep effects on production to a minimum.

ULVAC, Inc.

Certificate of Appreciation (2022)

We were presented with a certificate of appreciation for working to ensure a stable supply of products amidst difficulties in procuring semiconductor-related parts.

Semiconductor Lithography Systems, Nikon Corporation

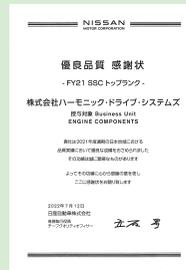
Award of Excellence - Outstanding Supplier (2023)

We were recognized for our high level of technology in addition to continued delivery of products during supply chain disruptions that began around 2020.

Nissan Motor Corporation

Certificate of Appreciation - Outstanding Quality (2021)

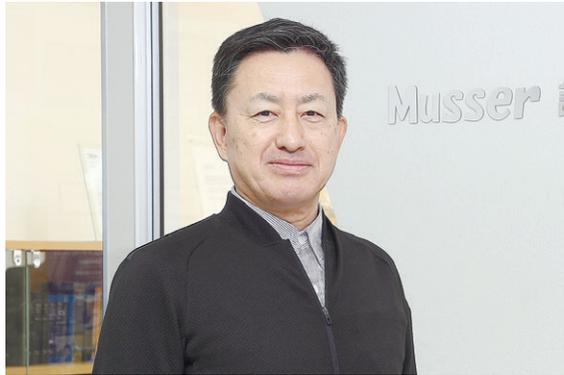
We were presented with the certificate in appreciation for reaching all quality target scores (Japan Region) for engine component products set in the Supplier Scorecard (SSC) for Japan in FY2021.



Providing QCDS+S with an awareness of the HDS Group's role in the industry

- Q** ● Improvement in product reliability ● Quality reform (Sigma Zero)
- C** ● Comprehensive price strategy
- D** ● Stable production capacity ● Strategic inventory control
- S** ● Improvement in delivery date management based on monitoring the manufacturing progress status in real time
- Initiatives that place customers first
- Recognize challenges customers face in a timely manner, and provide solutions quickly (ER response)





Managing Executive Officer
General Manager of Supply Chain

Minoru Asano

Specific initiatives toward Creation of Stable Systems for Procurement and Supply

A sustainable procurement policy was formulated in FY2022 for us to work together with our suppliers in realizing a sustainable society and enhancing corporate value. Based on this policy, we as the supply chain headquarters are working on three priority measures. The first measure is building and strengthening a system for stable supply, the second is comprehensively enhancing the capability of the supply chain overall, and the third is human resource development.

For **building and strengthening a system for stable supply**, we believe it important to maintain a close relationship with the HDS Cooperative Association which is made up of tier 1 suppliers. We are also focused on finding new suppliers, and are working to build and strengthen a system for stable supply while striving for Coexistence and Co-prosperity with suppliers. To achieve responsible procurement, we have revised the supplier assessment criteria based on the sustainable procurement policy. Suppliers are requested to agree to the sustainable procurement guidelines we provide and respond to a self-assessment survey, which allows us to confirm their implementation of the guidelines. We have also created a supply chain chart to strengthen resilience against geopolitical risks of procuring regions, and are preparing a structure allowing us to take prompt measures

Message From Officer in Charge of Supply Chains

Establishing a system for stable procurement is the important first step in seizing business opportunities. We will develop procurement activities to always be one step ahead so as not to overlook emerging risks.

Sustainable Procurement Policy

1. Fair and Equitable Transactions
2. Compliance with Laws and Social Norms
3. Respect for Human Rights and Work Environment
4. Consideration for the Global Environment
5. Coexistence and Co-prosperity with Suppliers

[HDSI website / Sustainable Procurement Policy](#)

in times of emergency.

As initiatives to **strengthen comprehensive capability of the supply chain as a whole**, we ask for the understanding of our suppliers for improvement to QCDS, which is our business policy, and request enhancement of their ability to issues of quality and delivery deadlines. We are also focused on supply chain DX, and have switched from analog methods such as paper and PDF formats to a uniform electronic system for the quotation process. This has made lead times significantly shorter for the process from quotation request to receipt and enabled detailed cost analysis, contributing largely to efficiency in operations. By becoming paperless with requests and responses for over 34,000 quotations annually, we have achieved a reduction in environmental burden as a supply chain overall.

For **human resource development**, OJT is fundamental. We believe the foundation of developing personnel is through direct visits to sites of not only tier 1 suppliers, but also tier 2 and tier 3 suppliers, to fully understand the overall picture of the production process for the parts we procure. We encourage our employees with experience to acquire knowledge regarding finance and labor through eLearning and correspondence courses to be able to fully address management issues faced by our suppliers. We believe that attempting to resolve issues through the same perspective as the management team of our suppliers will lead to practicing the HDSI management

philosophy of Coexistence and Co-prosperity.

Risks and opportunities in supply chain management

We believe the heightened geopolitical risks will become normalized, and we need to anticipate a situation in which material procurement rapidly becomes difficult due to a chain reaction of country risks. To address such risks in procurement, we have accurately understood the situation of tier 2 and tier 3 suppliers using the supply chain chart, and established a system to constantly monitor potential risks. When risk management is weak, supply may suddenly be disrupted and negatively affect production activities, resulting in major inconvenience caused to customers.

In handling overseas procurement risks, we place emphasis on coordination with our group companies in Germany, the US, and China. By strengthening our global network, we are able to identify causes of bottlenecks in procurement at an early stage, allowing us to respond quickly. Centralized purchasing may help reduce costs in normal times, but when considering geopolitical risks, it can be said to increase vulnerabilities. Therefore, strategic measures are needed such as decentralized purchasing and advance stocking of inventory.

With a decline in the workforce globally, application of the HDS Group's products is expanding from robots for automation to humanoid robots, etc. Stable procurement of materials and parts is essential in definitively capturing new business opportunities. Establishing a system for stable procurement is the important first step in seizing business opportunities, as procurement is positioned first among the processes of production. We will look ahead with a broad perspective and undertake procurement activities that are one step ahead so as not to overlook emerging risks.



Interview With Officer in Charge of Human Resources

I believe individuals willing to take on challenges who are interested in a wide range of matters, not just their specialized fields or work to which they are assigned, can play an active role.

*Executive Officer
General Manager of Human Resources and Administration*

Osamu Asakura

Please talk about the kind of personnel needed in realizing our mission of contributing to the mission of the technological innovation of society with motion control technology, and the measures to obtain such personnel.

With the commercialization of Clarence Walton Musser's invention, the HarmonicDrive®, HDSI has been meeting the needs of various fields and applications that require precision positioning. Thus far, we have paid close attention to the opinions and needs of customers, refined our technologies, and provided new value, and will continue to do so moving forward. To continue realizing HDSI's mission, we will need to ceaselessly pursue and propose ideal motion control that will expand over time, without being confined by fixed ideas. Roughly 160 engineers currently make up our team, mainly consisting of those in the R&D and production engineering divisions, which is hardly a large number for a company providing products globally. To continue working on reducing the size and weight of HarmonicDrive® while enhancing areas related to controllers, sensors, etc., I believe individuals willing to take on challenges who are interested in a wide range of matters, not just their specialized fields thus far or work to which they are assigned, can play an active role.

Type of individuals the HDS Group seeks

1. People who think for themselves and act with the ambition to take on new challenges
2. People who act with the spirit of cooperation needed in an organization
3. People who are richly individual and draw on their creativity
4. People who correctly see the direction of changes in the environment and can adapt to them
5. People who possess cultural and human breadth

In recent years, we employ roughly 30 or so new graduates and mid-career hires annually, with most being engineering-related employees. We recruit with a good balance between those who have just graduated, to whom we teach HDSI's technology from scratch, and those who can upgrade our technologies utilizing skills from their previous employment. We aim to increase the number of personnel who can improve technologies and skills for not only the technological field of machinery but also for related fields such as electrical, communications, lubricants, materials, etc. and are able to advance product development systematically.

Please tell us about specific measures and initiatives to realize the material issue of "creating a rewarding work environment."

The HDSI management philosophy begins with "Respect for the Individual." It is clearly stated that HDSI aspires to be a company where the rights of every individual employee are respected and where individuals can pursue a meaningful, culturally rich and purposeful life. Further, it also states that we will make HDSI a company that believes in each employee's aspirations, supports autonomous activities, and creates an environment where employees can achieve their potential through work, and where skills and performance are rewarded. The management philosophy is an unchanging goal that each of us as employees wishes to achieve, and I believe that goal cannot be achieved unless each of us is respected and at the same time respects others. I feel that if a corporate culture instilling respect for each other is fostered, it will lead to creating a safe, secure, and rewarding work environment.

To **promote development of skills**, we provide various learning opportunities for employees who are motivated to grow. These include open-call training programs for language training overseas, training dispatch to overseas group companies, and acquisition of PhD, MBA (Master of Business Administration), and MOT (Management of Technology). Employees can also use self-declaration forms to

ask the personnel division directly for a transfer for the purpose of upgrading skills. Systems are also available for self-learning through e-learning and correspondence courses. Through such systems, we provide opportunities for active skills development.

As **an initiative to create a safe and secure work environment**, the Well-Being Center was set up in FY2020 to work toward promoting the mental and physical health of employees. A dedicated occupational health nurse is employed full-time at the Hotaka Factory, and employees can freely request consultations on health matters. Yoga classes and the like are also held for maintaining health. There is also a system in place for employees, when they feel unwell, to be able to receive online medical support from a contract industrial physician. Ensuring psychological safety in the workplace is also a focus, and those in managerial positions are required or encouraged to attend group training or take e-learning courses on harassment prevention as well as developing and dealing with subordinates and juniors.

For improvement of occupational health in production locations, the Safety and Health Committees of each factory coordinate activities aiming to reduce occupational accidents to zero. Activities surrounding the improvement suggestion system and improvement circles are also robust. More than 1,000 suggestions for improvements are submitted each year, not only for improvements in operations, but also ideas on contributing to SDGs and to occupational health and safety



in the workplace. Outstanding suggestions are chosen and fulfilled as company-wide initiatives. There are also over 50 active improvement circles that collect wisdom of their members to make even greater improvements to operations. Outstanding suggestions and actual cases are shared quarterly through the intranet and morning meetings, with presentation of a top award for excellence annually.

Flexible working is being promoted so that women will want to continue working after marriage and childbirth, with initiatives being carried out such as the implementation of a remote work system and encouraging male employees to take childcare leave. With regard to gender balance, the proportion of new employees hired for engineering-related jobs is high, but we receive few applications from women for these roles. It is therefore a matter that cannot be resolved in a short period of time; however, we hope to first garner more interest in HDSI among female students of science by providing visiting lectures at high schools and technical colleges. It may take some time, but we believe such efforts will lead to an increase in the ratio of female employees, and also an increase in women playing an active role in management and as officers. We also believe participation by the elderly group is important, and have raised the retirement age to 70. We hope those with physical fitness and vitality will play a role, utilizing the experience and knowledge they have accumulated.

Establishing an environment to create new standards that define the next 50 years through outside-the-box thinking

HDSI marked its 50th anniversary in 2020, and has just started its new voyage toward the next 50 years. To make even greater strides over the next 50 years, we believe it is important to continue development and research for our proprietary technologies, while also not confining ourselves to an ivory tower, and instead listen to the needs and voices of our customers, respond accordingly, and bring to the forefront a “greedness” inherent in HDSI. To do so, we need human resources who can take issues and needs that customers want addressed, and use their creativity to think deeply about

how a solution can be reached even when conditions are technologically difficult. I hope such a perspective can be used to develop human resources over the next 50 years. Specifically, to focus on developing human resources we will address fostering personnel who possess high levels of sensibility and strong passion and who are in constant contact with the outside world, by promoting mechanisms to further increase contact between engineers and customers, rotate personnel internally, and undergo personnel exchanges among group companies including those overseas.

Promoting the health of each and every employee is the first step in creating a safe and secure work environment.

We offer various forms of support so that all employees can engage in work in a healthy mental and physical state. Follow-ups for regular health checkups, complete medical exams, and stress checks are encouraged, along with educational activities to promote health, mental health consultations on-site at factories, consultations to check the health of employees working long hours, and online consultations. We also recommend exercising 10 minutes longer than the current target for health promotion, with the theme “Let’s start now! Quick exercise.” We are putting into practice the idea that promoting the health of each and every employee is the first step in creating a safe and secure work environment.



Well-Being Center

Manager

Toshiaki Shimizu

Public health nurse and nurse

Masae Hotaka

Employee Roundtable Discussion

Working style at HDSI as perceived by young employees

The HDS Group advocates “Create a rewarding work environment” as one of its materiality issues. Seven young employees, consisting of both male and female employees from different departments, gathered to discuss topics such as whether a comfortable working environment is provided, whether the Company’s organization operates in a rewarding manner, whether opportunities for challenges are offered, and any issues or requests they may have.

[Venue: TRIAD IIDA-KAN, Date: Nov. 22, 2023]

Attendees (from top left)

- **Ryohei Takeuchi** (Procurement Dept., Supply Chain Div.)
- **Taishi Chikada** (Head Office Sales Dept., Domestic Sales Div.)
- **Shunsuke Mimura** (MT Production Dept., First Production Div.)
- **Ryuhō Nakanishi** (Designing Dept., Development & Engineering Div.)
(from bottom left)
- **Hua Jin** (Overseas Sales Dept., Overseas Sales Div.)
- **Marina Yamaya** (Quality Assurance Dept., Quality Assurance Div.)
- **Aoi Ando** (Corporate Planning & Investor Relations Office, Corporate Planning Div.)



Ando: I am Ando, acting as moderator. This year marks my fifth year with the Company. I primarily handle tasks related to financial reporting, such as analyzing IR data and updating the IR website, in the Corporate Planning & Investor Relations Office, Corporate Planning Division. I have also been concurrently responsible for duties associated with sustainability since 2022.

Mimura: I am Mimura from the Mechatronics Production Department. I am in my seventh year with the Company. Currently, I am engaged in the business transfer of mechatronics products to our group company, Harmonic Winbel.

Yamaya: I am Yamaya from the Quality Assurance Division. I joined the Company in 2020 and, currently, I am working in the Quality Assurance Group, where I am responsible for ensuring product quality, creating meeting minutes, and managing the progress of various projects, among other duties.

Takeuchi: I am Takeuchi from the Supply Chain Division. After completing my initial training upon joining the Company, I was assigned to the Procurement Department. This year marks my fifth year with the Company. In addition to the procurement of materials and procurement cost reduction, I am also collaborating with our partner companies to improve quality.

