Harmonic Drive Systems Inc.

Financial Results for the Fiscal Year Ending March 31, 2023

May 19, 2023

Event Summary

[Company Name]	Harmonic Drive Systems Inc.
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[Venue]	Webcast
[Venue Size]	
[Participants]	

[Number of Speakers]	3	
	Akira Nagai	President and CEO
	Akira Maruyama	Representative Director, General Manager of Corporate Planning Division
	Kazutoshi Kamijoh	CFO, Director and General Manager of Finance Accounting, Finance and Tax Division
[Analyst Names]*	Yuichiro Isayama	Goldman Sachs
	Sho Fukuhara	Jefferies
	Hikaru Mizuno	UBS Securities
	Lisa Jiang	Mitsubishi UFJ Morgan Stanley Securities
	Wendy Pan	Macquarie Capital Securities

*Analysts that SCRIPTS Asia was able to identify from the audio who spoke during Q&A.

Presentation

Moderator: We will now begin the presentation of the financial results of Harmonic Drive Systems Inc. for the fiscal year ended March 31, 2023.

First, I would like to introduce today's attendees. Mr. Akira Nagai, President and CEO.

Nagai: I am Nagai. Thank you.

Moderator: Mr. Akira Maruyama, Representative Director, General Manager of Corporate Planning Division.

Maruyama: Maruyama. Thank you.

Moderator: Mr. Kazutoshi Kamijoh, CFO, Director and General Manager of Finance Accounting, Finance and Tax Division.

Kamijoh: My name is Kamijoh. Thank you.

Moderator: Today, Director Kamijoh will give an overview of the financial results for the fiscal year under review and forecast for the current fiscal year, and President Nagai will explain the future outlook.

Today's presentation material is available on the Company's website. Today's briefing is also available as an audio webcast.

Now, I'll hand over to Director Kamijoh.

Kamijoh: I appreciate your taking the time out of your busy schedule to join our financial results briefing today.

Now, I would like to explain the summary of the financial results for the fiscal year ended March 31, 2023, and the full-year forecast for the fiscal year ending March 2024, in accordance with the material uploaded on our website today.

Consolidated results for FY 2023/3 (versus original forecasts)

(millions of yen)

	Forecast (announced Feb 8, 2023)		FY 2023/3 (actual)		Vs. original forecasts	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	71,000	100.0	71,527	100.0	527	0.7
Operating income	9,800	13.8	10,224	14.3	424	4.3
Ordinary income	10,100	14.2	10,757	15.0	657	6.5
Net income	6,700	9.4	7,595	10.6	895	13.4
EPS (yen)	70.28	—	79.67	—	9.40	13.4

*Net income refers to net income attributable to owners of parent.

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