Nakanishi: I am Nakanishi, in charge of design role in the Development & Engineering Division. I joined the Company in the same year as Chikada-san, Ando-san and Takeuchi-san. So, I am also in my fifth year. I am responsible for tasks such as registering new product part numbers and making revisions to drawings.

Chikada: I am Chikada from the Domestic Sales Division. I joined the Company as a new graduate in 2019 and was assigned to the Domestic Sales Division in 2020. It is my fifth year with the Company. I am primarily engaged in sales proposals and technical support, mainly for customers in Nagano Prefecture.

Jin: I am Jin. I entered the Company as a mid-career hire in February 2018. I am responsible for clients in South Korea and parts of China within the Overseas Sales Department. My previous position involved sales at a trading company specializing in machine tools. I decided to join this Company due to my interest in the future prospects of automation and robotics.

Ando: Do you think that a comfortable work environment is provided and that the organizational management fosters “a sense of fulfillment” in your day to day work?

Mimura: In my department, we are promoting multi-skilling, where one worker handles multiple tasks. By eliminating the system where work depends on a specific individual, it becomes easier to provide backup for employees taking vacations, thus promoting an environment where taking time off is easier. Additionally, when there were delays in product delivery due to

the business transfer, we were able to achieve early resolution with support from other departments. Networking with other departments has provided a great opportunity to gain new knowledge and experience, different from what we've had before, and it has also been helpful in resolving workplace challenges.

Yamaya: I work in a department with a small team of seven members. Working closely with my supervisor allows me to promptly seek advice on any uncertainties, enabling me to focus on my duties with peace of mind. I feel that my workplace environment permits excellent communication and openness.



Yamaya

Takeuchi: The Procurement Department requires close coordination with partner companies and also communication with various departments within the Company. When I exchange opinions with my superiors, senior colleagues, and colleagues from other departments, I find everyone to be approachable and supportive, making the work environment comfortable. Additionally, during regular work performance appraisals, I do such things as conducting progress checks, confirming challenges, and setting goals, all together with my supervisor. Having my performance evaluated fairly motivates me.

Nakanishi: In an environment where I feel comfortable asking questions to my superiors and senior colleagues, I am feeling that I am moving forwards in personal growth in steady steps. The design section has seen an increase in young employees, creating a fresh work environment. Lately, I've also been providing guidance to younger colleagues. As I've gained experience, I've come to share more work with other departments. I feel comfortable and motivated to work because everyone is willing to listen in a supportive manner.

Chikada: The sales section is seeing an increase in employees hired through mid-career recruitment. The Company has a unique culture where we share our previous job experiences and insights, absorbing each other's experiences. (lol) While the sales team at machinery manufacturers may have traditionally been seen as a "male-dominated workplace," our Company has many female employees who choose to work as sales persons, showcasing a trend toward diversification. Furthermore, our supervisors respect individual opinions such as by asking "how do you want to proceed with our work?" which minimizes the

feeling of workload burden and creates a comfortable working environment.

Jin: After taking a year and a half off for marriage and childbirth, I returned to work in April last year. I am now handling the same responsibilities as before taking maternity and childcare leave. Due to having a young child, I also utilize telecommuting, and when my child isn't feeling well, I can take an hour off from work and return later, allowing for a flexible work arrangement. Previously, I used to go on overseas business trips, but now someone else goes in my place. This allows me to work at my own pace, and I feel that it's a very comfortable working environment.



Jin

Ando: Do you think that opportunities for self-realization are provided, and that fair evaluations (such as remunerations and promotions) are conducted?

Jin: My boss respects my need for a manageable work pace that gives priority to my childcare responsibilities. I have no complaints about my current evaluation. Young motivated employees around me are getting promoted, and I also feel that I am being fairly evaluated. It seems like the company is paying attention to the employees' "motivation."

Chikada: I attend around five correspondence courses or seminars every year. I don't have experience or knowledge in development and design, and honestly, I feel that the solution-based selling business is a high hurdle for me. However, by studying various devices and logistics related to my work through correspondence courses, I feel that I am broadening and deepening my understanding of my job.



Chikada

Nakanishi: In our Company, we create goal management sheets and have twice-yearly interviews with our superior. Discussing such topics as performance evaluations and the setting of goals for the next half-year, and receiving feedback from my superior allow me to resolve challenges and improve my abilities or skills. I also believe that my contributions are fairly evaluated in this process. Moreover, by undertaking correspondence courses

outside my area of expertise, I am acquiring a broad range of knowledge, which in turn contributes to my confidence and personal growth.

Takeuchi: I have opportunities granted to participate in both on-the-job training (OJT) and off-the-job training (Off-JT). In Off-JT, my peers have the opportunity to participate in overseas training, and I also have the chance to join training sessions. This demonstrates that opportunities for talent development are proactively provided. The personnel appraisal process involves the department-wide implementation of a management program that incorporates various pieces of advice aimed at improving work performance levels specified by superiors. This system allows for evaluation of the entire department's performance. The process is transparent, ensuring fair evaluations.



Takeuchi

Yamaya: In my department, we have the opportunity to work with our supervisors in establishing goals and receive various pieces of advice. I feel that I am receiving thoughtful guidance and being fairly evaluated. In the Quality Assurance Department, we hold department head-led study sessions once a week, covering various fields, as part of our capacity building initiatives. Studying subjects like mechanical engineering, which I didn't specialize in, during these study sessions enables me to apply this knowledge directly to my work, leading to a "sense of fulfillment."

Mimura: We also hold study sessions in the Mechatronics Production Department, and I always look forward to them as opportunities for new discoveries. The Company covers the tuition fees for correspondence courses upon completion, and receiving an award for excellence also comes with a bonus, which motivates me to excel. Furthermore, through twice-yearly meetings with the department head and manager, I have the opportunity to discuss my performance evaluation, set future goals, and receive advice on how to achieve them. Being able to consult with them in a supportive manner boosts my motivation.

Ando: What do you think about career advancement, including departmental transfers?

Mimura: The manufacture of actuators in the Mechatronics Production Department is closed once the business transfer to Harmonic Winbel is completed. I have been given the opportunity to discuss with my boss my preferences for future departments. We conduct semiannual interviews with the department head regarding performance evaluations. Additionally, I have the opportunity to speak with the general manager, and it's reassuring to know that they care about the career advancement of employees on the front lines.



Mimura

Jin: I'm concerned about whether I'll be able to go on overseas business trips as my child grows up. Since I handle clients in South Korea and parts of China, if I can't go on business trips, I might need to consider transitioning to a regional position. I'm worried about whether I may not go on business trips while in an overseas sales position, whether there is a regional position available, and if there is a position available when I apply for it. I'm also concerned about the relationship with career advancement.

Nakanishi: I do not wish to be transferred, but I believe that the knowledge and experience I have gained in design work can be utilized in other departments such as development, contributing to my personal growth and to the Company. Indeed, it takes courage to volunteer for a change. So, it would be helpful if the Company asks something like, "Are there any employees interested in proactive department transfers?" This would make it easier for employees to raise their hands. I believe that a few months of job support-oriented transfers would be beneficial as it would contribute positively to the current initiative to foster multi-skilled workers.



Nakanishi

Yamaya: I think a rotation-based transfer system aimed at promoting proactive transfers would be effective, rather than moving due to dissatisfaction with current duties. Indeed, I think experiencing various tasks and departments can lead to new discoveries and personal growth.

Takeuchi: The Company's website states that it actively promotes job rotation, but I have never heard from anyone who has actually been transferred for job rotation. As Nakanishi-san also mentioned, there may be individuals who feel hesitant to express their desire for a transfer.

Chikada: I believe job rotation is beneficial for both individuals and the Company. When I joined the Company, I expressed a desire to work in the development section. However, when I mentioned that I would like to be a technology-savvy salesperson, I was immediately assigned to the sales headquarters! (lol) Given my history, I can't help but feel hesitant about transferring to the development or technical departments now as it might inconvenience others. However, if a transfer were possible, I believe it would allow for deeper absorption of knowledge and for the ability to develop products that meet customer needs by understanding both sides.

Ando: Please let us know if there are any issues or requests, including those related to the workplace environment and personnel system, that you would like to address.

Chikada: In our sales business, we propose customized products. So OJT is crucial. However, differences in projects and industries handled can lead to qualitative variations in OJT, often resulting in disparities in sales representatives' knowledge and experience levels. Currently, I am based in a sales office within a factory, and so it's feasible for me to directly approach the design and quality assurance departments for inquiries. However, I believe it would be physically difficult to do so in local sales offices. Therefore, I would appreciate the implementation of mechanisms within the organization aimed at uplifting the skill levels of personnel in charge, such as providing education through operations manuals.

Takeuchi: The Procurement Department experiences a significant increase in overtime hours during busy periods. We are striving to streamline our operations to minimize overtime hours as much as possible, but there are some tasks that cannot be rationalized. Multi-skilling in the production process is important, but I believe that streamlining tasks through the introduction of digital transformation (DX) and information and communication technology (ICT) is also necessary for reducing work hours.

Yamaya: I would be pleased to see more options for work arrangements in place. Employees with childcare responsibilities or other personal circumstances are allowed the flexibility to

choose alternative working styles. I believe it would also be valuable for individuals who do not have such commitments to have the freedom to choose their working arrangements. Indeed, there are various institutional frameworks and regulations in place aimed at workstyle reform, but it seems that they are not widely utilized. I would appreciate improvements to make them more accessible and user-friendly.

Nakanishi: Actually, there was a time when I conducted remote work while hospitalized. However, in the design business, there is a process where supervisors review printed drawings on paper, and it was challenging to do so remotely, posing a problem for me. In the case of 3D design, I sometimes feel that the specifications of my PC are insufficient. Due to the impact of the COVID-19 pandemic, I have recently felt a lack of communication between departments. I would appreciate it if the Company could arrange employee trips and other opportunities for us to get to know each other better.

Jin: I currently have my working hours reduced by one hour to pick up my child, which has been incredibly helpful. I've heard that some companies offer a system where employees with children in the lower grades of elementary school can work remotely for shorter hours. I would be grateful if the Company continues to adopt work systems permitting flexible working styles in accordance with the lifestyle of each employee.

Mimura: In our Company, there are extremely large fluctuations in orders taken. We are happy to receive orders, but orders that exceed our facility's capacity require human intervention, leading to increased overtime. We hope that the ongoing automation of equipment and implementation of planned production will lead to reductions in overtime hours and improvements in production efficiency.

Ando: I have been impressed by everyone's greater-than-expected sense of job satisfaction and your dedication to daily tasks. With our Company subject to significant fluctuations in orders received, I think that by promoting multi-skilling and ensuring flexibility in our personnel system, both employees and the Company can aim for further growth. Thank you very much for sharing your valuable insights today.



Ando



Interview With Officer in Charge of Public Relations

We aim to realize our Management Philosophy by conveying the HDS Group's diverse social initiatives to both internal and external stakeholders, thereby further enhancing the awareness of our employees.

Executive Officer in Charge of Public Relations
Tetsuo Ikuta

What do you think about our involvement with local communities?

Our Management Philosophy advocate "Coexistence and Co-prosperity" and "Contribution to Society." To ensure the further survival and development of HDSI, it is explicitly stated that we must make our best efforts to build relationships that satisfy all stakeholders, that we broadly contribute to society through our products and services, and that we aspire to be a company that helps to improve the environment and the quality of communities where we are located.

Our company established the current Toyoshina Factory in Azumino City, Nagano Prefecture, in 1970, and commenced production of the Harmonic Drive®. Subsequently, the Hotaka Factory, Ariake Factory, Matsumoto Factory (Harmonic Precision), and Komagane Factory (Harmonic Winbel) were added and the HDS Group has grown and expanded based in Nagano Prefecture. Moreover, many of our suppliers who form our supply chain and partner companies that handle component processing and other tasks are also engaged in business activities in the same region, fostering close relationships. From the perspective of securing human resources and ensuring the procurement and sourcing of materials, these local communities are extremely important to HDSI.

At present, the General Affairs Department of the Hotaka Factory is taking the lead in engaging in various local contribution activities in these communities. Our subsidiaries in Germany and the United States are planning and executing their own unique local contribution activities rooted in their communities. We aim

to communicate these activities both internally and externally, thereby enhancing employee awareness and contributing to the realization of our Management Philosophy.

Please tell us about specific initiatives for future generations and local communities.

The Human Resources Department and Public Relations Office collaborate to conduct periodic outreach classes at national technical colleges and high schools in Nagano Prefecture. These classes involve explaining the principles of Harmonic Drive® and providing practical examples of its applications. We also conducted science lectures at a national technical college in Tochigi Prefecture, which has once won the grand prize at the National Technical College Robot Contest (ROBOCON). We would like to continue collaborating with educational institutions



Outreach Classes at National Technical Colleges in Nagano

to contribute to the development of young talent supporting Japan's manufacturing industry.

At the 9th Shinshu Azumino Half Marathon, HDSI sponsored the event as a Gold Partner. Our executives and employees also participated in the race, completing it alongside participants from both inside and outside the prefecture, enjoying the nature of Azumino. We hope that sports will contribute to the revitalization of local communities, and we aim to continue the active involvement of our employees alongside sustained sponsorship.

As part of our commitment to community contribution, we support the annual "Harmonic Concert" and "Harmonic Lecture" held by the Harmonic Ito Foundation in Azumino City and Matsumoto City, respectively, through sponsorship. Since it was first held, all proceeds from the Harmonic Concert have been donated to Azumino City for the purchase of library books for elementary and junior high schools.

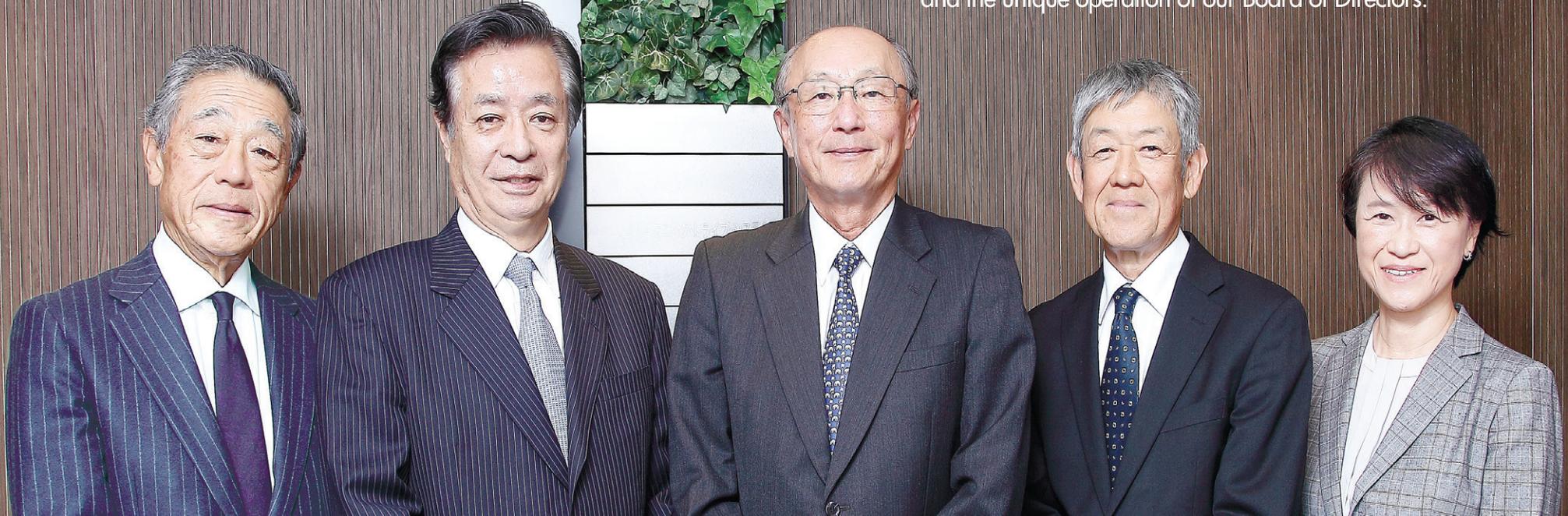
How are you going to advance initiatives for society, including future generations?

We believe that the greatest social contribution we can make is enriching society by fulfilling our responsibility to supply our products reliably, and this belief is firmly rooted within our organization. We believe that contributions to the local community, centered around Azumino City, where our production base is located, will be reflected in future corporate value through improvements in employee satisfaction and hiring of local people.

As a new initiative, we are aligning policies regarding contributions to society and future generations with our overseas group companies, and considering how to develop as a global corporation in this regard. In Europe and North America, matured philosophy regarding the relationship between businesses and society is deeply rooted, and companies in these regions are engaged in their own unique contribution activities, often involving employee participation. Currently, we are not only communicating our Company's philosophy and initiatives to our overseas group companies but also promoting information sharing by featuring their activities in our internal publications, and through other means.

Outside Directors Roundtable Discussion

Five outside directors with diverse backgrounds and expertise exchanged candid opinions regarding expectations and challenges concerning growth strategies, building of management foundations, and the unique operation of our Board of Directors.



Outside Director

Haruhiko Yoshida

Outside Director

Masanobu Nakamura

Outside Director

Yoshio Fukuda

Outside Director

Kazuhiko Hayashi

Outside Director

Kaeko Kitamoto

Mission to Be Fulfilled as an Outside Director

Yoshida: When serving as an executive director of a general trading company, I oversaw two firms listed on the Tokyo Stock Exchange's First Section (Prime Market now), followed by experience as an outside director for two First Section companies, committing myself to management decision-making from both internal and external perspectives. Drawing on these experiences, I oversee and advise with a big picture in mind, taking into account differences in scale and industry. I make a conscious effort to provide ideas and perspectives that differ

from common practices in the company.

Nakamura: I was involved in efforts related to non-performing loan disposal in banking, and in addressing the financial crisis of 2008, known as the Lehman Shock, at a foreign securities firm. Through these experiences, I have learned the importance of not overlooking the early signs of risks and the significance of timely and appropriate responses. At HDSI as well, we are faced with calls for agile responses to risks in line with changes in the external environment, and I am eager to contribute my experiences and insights.

Fukuda: I prioritized the following four aspects upon taking on the role of an outside director: Enhancing corporate value, taking into account the interests of stakeholders such as employees, shareholders, suppliers and local communities, nurturing management talent, and overseeing and supervising management. While addressing these four aspects, I also aim to leverage my experience in the management of manufacturing businesses to contribute to strengthening HDSI's governance and global management.

Hayashi: I initially worked as an engineer in an automotive manufacturer, focusing on the development of electronic systems. Subsequently, I was involved in management at a company supplying electrical components to automakers. I served as a technical adviser before assuming the role of an outside director at HDSI. I am providing support for the creation of new customer value through added value in HDSI's Total Motion Control, which extends beyond the field of manufacturing and sales of devices, mainly speed reducers.



Kitamoto

Kitamoto: I aim to leverage my expertise as a certified public accountant and insights gained from auditing multiple listed manufacturing companies to contribute to the enhancement of internal controls. I also actively contribute from fresh perspectives on the diversity of the organization and the empowerment of diverse human resources.

Achievements & challenges in the progress of the FY2021-FY2023 Medium-term Management Plan; transformations needed for further growth

Nakamura: The final year of the Medium-term Management Plan is likely to result in a challenging outcome due to sluggish demand for products geared toward robotics and semiconductors stemming from China's economic slowdown. On the other hand, there are observable achievements in enhancing problem-solving capabilities to realize what is

desired by customers through enhanced product development and services, such as the growth of in-vehicle products subject to relatively fewer cyclical fluctuations. We perceive that we may have been able to lay the groundwork for expanding the new applications, in response to the societal issue of declining global workforce population.

Fukuda: When evaluating financial indicators over the cumulative period of the Medium-term Management Plan, given the fluctuating nature of product supply and demand in our industry, we find that sales have generally met their targets, while profits have fallen short of their goals. However, research and development expenses, as well as capital investment, have exceeded the targeted figures. Since R&D and capital investment are sources of future profits, they can be evaluated positively from a long-term perspective. In the discussions for the next medium-term management plan, I would like the execution side to thoroughly discuss and clarify the desired future state of HDSI 10 years ahead, as well as to formulate medium-term strategies toward its realization.



Hayashi

Hayashi: Regarding the realization of "QCDS to satisfy customer expectations," which is one of the policy directions under the medium-term management plan, the focus is currently on the defensive side of ensuring that "Q" meets safety and conformance standards. Therefore, I would like to further promote the idea of "creating products that delight customers." If we use cooking as an analogy, food must be safe first of all but it won't be eaten if not delicious. Therefore, in our

technological development, adopting an aggressive approach that prioritizes "being delicious first" is necessary.

Kitamoto: Short-term performance goals are important, but it's also crucial to evaluate the effectiveness of measures toward realizing our vision from a long-term perspective. I would like for all employees in the HDS Group to share the long-term vision we should be heading toward, and for each and every employee to understand their own mission so they can act accordingly.

Yoshida: Personally, I am afraid that our earning power is dwindling and heading toward a slow decline. To accelerate growth, further ingenuity and effort to enhance cost competitiveness will be necessary. I advise not to rely solely on the past experience of contracting at the bottom of a business cycle, with the expectation of riding a wave of the next demand recovery. Rather, I would say, it's important to raise awareness of the emergence of competitive rivals and be prepared for the challenge.



Yoshida

Agenda deemed crucial toward "establish a management foundation commensurate with the times" one of the materiality issues

Fukuda: In "establish a management foundation," there are two important aspects. The first is the establishment of partnerships with customers and suppliers. The second is the cultivation of

a corporate culture where employees can feel fulfilled in their work. Manufacturing cannot be sustained without mutual trust among diverse stakeholders such as customers, end-users, suppliers and employees. Therefore, partnerships with multiple stakeholders can be considered the most basic of basics. Japanese workstyle reform often focuses on reducing working hours, but what is most important is whether employees feel fulfilled and can work energetically.

Hayashi: I feel that there is a slight weakness in systematically planning and developing technologies and products within the organization. I believe that relying solely on individual abilities without emphasizing organizational processes can lead to a lack of scalability and sustainability. It's possible to develop software with just one talented programmer. Without an organized approach, however, there may arise issues such as delayed response to glitches and inability to progress to the next stage. I'm thinking of strengthening organizational and systematic structures to enhance the scalability and sustainability of our business.

Kitamoto: Given significant fluctuations in demand within our industry, I believe it crucial to maintain a robust financial foundation to ensure flexibility in response, even when at the bottom of a business cycle. Additionally, it's crucial to strengthen trust relationships with diverse stakeholders. To achieve this, it's important to share a long-term vision with stakeholders such as employees, business partners and shareholders, and ensure they feel we are making progress toward its realization.

Yoshida: Since assuming the role of an outside director, I have consistently emphasized as crucial management issues the importance of fostering human resources and creating an environment conducive to technological development. While HDSI has competitive flagship products that will sell well with increased demand, relying solely on them could eventually lead to a decline in growth potential. Since technological prowess depends on human factors, I anticipate further dedication to fostering talent and creating an environment conducive to

technological development.

Nakamura: Establishing a conducive work environment and nurturing talent are indeed the bedrock of our business. Outside directors attend not only Board of Directors meetings but also monthly sessions of the Development Promotion Conference and the Business Innovation Conference, held at the Hotaka Factory, as well as Executive Officer Meetings, allowing for interactions with not only officers but also section chiefs and team leaders. We also serve as members of the Management Committee for the Whistleblower System, which increases opportunities to hear the voices of employees. To make employees feel fulfilled at work, it is crucial for senior officials to communicate effectively from the perspective of employees. I believe that the first step in building a solid management foundation starts with the mindset and actions of these senior officials.



Nakamura

Reasons for explaining governance code principles rather than simply complying with them

Yoshida: We do not have an optional nomination and remuneration committee, but eight outside directors, including corporate auditors, attend meetings of the execution side, participating in the process of evaluating human resources as potential successors. Outside directors also always participate in discussions regarding compensation for executive officers.

With exactly half of the Board of Directors being outside directors, we believe that the effectiveness of monitoring is sufficiently ensured.

Nakamura: The effectiveness of the Board of Directors is evaluated annually through questionnaire surveys answered by directors and corporate auditors. Discussions aimed at improving effectiveness are conducted during Board meetings, including addressing any issues raised. Regarding succession planning and the establishment of a nomination and remuneration committee, Mr. Yoshida and I share the same opinion. We believe that their functions are adequately fulfilled within discussions by the Board of Directors.

Fukuda: Outside directors attend crucial executive meetings, where their participation in discussions, as well as Q&A sessions, allows us to gain insights into their abilities and performance. Major corporations may have nomination committees in place, but the reality appears to be that there are often limited interactions between outside directors and executive officers or department heads on the front line. At HDSI, there are ample opportunities for active engagement, and an environment is in place where outside directors can participate in the process of appointing new officers. It is important to thoroughly explain to all stakeholders the desirable form of governance tailored to our Company's size and circumstances.



Fukuda

Corporate Governance

Basic views

The fundamental policy of Harmonic Drive Systems Inc. (hereinafter "the Company") for corporate governance is based upon ensuring sound and transparent corporate management and achieving swift and effective decision-making, with the aim of meeting the expectations of our stakeholders, achieving sustainable growth, and enhancing our corporate value over the long term. We do so through the implementation of our Management Philosophy, which consist of four pillars: Respect for the Individual, A Meaningful Company, Coexistence and Co-prosperity, and Contribution to Society.

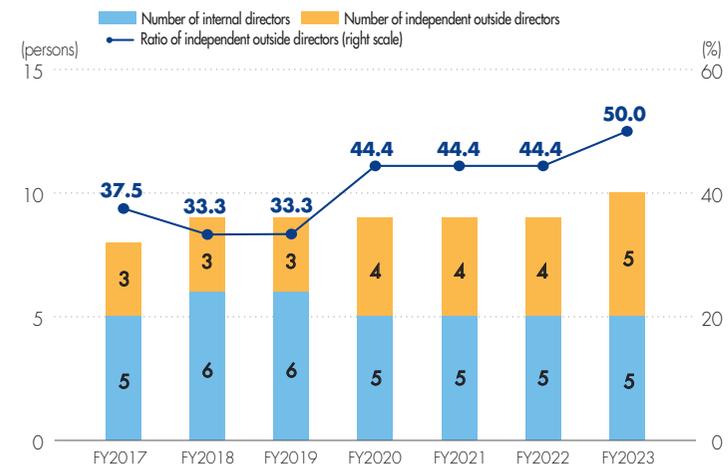
Track record of corporate governance enhancement

1998	Outside corporate auditors appointed (2 auditors)
2001	Number of outside corporate auditors increased (from 2 to 3)
2003	Executive officer system adopted, outside directors appointed (2 directors), Board of Directors Advisory Committee established
2004	Number of outside directors increased (from 2 to 3)
2005	Functions of Board Chairperson and President-cum-Representative Director separated
2006	Basic policy for internal control system formulated
2008	Basic policy for corporate governance formulated
2011	Internal Control and Auditing Office established
2013	Number of outside directors increased (from 3 to 4)
2019	Whistleblower system established
2022	Executive retirement allowance system abolished, stock compensation system with transfer restrictions introduced
2023	Sustainability Committee established, Number of outside directors increased (from 4 to 5)

Reasons for selecting a company form with a Board of Corporate Auditors

The Company has a Board of Corporate Auditors system in place. The Company's governance structure is based fundamentally on an institutional system in which it has a Board of Corporate Auditors in place, as stipulated in the Companies Act. Since the Company believes that its current governance system is functioning effectively, it has determined that it is appropriate to continuously enhance the corporate governance structure based on the current setup of the company with a Board of Corporate Auditors. The Company's Board of Corporate Auditors consists of a total of four auditors (of whom three are outside auditors), including two full-time auditors and two part-time auditors, with one of the two full-time auditors being an outside auditor. We have in place a system where auditors actively participate not only in Board of Directors meetings but also in other important meetings related to business execution, enabling regular auditing of operational performance.

Changes in ratio of independent outside directors to Board membership



● Composition of the Board of Directors (As of July 1, 2023)

Attributes	Name	Current Position (Responsibility)	Attendance at Board of Directors Meetings (FY2022)	Time of Appointment as Director	No. of Shares Held	Expected Insight, Experience, Capability, Expertise, etc.							
						Corporate Management/ Management Strategy	Overseas Business	Sales/ Marketing	Manufacturing/ Production	Technology/ R&D	Financial Strategy/ Capital Policy/ Accounting	Information and Communication Technology (ICT)	Sustainability
	Mitsumasa Ito	Chairperson of the Board of Directors	17/17	August 1979	671,995	●	●	●	●		●		
	Akira Nagai	President, Representative Director	17/17	June 2013	47,938	●	●	●			●	●	
	Akira Maruyama	Representative Director, Senior Executive Officer (General Manager of Corporate Planning and ICT Promotion)	17/17	June 2016	4,731	●		●	●	●		●	
	Kazutoshi Kamijoh	Director, Executive Officer (General Manager of Finance Accounting and Tax)	17/17	June 2020	9,588	●		●			●		
	Yoshihiro Tanioka	Director, Executive Officer (General Manager of Development and Engineering Division)	17/17	June 2021	4,542	●	●	●	●	●			
Outside Director Independent Director	Haruhiko Yoshida	Director	16/17	June 2003	20,422	●	●	●					
Outside Director Independent Director	Masanobu Nakamura	Director	17/17	June 2013	12,728	●	●	●			●		
Outside Director Independent Director	Yoshio Fukuda	Director	17/17	June 2020	1,024	●	●	●	●		●		
Outside Director Independent Director	Kazuhiko Hayashi	Director	13/13	June 2022	17	●	●			●			
Outside Director Independent Director	Kaeko Kitamoto	Director	Newly appointed thus not applicable	July 2023	0	●					●		●

Note: Mr. Kazuhiko Hayashi was newly elected as Director in the Ordinary General Meeting of Shareholders for FY2021 held on June 22, 2022 and assumed office. Thus, the table shows the number of meetings of the Board of Directors held after that date and the number of meetings attended.

Reasons for selecting skill areas of the Skills Matrix

Skill areas	Reason for selection
Corporate management/ Management strategy	A director needs management experience and track record at various companies including a manufacturing company as well as abundant knowledge to deliver technological innovation for a better society under the Group's mission of "contributing to technological innovation in society through motion control technology", in addition to achieving a sustainable society and enhancing corporate value.
Overseas business	A director needs abundant knowledge and experience in overseas business management and local culture, etc. to promote the growth strategy of the Group which operates business overseas.
Sales/ Marketing	A director needs proven knowledge and abundant experience in sales and marketing to identify essential needs of customers, create attractive and satisfactory products, and provide customer-oriented services.
Manufacturing/ Production	A director needs proven knowledge and abundant experience in manufacturing and production which is essential to maintain and develop a production system to achieve added-value manufacturing in total motion control, the domain of the Company, and high customer satisfaction.
Technology/ R&D	A director needs experience in R&D for speed reducers and mechatronics products, in addition to expertise and experience in the industry, to ensure high product quality as a leading company of precision speed reducers, and develop high added-value products for customers.
Financial strategy/ Capital policy/ Accounting	A director needs proven knowledge and abundant experience in finance and accounting to build a solid financial base, promote growth investment and financial strategy to sustainably enhance corporate value and return profits to shareholders.
Information and Communication Technology (ICT)	A director needs proven knowledge and experience in information and communication technology to develop information infrastructure including cyber security measures and to promote ICT across the Company utilizing advanced information technologies.
Sustainability	A director needs proven knowledge and experience in sustainability promotion including the introduction of renewable energy sources to reduce greenhouse gas emissions and human capital such as the promotion of diversity, equity, and inclusion to promote the reduction of global environmental impacts, the development of a rewarding work environment, etc. based on the Basic Policy of Sustainability and material issues (materiality), which were established to realize a sustainable society and enhance corporate value.

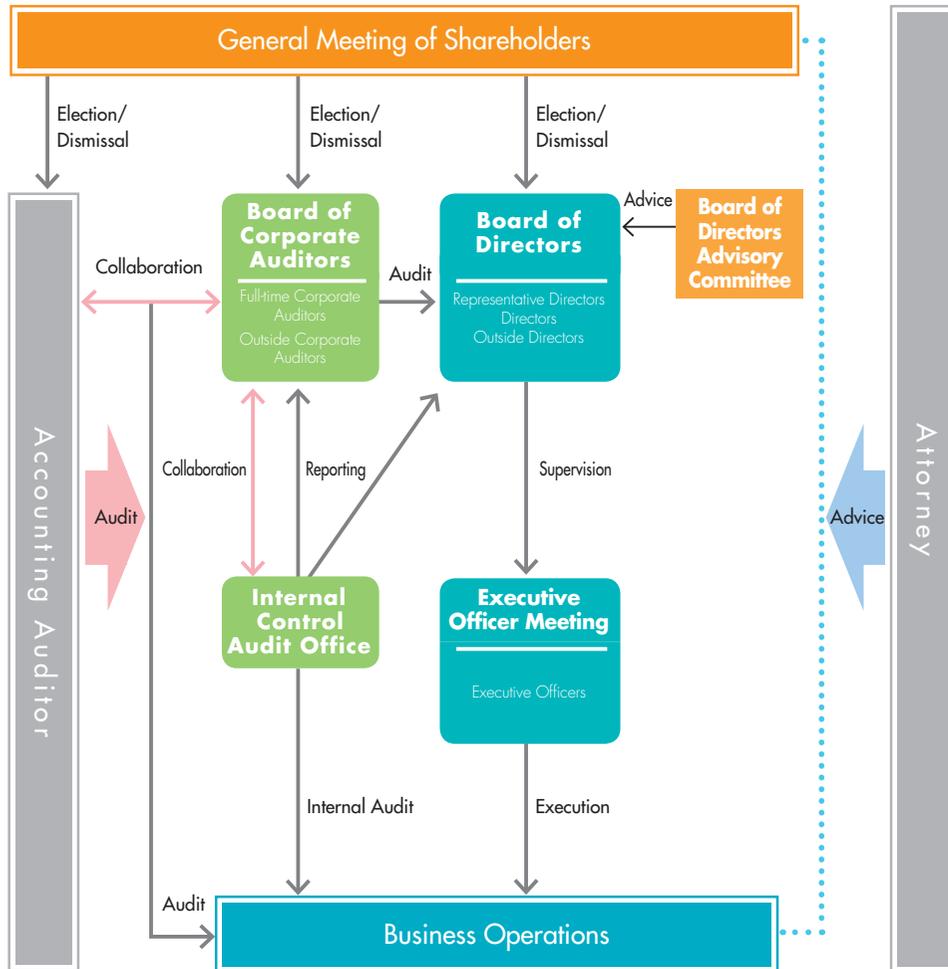
Reason for nomination as candidate for Outside Director and expected role

Name	Reason for appointment
Haruhiko Yoshida	Mr. Haruhiko Yoshida has served in prominent positions at Mitsui & Co., Ltd., and possesses abundant experience and superior insight in regard to corporate management, in addition to extensive international experience. Thus far, he has utilized this ability and experience to appropriately advise and supervise the management of the Company in general, and can be expected to continue to do so.
Masanobu Nakamura	Mr. Masanobu Nakamura has served in prominent positions in major banks and securities companies, and possesses abundant experience and superior insight in regard to corporate management, in addition to extensive international experience. Thus far, he has utilized this ability and experience to appropriately advise and supervise the management of the Company in general, and can be expected to continue to do so.
Yoshio Fukuda	Mr. Yoshio Fukuda has served in prominent positions at Teijin Limited and Teijin Group and possesses abundant experience and superior insight in regard to corporate management, in addition to extensive international experience. In addition, he has a high level of knowledge of strategic planning, establishment of joint ventures, M&As, etc. Based on the above, the Company has judged that he has been appropriately advising and supervising the overall management of the Group, which is expanding its business internationally, from an independent standpoint, and can be expected to continue to do so.
Kazuhiko Hayashi	Mr. Kazuhiko Hayashi has engaged in the development and engineering of power train and electric drive control system, etc. at the Toyota Group, and demonstrated leadership as manager. He has served in prominent positions at the Sumitomo Electric Industries Group, and possesses abundant experience and superior insight in regard to corporate management. In addition, he has top-class expertise on the development and engineering of such products, and served as a visiting professor at a graduate school which was established to invent new technology based on advanced technology and creating new business, where he lectured on energy and control-related fields in the automotive industry. Based on this experience and capability, the Company judges that he can advise and supervise the management of the Company in general, and can be expected to continue to do so.
Kaeko Kitamoto	Ms. Kaeko Kitamoto has abundant experience and superior insight into financial accounting, having been involved in accounting audits of various listed companies as a certified public accountant at a major audit corporation and is currently serving as a Partner and Executive Board Member of the same corporation. In addition, since 2018, she has served as a member of the Electricity and Gas Market Surveillance Commission, Ministry of Economy, Trade and Industry, and has knowledge of introducing renewable energy sources to reduce CO ₂ emissions. Based on this experience and capability, the Company judges that she can appropriately advise and supervise the management of the Company in general and its sustainability initiatives, including climate change and diversity, equity, and inclusion.

Main agenda items of Board of Directors meetings in FY2022

- Reports and deliberations on progress of Medium-term Management Plan/single-year plan, and status of business execution
- Deliberations on annual management plan and budget, R&D investment, etc.
- Reports and deliberations on internal audit, whistleblower system, effectiveness of business activities, and operational status of other internal control systems
- Business execution framework and revamp of organizational mechanisms
- Evaluation of Board of Directors' effectiveness (analysis based on questionnaire survey conducted among all directors and corporate auditors)
- Abolition of executive retirement allowance system, introduction of stock compensation system with transfer restrictions, acquisition of treasury shares, financing
- Sustainability promotion framework and sustainable procurement policy

● Corporate Governance System



● Roles and Compositions of Supervisory Institutions

Institutions	Board of Directors	Board of Corporate Auditors
Composition	<p>Internal 5 + Outside 5 Chair: Chairperson of the Board of Directors</p>	<p>Internal 1 + Outside 3 Chair: Full-Time Outside Corporate Auditor</p>
Purpose/ Authority	<ul style="list-style-type: none"> Resolutions on basic management policies, etc. Supervision of the execution of duties by Executive Officers 	<ul style="list-style-type: none"> Audit of the execution of duties by Directors Preparation of audit reports Determination of the content of proposals concerning the selection and dismissal of Accounting Auditors, etc.
Percentage of Independent Directors	50%	50%
Number of meetings held in FY2022	17	18
Secretariat	Corporate Planning & Investor Relations	Corporate Auditors' Office

● Status of activities of Board of Corporate Auditors

- HDSI is a company with a Board of Corporate Auditors, and the Company's audit for the consolidated 2022 fiscal year was conducted by a total of four members of the Board of Corporate Auditors (including three outside auditors), consisting of two full-time auditors and two part-time auditors.
- After the Annual General Meeting of Shareholders, the Board of Corporate Auditors determines audit policies, plans, and work assignments, and each Board member audits the execution of duties by directors, executive officers and others in accordance with the "Board of Corporate Auditors Regulations," "Board of Corporate Auditors Auditing Standards" and "Implementation Standards for Internal Control System."
- The Board of Corporate Auditors audits the execution of duties by directors through attendance at important meetings, including Board of Directors meetings, Executive Officer Meeting, Business Process Innovation Meeting, Development Promotion Meeting, Affiliated Company Meeting, and the President's Audit. Further, the Board of Corporate Auditors meets with representative directors, shares information with outside directors, exchanges opinions with executive directors, executive officers, division heads, office managers, divisional sales managers, and the presidents of domestic and overseas subsidiaries, and inspects important documents, including authorization requests and credit application forms. The Board of Corporate Auditors also plans and holds Group corporate auditor liaison meetings with auditors from affiliated companies to share information among Group companies and take the lead in improving knowledge related to auditing duties.

The status of Board of Corporate Auditors meetings is as follows.

The Board of Corporate Auditors holds regular meetings on the same day in principle as the Board of Directors' meetings and convenes extraordinary meetings as necessary. The Board of Corporate Auditors held a total of 18 meetings in FY2022.

Name	Full-time / Part-time	Internal / Outside	Number of meetings held	Number of meetings attended	Attendance rate
Yoshitsugu Yokogoshi	Full-time	Outside	18	18	100%
Hidefumi Iguchi	Full-time	Internal	13	13	100%
Shigeto Ohashi	Part-time	Outside	18	18	100%
Eisaku Imazato	Part-time	Outside	18	17	94%

Note: Mr. Hidefumi Iguchi was newly elected as Auditor at the Ordinary General Meeting of Shareholders held on June 22, 2022, and subsequently assumed office. Thus, the table shows the number of meetings of the Board of Corporate Auditors held after that date and the number of meetings attended

Priority audit items (FY2022)

- Monitoring of implementation status of execution and progress of second year of current Medium-term Management Plan
- Establishment and further enhancement of communication with important subsidiaries under overseas trilateral framework
- Monitoring of common issues among Group companies such as establishment, improvement and operation of internal control systems, response to internal control deficiencies, establishment of a preventive framework, etc.
- Monitoring of initiatives related to Group risk management

Cooperation with internal audit section

Internal audits are conducted throughout the year by the Internal Control and Audit Office, which is led by one office manager and three auditors, based on a pre-planned audit schedule for the Company and for both domestic and overseas subsidiaries. Furthermore, the Corporate Planning & Investor Relations Office of the Corporate Planning Division serves as the secretariat for internal audits. Through the biannual "President's Audit," where the President directly reviews the performance of department heads, we have a system in place to monitor the progress of management plans and the status of risk management.

The matters identified through internal audits are reported to the President as audit results and are also reported to the Board of Corporate Auditors, establishing a dual reporting line system. They are also reported to the Board of Directors. During the audit process, the head of the Internal Control & Audit Office conducts regular meetings with corporate and accounting auditors. Thus, the office, Board of Corporate Auditors and accounting auditors share information and collaborate closely with each other.

● Policy for determining executive compensation and its calculation method

Compensation for directors consists of a basic salary in cash, which is fixed, equity-based compensation in the form of shares with transfer restrictions, and variable remuneration such as bonuses linked to the annual performance. Such executive compensation takes into account directors' responsibilities for enhancing the medium to long-term corporate value of the HDS Group and for improving its performance in each business year. For outside directors, we do not provide equity-based compensation. Instead, we pay a basic salary and bonuses in cash.

Breakdown of directors compensation

Executive director

Fixed remuneration
(cash compensation + stock with transfer restrictions)



Performance-linked bonuses
(cash compensation)

Outside director

Fixed remuneration
(cash compensation)



Performance-linked bonuses
(cash compensation)

Indicators determining performance-linked compensation

The directors' performance-linked compensation is determined by a comprehensive consideration of the earnings performance of each business year (based on a standard of 4% of nonconsolidated net profit in principle) and the achievement status of the relevant year's management plan, in order to enhance the awareness of performance improvement on an annual basis. After this process of determination, the proposed compensation is subject to approval through a resolution by the Board of Directors before being finalized at a shareholders' general meeting. The reason for using nonconsolidated net profit as a metric for determining executive bonuses is based on the belief that it is desirable to align executive bonuses with earnings performance. The level of executive bonuses takes into account the clarity of the metric as an indicator and its high correlation with earnings per share, among other factors.

Proportion by type of compensation

Remuneration for directors consists of fixed compensation (basic salary in cash and equity-based compensation in the form of shares with transfer restrictions) and variable compensation (performance-linked bonuses). Since nonconsolidated net profit, which serves as the funding source for bonuses, varies depending on business performance, the proportion of each type of compensation is not determined in advance, but retrospectively, based on the amount of bonus determined by the performance linked key indicators for each business year.

Method for determining compensation amount for individual directors

Decision-making authority on compensation for individual directors (excluding outside directors) is delegated to the President, Representative Director, taking into account factors such as if a director has the authority to represent the company, position, responsibilities, and contribution. In determining the compensation amount, however, the President, Representative Director consults with other representative directors and two outside directors selected by the Board of Directors regarding a draft remuneration amount prepared in advance for each director, and decides after considering recommendations from these officers. Regarding the responsibilities, execution of duties, and contribution of directors (excluding outside directors), decision-making authority based on a comprehensive perspective is delegated to the President, Representative Director, after undergoing the aforementioned consultation and recommendation process since the President, Representative Director, has the most comprehensive understanding of these matters.

Compensation for individual outside directors is determined after consideration and evaluation of factors such as the responsibilities of each outside director, the status of Board meeting attendance, and the contents of statements and proposals at various meetings. Decision-making authority on compensation is delegated to the President, Representative Director, who is supposed to determine it after consulting with each outside director.

Compensation for corporate auditors

Compensation for corporate auditors consists solely of fixed basic remuneration in cash.

Breakdown of executive compensation (FY2022 results)

Officer category	Total amount of compensation, etc. (thousands of yen)	Total amount of compensation, etc. by type (in thousands of yen)				Number of target officers (persons)
		Basic compensation	Performance-linked compensation	Non-monetary compensation, etc.	Provision for retirement benefits	
Directors (Except outside directors)	415,528	124,794	230,000	52,210	8,523	5
Corporate auditors (Except outside corporate auditors)	21,601	21,601	—	—	—	1
Outside officers	132,200	111,600	20,000	—	600	9

Note: Regarding performance-linked compensation for directors, the amount for FY2022 has been determined by comprehensively considering the FY2022 business performance (based on a standard of 4% of nonconsolidated net profit in principle) and the achievement status of the fiscal year's management plan. Listed here is the amount approved at the FY2022 General Meeting of Shareholders. Nonconsolidated net profit for FY2022 amounted to 6,880 million yen, and this amount multiplied by 4% serves as the basis for the proposed performance-linked compensation for directors.

Compliance

In April 2004, the Company established the "Harmonic Drive Systems Inc. Charter of Corporate Behavior" and has been promoting activities rooted in a high standard of corporate ethics, as well as working to maintain and improve our internal control systems and risk management framework.

Initiatives for compliance with laws/regulations and thorough observance of corporate ethics

- "Code of Conduct" established, using the Charter as specific guidance
- Maintaining and improving an efficient and effective internal control system carried out continuously, based on the fundamental framework defined in "Internal Control Manual"

Risk management framework

As for our risk management framework, we disseminate the "Crisis Management-Code of Conduct in the Event of Crisis," which specifies protocols for action in the event of a risk materializing and a crisis occurring. Additionally, we have developed a system for managing risks based on the "Crisis and Risk Management Regulations," aiming to handle management risks and crisis responses in a safe and responsible manner. Furthermore, based on the Rules for Management of Affiliated Companies, we have established an appropriate management framework for our subsidiaries and, by holding quarterly Affiliated Company Meeting, we continuously monitor the status of business execution and risks of our subsidiaries.

Stakeholder Engagement

The HDS Group aims to enhance corporate value as well as enriching the lives of people worldwide and bringing a sustainable society into reality by contributing to technological innovation in society through motion control technology. To achieve this, we are endeavoring to build trusting relationships with all stakeholders, including employees, shareholders/investors, customers, suppliers, local communities, and future generations, through continuous dialogue and co-creation with them.

Stakeholders	Basic Policy	Key concerns of stakeholders	Main dialogue channels	SDGs
 <p>Employees</p>	<p>We aim to be a company where the rights of each and every employee are respected, and where individuals can pursue a meaningful and fulfilling cultural life. For that purpose, we strive to be a company that rewards capabilities and performance by supporting the autonomous activities of each individual and creating an environment where individuals can fully utilize their abilities through work.</p>	<ul style="list-style-type: none"> ● Respect for fundamental human rights in labor ● Safe production site environment ● Opportunities for growth and self-realization ● Environmental protection of the earth, respect for culture and customs of society ● Ensuring diversity and choice in work style 	<ul style="list-style-type: none"> ● Job rotation ● Self-declaration system for career paths, etc. ● Regular personnel appraisals and meetings with superiors ● Varied skill development training ● Whistleblower system 	   
 <p>Shareholders/ investors</p>	<p>We disclose information in accordance with the Financial Instruments and Exchange Act and the "Rules on Timely Disclosure of Corporate Information by Issuers of Listed Securities" established by the Tokyo Stock Exchange. Furthermore, it is our policy to proactively and fairly disclose various corporate information considered useful for understanding the Company, including mechanisms of corporate value creation and efforts for enhancing corporate value.</p>	<ul style="list-style-type: none"> ● Initiatives for enhancing corporate value (strengthening shareholder returns) ● Capital policy taking account of capital efficiency ● Earning shareholder returns that exceed capital cost ● Enhancing sustainability-related efforts and disclosure ● Enhancing effectiveness of governance 	<ul style="list-style-type: none"> ● Financial results briefing attended by president-cum-representative director (twice a year) ● Small meetings for overseas institutional investors (FY2022: 14 meetings attended by 291 persons, FY2021: 11 meetings attended by 168 persons) ● Individual meetings with domestic and overseas institutional investors (Overseas: FY2022: 79 investors, FY2021: 67 investors) (Domestic: FY2022: 146 investors, FY2021: 154 investors) ● Company briefing sessions for individual investors (twice or more per year) 	
 <p>Customers</p>	<p>As the foundation of its management, The HDS Group prioritizes "ceaseless research and development activities" and "a constant emphasis on quality," aiming to create attractive products that satisfy our customers and provide services from the perspective of our customers.</p>	<ul style="list-style-type: none"> ● Stable supply of high-quality products ● Meeting delivery deadlines ● Maintaining and improving product quality ● Provision of environmentally-friendly products ● Responsible supply chain 	<ul style="list-style-type: none"> ● Provision of products and services that satisfy customers ● Continuous communication with customers ● Establishment of Product Service (PS) Group to accommodate various specification requirements ● Global technology exchanges among industry, government and academia through international symposiums 	  
 <p>Suppliers</p>	<p>We established a Sustainable Procurement Policy in September 2022. We aim for mutual prosperity with all suppliers, who are valued partners, taking into account such matters as fair and equitable transactions, compliance with laws and social norms, respect for human rights and consideration for labor conditions, and consideration for the global environment throughout the entire supply chain.</p>	<ul style="list-style-type: none"> ● Fair, equitable and transparent terms of trading ● Continuous and stable transactions ● Procurement activities friendly to society and the global environment ● Co-creation of sustainability 	<ul style="list-style-type: none"> ● Daily procurement activities ● Audits of product quality ● On-site audits of CSR and responses to SAQ (self-assessment questionnaire) ● Environmental impact assessments of potentially hazardous substances and submission of documents on green procurement standards 	 
 <p>Local communities</p>	<p>Toward achieving "Coexistence and Co-prosperity and "Contribution to Society," as stated in our Management Philosophy, we aim to contribute directly and indirectly to society and industry broadly through our business activities as a good member of society, striving to be a company that helps improve the environment and quality of life in our local communities.</p>	<ul style="list-style-type: none"> ● Prosperity of local communities ● Coexistence and Co-prosperity with local communities ● Job creation in local communities and their development 	<ul style="list-style-type: none"> ● Harmonic Concerts ● Harmonic Lectures ● Cleanup activities in local communities ● Support for Shinshu Azumino Half-Marathon ● Donations and support activities 	  
 <p>Future generations</p>	<p>We teach the mechanisms of our products, how they are used in robotics, the joy of manufacturing, value creation, and social contribution to younger generations who shoulder the future, ranging from elementary school to university students, through various events and lessons given at school as an outreach program.</p>	<ul style="list-style-type: none"> ● Joy and importance of manufacturing ● Role of mechanical design ● Mechanisms of robots and how they are used ● Value created by our products 	<ul style="list-style-type: none"> ● Painting competition for elementary schoolchildren ● Lectures on science ● Lessons given at school as outreach program 	 

Directors and Executives (As of July 1, 2023)

Directors



Mitsumasa Ito

Date of birth: January 2, 1939

May 1976 Representative Director, Harmonic Drive System GmbH
August 1979 Director, Harmonic Drive Systems Inc. (the "Company")
June 1991 Managing Director and General Manager of Corporate Planning Office, the Company
April 1992 Managing Director and General Manager of General Affairs Division, the Company
July 1994 President and Representative Director, the Company
June 2003 Chairperson and Representative Director, the Company
June 2005 Chairperson and Representative Director and Chief Executive Officer, the Company
June 2007 Chairperson and Representative Director and Executive Chairperson and Chief Executive Officer, the Company
April 2009 President, Research Institute for Oceanchemistry Foundation
June 2010 Chairperson and Representative Director and Executive Chairperson and CEO, the Company
June 2011 Chairperson and Representative Director, the Company
April 2012 Councilor, Research Institute for Oceanchemistry Foundation (General)
July 2016 Chairperson, Harmonic Ito Foundation (General)
September 2016 Councilor, Research Institute for Oceanchemistry Foundation (Public Interest)
March 2017 Deputy Chairperson of the Supervisory Board, Harmonic Drive AG
March 2018 Chairperson, Harmonic Ito Foundation (Public Interest) (incumbent)
June 2019 Director, KODEN Holdings Co., Ltd.
January 2020 Member of Supervisory Board, Harmonic Drive SE (incumbent)
June 2021 Chairperson and Representative Director, KODEN Holdings Co., Ltd.
June 2022 Chairperson and Director, the Company (incumbent)
June 2022 Chairperson and Director, KODEN Holdings Co., Ltd. (incumbent)



Akira Nagai

Date of birth: March 26, 1948

April 1972 Joined Mizra & Co., Ltd.
April 2002 Joined Harmonic Drive Systems Inc. (the "Company")
April 2002 General Manager of Overseas Division, the Company
June 2002 Chairperson and Director, HD Systems, Inc.
June 2003 Executive Officer (Marketing and Sales), General Manager of Overseas Division, General Manager of Corporate Planning and IT Office, the Company
December 2005 President and CEO, HD Systems, Inc. (incumbent)
June 2007 Managing Executive Officer (Corporate Planning and Finance), the Company
April 2009 Managing Executive Officer (Corporate Planning and Finance), the Company
January 2011 Corporate Auditor, Harmonic Drive Systems (Shanghai) Co., Ltd.
June 2013 President and Representative Director, Executive President, the Company
May 2015 Director, Harmonic AD, Inc. (incumbent)
June 2016 President and Representative Director, Chief Executive Officer, In Charge of Marketing and Sales, the Company
December 2016 Manager, GK HD Management (incumbent)
March 2017 Chairperson of the Supervisory Board, Harmonic Drive AG
June 2017 President and Representative Director, Chief Executive Officer, In Charge of Marketing and Sales and Quality, the Company
June 2019 President and Representative Director, Chief Executive Officer, In Charge of Quality, the Company
January 2020 Deputy Chairperson of the Supervisory Board, Harmonic Drive SE (incumbent)
June 2020 President and Representative Director, Chief Executive Officer, the Company (incumbent)



Akira Maruyama

Date of birth: January 8, 1962

April 1985 Joined Harmonic Drive Systems Inc. (the "Company")
April 2007 General Manager of Marketing and Sales Division, the Company
April 2009 General Manager of Marketing and Sales Division and General Manager of Sales Planning Department, the Company
September 2009 General Manager of Engineering Department, Precision Equipment Division, the Company
September 2012 General Manager of Engineering Division, the Company
June 2014 Executive Officer (Engineering), the Company
June 2015 Director, HD Logistics, Inc.
June 2016 Director and Executive Officer (Development Engineering), the Company
June 2018 Director and Executive Officer (Corporate Planning and IT), the Company
June 2019 Corporate Auditor, Wirbel Co., Ltd. (currently Harmonic Wirbel Inc.)
June 2019 Director and Executive Officer, General Manager of Corporate Planning Division, the Company
June 2019 Director and Executive Officer, General Manager of Corporate Planning Division and General Manager of ICT Promotion Office, the Company
June 2021 Representative Director and Senior Managing Executive Officer, General Manager of Corporate Planning Division and ICT Promotion Office, the Company (incumbent)
June 2022 Representative Director and Senior Managing Executive Officer, General Manager of Corporate Planning Division and ICT Promotion Office, the Company (incumbent)
May 2023 Director, Harmonic Wirbel Inc. (incumbent)



Kazutoshi Kamijoh

Date of birth: June 9, 1968

April 1992 Joined Harmonic Drive Systems Inc. (the "Company")
July 2003 Corporate Planning Manager of Corporate Planning and IT Office, and Administrative Manager, the Company
July 2007 General Manager of Corporate Planning Department, Corporate Planning and IT Office, and General Manager of Administration Department, the Company
May 2012 Corporate Auditor, Ono Iron Casting Co., Ltd.
May 2013 Corporate Auditor, Harmonic Drive Systems (Shanghai) Co., Ltd.
July 2014 Executive Officer, In Charge of Corporate Planning and Finance, the Company
June 2016 Executive Officer, In Charge of Corporate Planning, Finance and Accounting, the Company
March 2017 Manager, GK HD Management (incumbent)
June 2019 Executive Officer, General Manager of Finance Accounting, Finance and Tax Division, the Company
June 2020 Director and Executive Officer, General Manager of Finance Accounting, Finance and Tax Division, the Company
July 2021 Member of the Supervisory Board, Harmonic Drive SE (incumbent)
June 2022 Director and Executive Officer (Finance Accounting, Finance, Tax, Human Resources and Administration), General Manager of Finance Accounting, Finance and Tax Division, the Company
June 2023 Director and Executive Officer, General Manager of Finance Accounting, Finance and Tax Division, the Company (incumbent)



Kazuhiko Hayashi

Date of birth: April 25, 1954

April 1978 Joined Toyota Motor Co., Ltd. (currently Toyota Motor Corporation)
January 2001 Project General Manager of Leading-edge Vehicle Development Planning Office, Toyota Motor Corporation
January 2004 General Manager of Electronics Engineering Div. II, Toyota Motor Corporation
January 2005 General Manager of Electronics Engineering Div. I, Toyota Motor Corporation
April 2007 General Manager of BR Control Software Development Office, Toyota Motor Corporation
January 2010 Managing Executive Officer, Sumitomo Wiring Systems, Ltd.
January 2012 Executive Officer of Sumitomo Electric Industries, Ltd., Managing Executive Officer of Sumitomo Wiring Systems, Ltd., and Director of AutoNetworks Technologies, Ltd.
June 2015 Senior Managing Executive Officer of Sumitomo Wiring Systems, Ltd., Executive Officer of Sumitomo Electric Industries, Ltd., and Director of AutoNetworks Technologies, Ltd.
July 2019 Visiting Professor, Nagasaki Institute of Applied Science
June 2022 Outside Director, Harmonic Drive Systems Inc. (the "Company") (incumbent)



Kaeko Kitamoto

Date of birth: April 15, 1965

April 1988 Joined Sapporo Breweries Limited
October 1993 Joined Ono Showa Audit Corporation (currently Ernst & Young ShinNihon LLC)
July 2009 Partner, Ernst & Young ShinNihon LLC
September 2018 Member of Electricity and Gas Market Surveillance Commission, Ministry of Economy, Trade and Industry (incumbent)
July 2019 Executive Board Member, Ernst & Young ShinNihon LLC
July 2023 Outside Director, Harmonic Drive Systems Inc. (the "Company") (incumbent)



Yoshitsugu Yokogoshi

Date of birth: November 16, 1953

April 1977 Joined The Sanwa Bank, Ltd. (currently MUFG Bank, Ltd.)
April 1995 Yayoi Branch Manager, The Sanwa Bank, Ltd.
May 2005 Executive Officer, General Manager, Public Relations Department, UFI Bank Ltd. (currently MUFG Bank, Ltd.)
May 2007 Managing Executive Officer and Deputy Chief Executive, Retail Banking Business Unit, The Bank of Tokyo-Mitsubishi UFI, Ltd. (currently MUFG Bank, Ltd.)
January 2009 Executive Vice President, Mitsubishi UFI Asset Management Co., Ltd. (currently Mitsubishi UFI Asset Management Co., Ltd.)
June 2014 President, The Midori Kai Co., Ltd.
June 2017 Full-time Audit & Supervisory Board Member, Cosmo Oil Co., Ltd.
June 2020 Full-time Outside Corporate Auditor, Harmonic Drive Systems Inc. (the "Company") (incumbent)



Hidefumi Iguchi

Date of birth: April 5, 1959

April 1983 Joined Harmonic Drive Systems Inc. (the "Company")
May 1999 General Manager of Quality Assurance Promotion Office, the Company
April 2009 General Manager of Operational Process Innovation Department, the Company
June 2011 General Manager of Internal Control and Audit Office, the Company
May 2013 Corporate Auditor, Harmonic Precision Inc.
July 2014 Executive Officer (Corporate Governance), General Manager of the Internal Control and Audit Office, the Company
June 2020 Executive Officer (Administration and Human Resource), General Manager of Administration and Human Resource and Manager of Environment
April 2022 Executive Officer, General Manager of Administration and Human Resource Division, Manager of Environment and General Manager of Well-Being Center, the Company
June 2022 Full-time Corporate Auditor, the Company (incumbent)

Corporate Auditors



Yoshihiro Tanioka
Date of birth: September 21, 1958

April 1982 Joined Harmonic Drive Systems Inc. (the "Company")
May 2003 Manager of No.1 Development Department, Mechatronics Division, the Company
March 2006 General Manager of Engineering Department, Mechatronics Division, the Company
March 2006 Director, Wirbel Co., Ltd. (currently Harmonic Wirbel Inc.)
July 2007 General Manager of Mechatronics Division, the Company
October 2009 General Manager of Development Division, the Company
June 2010 Executive Officer and General Manager of Development Division, the Company
September 2011 Executive Officer (Engineering), the Company
September 2012 Executive Officer and General Manager of Overseas Business Division, the Company
April 2015 Executive Officer and General Manager of Sales Strategy Division, the Company
May 2015 Representative Director and President, Harmonic AD, Inc.
May 2015 Director of SAMICK ADM Co., Ltd. (incumbent)
May 2017 Executive Officer in Charge of Harmonic Planetary Development, the Company
May 2018 Director, Harmonic AD, Inc. (incumbent)
June 2018 Executive Officer (Development Engineering), the Company
June 2019 Executive Officer, General Manager of Development and Engineering Division, the Company
June 2021 Director and Executive Officer, General Manager of Development and Engineering Division, the Company (incumbent)



Haruhiko Yoshida
Date of birth: September 2, 1943

April 1966 Joined Mitsui & Co., Ltd.
February 1996 Senior Executive Vice President, Mitsui & Co. (USA), Inc.
April 1998 General Manager of Communications, Transportation & Industrial Project Unit, Mitsui & Co., Ltd.
April 1998 Director and General Manager of Communications, Transportation & Industrial Project Unit, Mitsui & Co., Ltd.
June 1998 Representative Director, Executive Managing Director, and General Manager of Communications, Transportation & Industrial Project Unit, Mitsui & Co., Ltd.
June 2001 Executive Managing Officer and General Manager of Communications, Transportation & Industrial Project Unit, Mitsui & Co., Ltd.
April 2002 Executive Managing Officer and General Manager of Communications, Transportation & Industrial Project Unit, Mitsui & Co., Ltd.
July 2002 Executive Managing Officer and Assistant to President of Machinery and Information Group, Mitsui & Co., Ltd.
June 2003 Outside Director, Nogano Keki Co., Ltd.
June 2003 Outside Director, Harmonic Drive Systems Inc. (the "Company") (incumbent)
June 2006 Corporate Auditor, Hakudo Co., Ltd.
June 2007 Outside Director, Hakudo Co., Ltd.



Masanobu Nakamura
Date of birth: August 23, 1946

May 1970 Joined The Sanwa Bank, Ltd. (currently MUFG Bank, Ltd.)
June 1999 Executive Officer and Nihonbashi Branch Manager, The Sanwa Bank, Ltd.
April 2001 Executive Officer and New York Branch Manager, The Sanwa Bank, Ltd.
January 2002 Managing Executive Officer and New York Branch Manager, UFB Bank Limited (currently MUFG Bank, Ltd.)
May 2002 Executive Operating Officer, Corporate Banking Company Director, UFB Bank Limited
May 2004 Representative Director, Executive Operating Officer (Strategic Support Group), Company Director, UFB Bank Limited
June 2005 Special Advisor, Sanshin Co., Ltd.
October 2005 President and Representative Director, BNP Paribas (Japan)
November 2005 Director, Tokyo Branch, BNP Paribas Securities (Japan) Limited
June 2007 Board of Directors Advisory Committee, Harmonic Drive Systems Inc. (the "Company")
May 2011 Chairperson, BNP Paribas Securities (Japan) Limited
September 2011 Special Advisor, BNP Paribas Securities (Japan) Limited
June 2013 Outside Director, the Company (incumbent)



Yoshio Fukuda
Date of birth: March 1, 1953

April 1976 Joined Teijin Limited
July 2006 Corporate Officer, Teijin Group
Member of the Board and General Manager of Raw Materials & Polymers Division, Teijin Fibers Ltd.
May 2007 President, PT. Teijin Indonesia Fiber Corporation Tbk
June 2010 Corporate Officer and Member of the Board, General Manager of Corporate Planning Division, Teijin Limited
June 2012 Executive Officer and Member of the Board, General Manager of Electronics Materials and Performance Polymer Products Business Group, and General Manager of Resin and Plastic Processing Business Unit, Teijin Limited
President, Teijin Chemicals Ltd.
Chairperson, Global Policy Board, Teijin DuPont Films Global Joint Venture
June 2013 Senior Executive Officer and Member of the Board, General Manager of Electronics Materials and Performance Polymer Products Business Group, Teijin Limited
Chairperson, Global Policy Board, Teijin DuPont Films Global Joint Venture
April 2015 Advisor, Member of the Board, Teijin Limited
June 2015 Advisor, Teijin Limited
June 2016 Outside Director, Toyo Construction Co., Ltd.
June 2017 Outside Corporate Auditor, Harmonic Drive Systems Inc. (the "Company")
June 2017 Auditor, Japan Indonesia Association, Inc. (incumbent)
June 2020 Director, Harmonic AD, Inc.
June 2020 Outside Director, the Company (incumbent)
March 2021 Auditor, Japan-Sri Lanka Association (incumbent)



Shigeto Ohashi
Date of birth: May 8, 1956

April 1980 Joined Tokyo Aircraft Instrument Co., Ltd.
April 2000 General Manager, Human Resources Department, Administration Division, Tokyo Aircraft Instrument Co., Ltd.
June 2008 Executive Officer, Deputy General Manager, Administration Division, and General Manager, Human Resources Department, Administration Division, Tokyo Aircraft Instrument Co., Ltd.
June 2009 Director, Tokyo Aircraft Instrument Co., Ltd.
April 2016 President, Tokyo Aircraft Instrument Co., Ltd.
May 2017 President, TKK Works Co., Ltd.
June 2020 Outside Corporate Auditor, Harmonic Drive Systems Inc. (the "Company") (incumbent)
June 2020 Chairperson, Tokyo Aircraft Instrument Co., Ltd.
June 2021 Director, Tokyo Aircraft Instrument Co., Ltd.
June 2023 Managing Director, Tokyo Aircraft Instrument Co., Ltd.
July 2023 Director, Tokyo Aircraft Instrument Co., Ltd. (incumbent)



Eisaku Imazato
Date of birth: March 2, 1956

April 1979 Joined The Nikko Securities Co., Ltd. (currently SMBC Nikko Securities Inc.)
March 2002 General Manager, Corporate Clients Department II, Nikko Cordial Securities Inc.
March 2003 Executive Officer, General Manager, Tokyo Corporate Clients Department II, Nikko Cordial Securities Inc.
December 2004 Director in charge of sales planning and corporate clients, Nikko Cordial Securities Inc.
February 2005 Executive Managing Director in charge of planning and wholesale business promotion, Nikko Cordial Securities Inc.
February 2007 Senior Managing Director in charge of Wholesale Sales Division I, Nikko Cordial Securities Inc.
August 2008 Senior Executive Officer, Head of Institutional Client Coverage Division, Nikko Citigroup Limited
February 2009 Managing Executive Officer, Co-Head of Corporate & Institutional Business Unit, Mitsubishi UFB Securities Co., Ltd.
May 2010 Managing Executive Officer, Head of Corporate & Institutional Business Unit, Mitsubishi UFB Securities Holdings Co., Ltd.
Executive Officer, Mitsubishi UFB Financial Group, Inc.
June 2012 Principal Executive Officer, Head of Corporate & Institutional Business Unit, Mitsubishi UFB Morgan Stanley Securities Co., Ltd.
June 2016 Outside Director, Chairperson of the Board of Directors, Manzoni Securities Co., Ltd.
March 2020 Outside Director, Manzoni Securities Co., Ltd. (incumbent)
June 2020 Outside Corporate Auditor, Harmonic Drive Systems Inc. (the "Company") (incumbent)

Executive Officers

Chief Executive Officer

Senior Executive Officer (General Manager of Corporate Planning and ICT Promotion)

Managing Executive Officer (General Manager of Supply Chain)

Executive Officer (In Charge of Public Relations)

Executive Fellow Officer (Chief Technical Officer) (In Charge of Engineering and Quality)

Executive Officer (General Manager of Development and Engineering)

Executive Officer (General Manager of Finance Accounting, Finance, and Tax Division)

Executive Officer (General Manager of Sales Administrative Division and Overseas Sales)

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

Executive Officer (In Charge of Corporate Planning and Investor Relations)

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

Executive Officer (General Manager of Production Technology)

Executive Officer (In Charge of Administration, Human Resource and Environmental Management Representative)

Executive Officer (In Charge of Harmonic Drive Laboratory)

Akira Nagai

Akira Maruyama

Minoru Asano

Tetsuo Ikuta

Yoshihide Kiyosawa

Yoshihiro Tanioka

Kazutoshi Kamijoh

Michiya Yashiro

Naomi Shirasawa

Makiko Ono

Tsuyoshi Awaduhara

Hiroki Hanaoka

Osamu Asakura

Shizuka Yata

Sustainability Data

Environment

Indicator		Unit	Scope covered	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023
Total GHG emissions		tCO ₂	Consolidated	239,013	6,613,783
Scope 1	Japan	tCO ₂	Consolidated	80	81
	Asia			16	14
	Europe			197	47
	North America			205	145
	Total			498	286
By location	Japan	tCO ₂	Consolidated	13,394	15,418
	Asia			416	264
	Europe			2,349	2,494
	North America			783	474
	Total			16,942	18,650
Scope 2	Japan	tCO ₂	Consolidated	12,360	9,839
	Asia			—	298
	Europe			—	1,785
	North America			—	291
	Total			—	12,213
Scope 3	1. Purchased goods and services	tCO ₂	Consolidated	198,899	358,792
	2. Capital goods			17,054	11,237
	3. Fuel- and energy-related activities not included in Scope 1 or Scope 2			899	18,329
	4. Upstream transportation and distribution			3,951	8,466
	5. Waste generated in operations			455	1,322
	6. Business travel			104	702
	7. Employee commuting			212	613
	8. Upstream leased assets			0	0
	Total upstream			221,574	399,461
	9. Downstream transportation and distribution			—	3,837
	10. Processing of sold products			—	0
	11. Use of sold products			—	6,190,129
	12. End-of-life treatment of sold products			—	1,398
	13. Downstream leased assets			—	23
	14. Franchises			—	0
	15. Investments			—	0
	Total downstream			—	6,195,386
16. Other (upstream)	—	0			
17. Other (downstream)	—	0			
Total	221,574	6,594,846			
Energy consumption	Fuel consumption	MWh	Consolidated	22,170	1,815
	Electricity consumption			20,247,207	45,780
	Total			20,269,377	47,595
Renewable energy electricity ratio	%	Consolidated	—	28.2	

Indicator		Unit	Scope covered	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023
Total water withdrawal		ML (megaliters)	Consolidated	23	31
Total water discharge				23	31
Incineration waste		t	Consolidated	54.1	2,245
Cafeteria waste				0.4	10
Amount of general waste discharge				54.5	2,255
Amount of hazardous waste discharge				—	712
Green procurement	Ratio of consent acquired for green procurement standards	%	Non-consolidated	100	100
	Number of suppliers audited	Company		9	15
Number of companies surveyed for inclusion of environmentally hazardous substances		Company	Non-consolidated	90	95
Amount of copper usage		Thousand t	Non-consolidated	3.58	3.44
Amount of oil and grease used		Thousand t	Non-consolidated	0.09	0.14
Amount of recycled plastic raw materials used		t	Non-consolidated	17.36	6.24
ISO 14001	Certification status	Company	Consolidated	5	5
	Ratio of certifications acquired at sites	%	Consolidated	50	50
Status of EHS audits		Company	Consolidated	4	4
*EHS audit: Internal environmental audit based on the ISO 14001 standard or in accordance with the company's environmental policy					
Ratio of sites where environmental risk assessments have been conducted among all sites		%	Non-consolidated	100	100
Violations of environmental laws and regulations		Number of cases	Non-consolidated	0	0
Accidents and pollution causing environmental issues		Number of cases	Non-consolidated	0	0
Complaints on environmental issues		Number of cases	Non-consolidated	0	0
Fine on environmental issues		Yen	Non-consolidated	0	0
Environmental training	Number of participants	Person(s)	Non-consolidated	2	101
	Ratio of participants to employees	%		0.5	20.6

Note: The scope of GHG emissions Scope 3 categories 1, 4, 5, 6, 7 and water and waste related data for the fiscal year ended March 31, 2022 is on a non-consolidated basis, and the calculation method is partially different from that for the fiscal year ended March 31, 2023. The above figures are rounded to the nearest whole number.

Social

Indicator		Unit	Scope covered	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023
Number of employees (consolidated)	Entire Group	Person(s)	Consolidated	1,145	1,324
	Entire Company			412	490
Number of employees (non-consolidated)	Male	Person(s)	Non-consolidated	352	404
	Female			60	86
	Ratio of female employees	%		14.6	17.6
Average number of temporary and contract employees		Entire Company	Person(s)	138	156
Ratio of average number of temporary employees		Entire Company	%	25.1	24.1
Average age		Entire Company	Age	41.8	41.8
Average years of service		Entire Company	Year(s)	15.1	14.4
Number of foreign employees	Entire Company			—	8
	Male	Person(s)	Non-consolidated	—	3
	Female			—	5
	Ratio of foreign employees	%		—	1.6

Indicator	Unit	Scope covered	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023	
Number of newly graduated recruits	Entire Company	Person(s)	Non-consolidated	6	9
	Male			5	8
	Female			1	1
Number of mid-career recruits	Entire Company	Person(s)	Non-consolidated	16	13
	Male			16	10
	Female			0	3
Retention of newly graduated recruits (turnover rate after 3 years)	Entire Company	%	Non-consolidated	7.7	0.0
	Male			5	0.0
	Female			16.7	0.0
Total turnover rate	Entire Company	%	Non-consolidated	3.7	3.0
Turnover rate for personal reasons retirees	Entire Company	%	Non-consolidated	3.7	2.8
Managers	Male (entire Company)	Person(s)	Non-consolidated	81	82
	Male (foreign nationals)			0	0
	Female (entire Company)			3	2
	Female (foreign nationals)			0	0
	Ratio of female managers			%	3.6
Executive Officer	Male (entire Company)	Person(s)	Non-consolidated	12	12
	Male (foreign nationals)			0	0
	Female (entire Company)			1	1
	Female (foreign nationals)			0	0
	Ratio of female managers			%	7.7
Employees with disabilities	Entire Company	Person(s)	Non-consolidated	10	11
	Male			8	9
	Female			2	2
	Ratio of employees with disabilities			%	1.85
Average monthly overtime hours/person	Entire Company	Hours	Non-consolidated	25.2	22.9
Percentage of paid leave taken		%	Non-consolidated	69.6	73.2
Number of employees who took childcare leave	Entire Company	Person(s)	Non-consolidated	14	9
	Male			10	9
	Female			4	0
Ratio of employees who took childcare leave	Male	%	Non-consolidated	55.6	56.3
Labor-management meetings	Number of meetings held	Times	Non-consolidated	12	12
Safety and Health Committee	Number of meetings held	Times	Non-consolidated	12	12
Employee training on safety and health	Number of meetings held	Times	Non-consolidated	20	12
	Number of participants	Person(s)		300	162
Status of EHS risk assessments *EHS: A method of managing the environment and occupational health and safety in an integrated manner	Number of cases		Non-consolidated	41	30
Stress check inspection rate		%	Non-consolidated	88.6	86.0
Harassment Prevention Training	Number of trainings held	Times	Non-consolidated	3	3
	Number of participants (cumulative)	Person(s)		381	144
	Ratio of participants to employees	%		75.3	29.4
Child labor, forced labor, human trafficking	Number of cases		Consolidated	0	0
Special training (master's, doctoral, MBA, MOT, overseas training, overseas language study, etc.)	Person(s)		Non-consolidated	1	3

Indicator	Unit	Scope covered	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023
Number of employees taking correspondence education programs (cumulative)	Person(s)	Non-consolidated	234	131
Certification status (including ISO 9001 and other industry-specific standards)	Certified sites	Company	7	7
	Ratio of sites certified	%	70	70
Number of patents held	Number of cases	Non-consolidated	951	1,004
Corporate citizenship activities (social contribution activities)	Community cleanups	Times	6	6
	Harmonic Lectures	Times	1	1
	Harmonic Concerts	Times	0	1
	Lessons in educational facilities	Times	—	3

Governance

Indicator	Unit	Scope covered	Fiscal year ended March 31, 2022	Fiscal year ended March 31, 2023	
Director	Male	Person(s)	5	5	
	Internal	Female	Person(s)	0	0
		Female ratio	%	0	0
	Outside	Male	Person(s)	4	4
		Female ratio	%	0	0
Total	Person(s)	Non-consolidated	9	9	
Ratio of Independent Outside Directors	%	Non-consolidated	44.4	44.4	
Number of Board of Directors meetings	Times	Non-consolidated	17	17	
Average attendance at Board of Directors meetings	%	Non-consolidated	99.3	99.4	
Corporate Auditor	Internal	Person(s)	Non-consolidated	1	1
	Outside			3	3
	Total			4	4
Ratio of Independent Outside Corporate Auditors	%	Non-consolidated	50.0	50.0	
Number of Board of Corporate Auditors meetings	Times	Non-consolidated	18	18	
Average attendance at Corporate Auditors meetings	%	Non-consolidated	98.6	98.6	
Number of whistleblown cases	Number of cases	Non-consolidated	17	19	
Number of confirmed corruption cases	Number of cases	Non-consolidated	0	0	
Fines imposed in connection with corruption	Yen	Non-consolidated	0	0	
Compliance trainings	Number of trainings held	Times	—	6	
	Number of participants	Person(s)	—	293	
	Ratio of participants to employees	%	—	59.8	
Political donations	Yen	Non-consolidated	0	0	
Number of incidents of corruption and bribery	Number of cases	Non-consolidated	0	0	
Number of violations of antitrust laws	Number of cases	Non-consolidated	0	0	
Number of information security incidents	Number of cases	Consolidated	1	0	
Information security compliance ratio	%	Consolidated	97.0	96.5	
Awareness training to prevent information security breach	Number of trainings held	Times	1	2	
	Number of participants (cumulative)	Person(s)	470	1,040	
Information security due diligence performed by a third party	Times	Consolidated	2	2	

Financial Data for the Past 11 Years

Items	Units	FY2012	FY2013	FY2014	FY2015
Net sales	(Millions of yen)	18,130	21,083	25,951	28,278
Cost of sales	(Millions of yen)	10,762	11,965	13,829	14,992
Gross profit	(Millions of yen)	7,368	9,117	12,121	13,286
Selling, general and administrative expenses	(Millions of yen)	3,931	4,449	5,054	5,667
Operating profit or loss	(Millions of yen)	3,436	4,668	7,066	7,618
Ordinary profit	(Millions of yen)	3,576	4,822	7,525	7,829
Profit or loss attributable to owners of parent	(Millions of yen)	1,960	2,993	4,833	5,001
Total assets	(Millions of yen)	36,953	38,625	49,440	48,749
Total net assets	(Millions of yen)	25,986	30,520	37,680	38,891
Interest bearing liabilities	(Millions of yen)	4,919	217	745	892
Net cash	(Millions of yen)	7,068	8,870	11,402	12,014
Equity ratio	(%)	67.5	75.9	73.3	76.1
Cash flows from operating activities	(Millions of yen)	4,700	3,643	5,494	6,499
Cash flows from investing activities	(Millions of yen)	3,271	(1,102)	(2,103)	(4,394)
Free cash flows	(Millions of yen)	7,972	2,540	3,390	2,105
Cash flows from financing activities	(Millions of yen)	(2,545)	(5,591)	(737)	(1,384)
Cash and cash equivalents at end of period	(Millions of yen)	9,713	6,883	9,730	10,439
Net assets per share	(Yen)	272.5	320.1	395.7	405.3
Net profit or loss per share	(Yen)	21.4	32.7	52.8	54.6
Dividends per share	(Yen)	7.3	9.7	14.3	18.0
Total dividend paid	(Millions of yen)	671	885	1,312	1,648
Dividend payout ratio	(%)	34.2	29.6	27.2	33.0
Ratio of total amount of dividends to net assets	(%)	2.8	3.3	4.0	4.5
Ratio of gross profit to net sales	(%)	40.6	43.2	46.7	47.0
Ratio of operating profit to net sales	(%)	19.0	22.1	27.2	26.9
ROA	(%)	5.4	7.9	11.0	10.2
ROE	(%)	8.2	11.0	14.7	13.6
Capital investment	(Millions of yen)	1,377	1,304	2,475	4,296
Depreciation and amortization	(Millions of yen)	1,119	1,170	1,305	1,524
R&D expenditure	(Millions of yen)	1,146	1,235	1,309	1,404

Note 1: The Company conducted a 3-for-1 common stock split on October 1, 2014. However, net profit/dividend paid/net assets per share are calculated based on the assumption that the stock split was executed at the beginning of FY2012.

Note 2: Depreciation and amortization represents the total depreciation and amortization expense related to property, plant and equipment and intangible assets.

FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
30,069	54,339	67,809	37,487	37,034	57,087	71,527
16,202	28,636	37,363	25,484	24,451	34,661	45,741
13,866	25,703	30,446	12,003	12,582	22,426	25,786
6,052	13,386	13,821	12,198	11,716	13,686	15,561
7,813	12,316	16,624	(195)	865	8,739	10,224
7,958	11,946	17,185	236	1,366	9,108	10,757
19,732	7,777	11,322	(1,095)	662	6,643	7,595
101,999	138,584	142,872	131,848	140,028	143,289	154,336
62,611	108,719	113,277	106,718	110,059	98,856	103,955
15,666	1,938	2,104	6,963	6,328	16,887	22,946
(3,569)	27,526	16,717	12,607	14,835	3,041	(2,133)
54.0	71.7	72.5	73.3	73.5	69.0	67.4
7,225	9,233	15,121	10,950	9,555	9,881	10,850
(32,522)	(8,171)	(22,399)	(12,537)	(1,230)	(4,703)	(8,663)
(25,296)	1,062	(7,277)	(1,587)	8,324	5,178	2,187
24,648	17,493	(3,271)	2,362	(6,561)	(6,663)	(1,599)
9,668	28,320	17,600	18,342	19,996	18,767	19,921
601.1	1,032.4	1,076.7	1,003.8	1,068.8	1,026.9	1,093.5
215.4	83.9	117.6	(11.4)	6.9	69.0	79.7
20.0	26.0	38.0	20.0	20.0	21.0	28.0
1,831	2,446	3,658	1,925	1,925	2,021	2,661
9.3	31.5	32.3	—	290.6	30.4	35.1
4.0	3.2	3.6	1.9	1.9	2.0	2.6
46.1	47.3	44.9	32.0	34.0	39.3	36.1
26.0	22.7	24.5	(0.5)	2.3	15.3	14.3
26.2	6.5	8.1	(0.8)	0.5	4.7	5.1
42.8	10.1	11.2	(1.1)	0.7	6.6	7.5
4,576	8,757	23,876	7,892	1,959	5,690	9,236
1,774	5,164	5,566	6,826	6,464	7,278	8,520
1,383	2,114	2,476	2,195	2,444	3,012	3,274

Financial Data (FY2022)

Consolidated Balance Sheets

(Millions of yen) As of March 31, 2023	(Millions of yen) As of March 31, 2023
Assets	Liabilities
Current assets	Current liabilities
Cash and deposits 20,783	Notes and accounts payable - trade 3,596
Notes receivable - trade 7,408	Contract liabilities 267
Accounts receivable - trade 10,165	Short-term borrowings 2,610
Securities 28	Current portion of long-term borrowings 2,569
Merchandise and finished goods 2,014	Lease liabilities 583
Work in process 3,658	Income taxes payable 1,046
Raw materials and supplies 6,828	Provision for bonuses 1,471
Other 1,307	Provision for bonuses for directors (and other officers) 351
Allowance for doubtful accounts (19)	Provision for loss on compensation for aftercare of products 64
Total current assets 52,175	Other 3,906
Non-current assets	Total current liabilities 16,467
Property, plant and equipment	Non-current liabilities
Buildings and structures 27,102	Long-term borrowings 17,766
Accumulated depreciation (7,679)	Lease liabilities 3,836
Buildings and structures, net 19,423	Deferred tax liabilities 10,003
Machinery, equipment and vehicles 41,046	Provision for retirement benefits for directors (and other officers) 12
Accumulated depreciation (23,709)	Provision for operating officers' retirement benefits 80
Machinery, equipment and vehicles, net 17,337	Retirement benefit liability 750
Tools, furniture and fixtures 9,579	Other 1,463
Accumulated depreciation (7,735)	Total non-current liabilities 33,913
Tools, furniture and fixtures, net 1,843	Total liabilities 50,380
Land 3,329	Net assets
Leased assets 6,253	Shareholders' equity
Accumulated depreciation (2,100)	Share capital 7,100
Leased assets, net 4,153	Capital surplus 22,773
Construction in progress 2,766	Retained earnings 64,852
Other 821	Treasury shares (4,978)
Accumulated depreciation (747)	Total shareholders' equity 89,747
Other, net 73	Accumulated other comprehensive income
Total property, plant and equipment 48,926	Valuation difference on available-for-sale securities 5,845
Intangible assets	Foreign currency translation adjustment 8,146
Goodwill 15,258	Remeasurements of defined benefit plans 216
Software 191	Total accumulated other comprehensive income 14,207
Customer related assets 19,489	Total net assets 103,955
Technical assets 5,205	Total liabilities and net assets 154,336
Other 187	
Total intangible assets 40,332	
Investments and other assets	
Investment securities 11,044	
Shares of subsidiaries and associates 89	
Retired benefit asset 1,191	
Deferred tax assets 439	
Other 141	
Allowance for doubtful accounts (5)	
Total investments and other assets 12,901	
Total non-current assets 102,160	
Total assets 154,336	

Consolidated Statement of Income

(Millions of yen) For the fiscal year ended of March 31, 2023
Net sales 71,527
Cost of sales 45,741
Gross profit 25,786
Selling, general and administrative expenses 15,561
Operating profit 10,224
Non-operating income
Interest income 14
Dividend income 268
Foreign exchange gains 275
Subsidy income 245
Other 212
Total non-operating income 1,016
Non-operating expenses
Commission for purchase of treasury shares 116
Interest expenses 166
Share of loss of entities accounted for using equity method 0
Foreign exchange losses -
Rental expenses 144
Other 55
Total non-operating expenses 484
Ordinary profit 10,757
Extraordinary income
Gain on sale of non-current assets 1
Gain on sale of investment securities -
Subsidy income 2
Total extraordinary income 3
Extraordinary losses
Loss on sale of non-current assets -
Loss on retirement of non-current assets 63
Loss on tax purpose reduction entry of non-current assets 2
Special extra for retirement payments 501
Total extraordinary losses 567
Profit before income taxes 10,194
Income taxes - current 3,089
Income taxes - deferred (491)
Total income taxes 2,598
Profit 7,595
Profit attributable to non-controlling interests -
Profit attributable to owners of parent 7,595

Consolidated Statement of Comprehensive Income

(Millions of yen) For the fiscal year ended March 31, 2023
Profit 7,595
Other comprehensive income
Valuation difference on available-for-sale securities (66)
Foreign currency translation adjustment 4,392
Remeasurements of defined benefit plans, net of tax 209
Total other comprehensive income 4,536
Comprehensive income 12,132
Comprehensive income attributable to
Comprehensive income attributable to owners of parent 12,132
Comprehensive income attributable to noncontrolling interests -

Consolidated Statements of Cash Flows

(Millions of yen) For the fiscal year ended of March 31, 2023
Cash flows from operating activities
Profit before income taxes 10,194
Depreciation 8,520
Amortization of goodwill 1,054
Increase (decrease) in allowance for doubtful accounts (4)
Increase (decrease) in retirement benefit liability (381)
Increase (decrease) in provision for retirement benefits for directors (and other officers) (478)
Increase (decrease) in provision for operating officers' retirement benefits (48)
Increase (decrease) in provision for bonuses for directors (and other officers) 40
Increase (decrease) in provision for loss on compensation for aftercare of products (1)
Interest income (14)
Dividend income (268)
Interest expenses 166
Share of loss/profit of entities accounted for using equity method 0
Subsidy income (2)
Loss (gain) on sale of investment securities -
Loss (gain) on sale of non-current assets (1)
Loss on retirement of non-current assets 61
Loss on tax purpose reduction entry of non-current assets 2
Decrease (increase) in trade receivables (1,636)
Decrease (increase) in inventories (2,540)
Increase (decrease) in trade payables (458)
Other, net 1,347
Subtotal 15,551
Interest and dividends received 283
Subsidies received 2
Interest paid (177)
Income taxes paid (4,967)
Income taxes refund 158
Net cash provided by (used in) operating activities 10,850
Cash flows from investing activities
Purchase of property, plant and equipment (8,838)
Proceeds from sale of property, plant and equipment 2
Purchase of intangible assets (229)
Proceeds from sale of investment securities -
Payments into time deposits (1,701)
Proceeds from withdrawal of time deposits 2,108
Payments of leasehold and guarantee deposits (8)
Proceeds from refund of leasehold and guarantee deposits 4
Other, net 0
Net cash provided by (used in) investing activities (8,663)
Cash flows from financing activities
Proceeds from short-term borrowings 9,910
Repayments of short-term borrowings (7,610)
Proceeds from long-term borrowings 6,000
Repayments of long-term borrowings (2,242)
Repayments of lease liabilities (551)
Purchase of treasury shares (5,000)
Dividends paid (2,105)
Dividends paid to non-controlling interests -
Net cash provided by (used in) financing activities (1,599)
Effect of exchange rate change on cash and cash equivalents 567
Net increase (decrease) in cash and cash equivalents 1,154
Cash and cash equivalents at beginning of period 18,767
Cash and cash equivalents at end of period 19,921

Global Network

Establishing a global supply network of high-quality product lineups

The HDS Group has production bases in Japan, Germany, the U.S., and South Korea and also conducts development in Japan, Germany, and the U.S. The Company provides sales and technological services in Japan and the Asian region, while the German consolidated subsidiary,

Harmonic Drive SE and its eight consolidated subsidiaries are in charge of Europe, Middle East, Africa, India, and South America. Harmonic Drive L.L.C., the U.S. subsidiary, covers North America. The Chinese consolidated subsidiary, Harmonic Drive Systems (Shanghai) Co., Ltd., provides sales and technological services to the Chinese market. The South Korean subsidiary, SAMDICK ADM CO., LTD., manufactures Precision planetary speed reducers.

Harmonic Drive SE

Location : Hessen, Germany
Business domain : development, production, and sales of speed reducers and mechatronics products



SAMICK ADM CO., LTD.

Location : Dalseonggun, Daegu, South Korea
Business domain : manufacture of Precision planetary speed reducers



Harmonic Drive L.L.C.

Location : Massachusetts, U.S.A.
Business domain : development, production, and sales of speed reducers and mechatronics products



HD Systems, Inc.

Location : Massachusetts, U.S.A.
Business domain : holding company for the HDS Group business in the U.S.

HD Systems, Inc. Silicon Valley Office

Location : California, U.S.A.
Business domain : research and study of advanced technologies

Harmonic Drive Systems (Shanghai) Co., Ltd.

Location : Shanghai, China
Business domain : sales of and technical services for speed reducers and mechatronics products



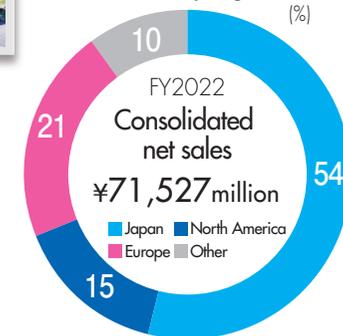
Harmonic Drive Systems Inc. Taiwan Representative Office

Location : Taipei, Taiwan
Business domain : market research and technical support

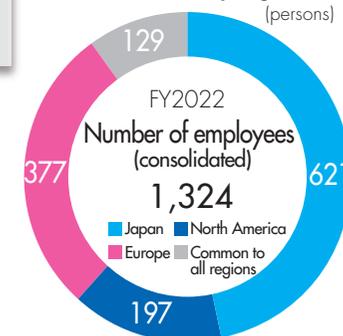


- ① Harmonic Drive Systems Inc. Hotaka Factory and Ariake Factory
Harmonic AD, Inc.
HD Logistics, Inc.
- ② Harmonic Precision Inc.
- ③ Harmonic Winbel Inc.
- ④ Ome Iron Casting Co., Ltd.

Composition of consolidated net sales by region (%)



Number of employees (consolidated) by region



Corporate Overview

Corporate Information (As of March 31, 2023)

Corporate Name	Harmonic Drive Systems Inc.
Location of head office	6-25-3 Minami-Oi, Shinagawa-ku, Tokyo 140-0013, Japan
TEL	+81-3-5471-7800
Corporate website	https://www.hds.co.jp/english/#1
Founded	October 27, 1970
Listed stock exchange	Tokyo Stock Exchange (Standard Market) Securities code: 6324
Business domain	Development, production, and sales of precision speed reducers and applied mechatronics products (actuators and motion control equipment)
Fiscal year end	March
Share capital	¥7,100,036,369
Net sales	Consolidated: ¥71.5 billion Non-consolidated: ¥50.8 billion
No. of employees	Consolidated: 1,324 Non-consolidated: 490
Group companies	Consolidated subsidiaries: 18, Equity-method affiliates: 1

Major Offices and Factories

Name	Location
Head Office	Shinagawa-ku, Tokyo, Japan
Tokyo Office	Shinagawa-ku, Tokyo, Japan
Kohshin Office	Azumino-shi, Nagano, Japan
Chubu Office	Meito-ku, Nagoya-shi, Aichi, Japan
Kansai Office	Yodogawaku, Osaka-shi, Osaka, Japan
Kyushu Office	Hakata-ku, Fukuoka-shi, Fukuoka, Japan
Taiwan Representative Office	Taipei City, Taiwan (R.O.C.)
Hotaka Factory	Azumino-shi, Nagano, Japan
Ariake Factory	Azumino-shi, Nagano, Japan
Matsumoto Factory	Matsumoto-shi, Nagano, Japan
Komagane Factory	Komagane-shi, Nagano, Japan

Name of consolidated subsidiary	Percentage of voting rights	Location	Business domain
HD Logistics, Inc.	100.0%	Azumino-shi, Nagano, Japan	Logistics
Harmonic Precision Inc.	100.0%	Matsumoto-shi, Nagano, Japan	Production and processing of cross roller bearings
Harmonic AD, Inc.	100.0%	Azumino-shi, Nagano, Japan	Production of Precision planetary speed reducers
Harmonic Winbel Inc.	100.0%	Komagane-shi, Nagano, Japan	Development, mass production support, manufacturing and sales of various motors
HD Systems, Inc.*	100.0%	Beverly, Massachusetts, U.S.A.	Investment in Harmonic Drive L.L.C., research and study of speed reducers and mechatronics products
Harmonic Drive L.L.C.*	100.0%	Beverly, Massachusetts, U.S.A.	Development and production of speed reducers and mechatronics products, and sales in North America region
Harmonic Drive Systems (Shanghai) Co., Ltd.*	100.0%	Shanghai, China	Sales and technical services of speed reducers and mechatronics products
SAMICK ADM CO., LTD.*	51.0% (51.0%)	Dalseong-gun, Daegu, South Korea	Production of Precision planetary speed reducers
GK HD Management*	100.0%	Shinagawa-ku, Tokyo, Japan	Holding company for the purpose of investment in Harmonic Drive SE
Harmonic Drive SE and 8 consolidated subsidiaries*	100.0%(63.2%)	Limburg a.d. Lahn, Hessen, Germany	Development and production of speed reducers and mechatronics products, and sales in Europe, Middle East, Africa, India and South America region

Note 1: Fiscal year ends on December 31 for the consolidated subsidiaries marked with *.

Note 2: Percentage of voting rights () indicates the percentage of indirect ownership.

Note 3: Harmonic Winbel Inc. changed its name from Winbel Co., Ltd. as of April 1, 2023.

Name of equity-method company	Percentage of voting rights	Location	Business domain
Ome Iron Casting Co., Ltd.	49.2%	Nishitama-gun, Tokyo, Japan	Development, production, and sales of high-strength cast-iron products

HDS Report 2023 Editors

Corporate Planning Division
Corporate Planning &
Investor Relations
Secretariat, Sustainability
Committee



Kazuha Yamakawa

Makiko Ono

Aoi Ando

<From the editors>

Thank you for reading the HDS REPORT 2023. This is the first integrated report for our Company. The content is designed to introduce the voices of the frontline in an easy-to-understand manner, including the management philosophy, value creation process, top management message, messages from each executive in charge, roundtable discussions among employees as well as among Outside Directors. We hope that this report will help you deepen your understanding of the HDS Group and look forward to the realization of our vision. We also hope that the report will stimulate our dialogue with all of our stakeholders.

Stock Information

Stock Information (As of March 31, 2023)

Total number of shares authorized to be issued	356,400,000 shares
Total number of issued and outstanding shares	96,315,400 shares
Number of shareholders	9,053
Fiscal year	From April 1 of each year to March 31 of the following year
Ordinary General Meeting of Shareholders	Held in June every year
Record date	March 31
Interim dividend	September 30
Transfer agent	1-3-3, Marunouchi, Chiyoda-ku, Tokyo 100-8241 Japan
Special account manager	Mizuho Trust & Banking Co., Ltd.
Handling office	1-3-3, Marunouchi, Chiyoda-ku, Tokyo 100-8241 Japan Stock Transfer Agency Department, Head Office, Mizuho Trust & Banking Co., Ltd.

Status of Major Shareholders

Name of shareholder	No. of shares held (thousand)	Shareholding ratio (%)
KODEN Holdings Co., Ltd.	33,490	35.2
SSBTC CLIENT OMNIBUS ACCOUNT	6,436	6.8
The Master Trust Bank of Japan, Ltd. (Trust Account)	4,576	4.8
Toyota Motor Corporation	4,379	4.6
Norimitsu Ito	3,041	3.2
Custody Bank of Japan, Ltd. (Trust Account)	2,970	3.1
Central trust (A030) trustee SMBC Trust Bank Ltd.	2,176	2.3
The Nomura Trust and Banking Co., Ltd. (Trust Account)	2,000	2.1
J.P.MORGAN BANK LUXEMBOURG S.A. 381572	1,786	1.9
STATE STREET BANK WEST CLIENT-TREATY 505234	1,223	1.3
Total	62,080	65.2

Note: The shareholding ratios noted above are calculated excluding treasury stock.

Percentage of Shares Held by Type of Shareholder



Stock Price Chart



Comparison of Stock Performance (TSR: Total Shareholder Return, %)

Investment period	1 year (March 31, 2022 - March 31, 2023)	3 years (March 31, 2020 - March 31, 2023)	5 years (March 31, 2018 - March 31, 2023)	10 years (March 31, 2013 - March 31, 2023)
Harmonic Drive Systems Inc.	4.8	-5.5	-26.0	718.3
TOPIX	5.8	53.4	31.8	142.1
TOPIX Sector Indices	8.6	67.1	29.3	152.6

Note: The table above shows the cumulative return on investment including dividends as of March 31, 2023, if investments were made 1, 3, 5, and 10 years ago.

Stock Price Valuation

	FY2018	FY2019	FY2020	FY2021	FY2022
Stock price at end of term (Yen)	3,790	4,725	7,480	4,220	4,395
PBR (Times)	3.5	4.7	7.0	4.1	4.0
ROE (Times)	11.2	-1.1	0.7	6.6	7.5
PER (Times)	32.2	-415.2	1,087.2	61.1	55.2
Dividend yield (%)	1.0	0.4	0.3	0.5	0.6
Market capitalization at end of period (Billions of yen)	365.0	455.1	720.4	406.5	423.3



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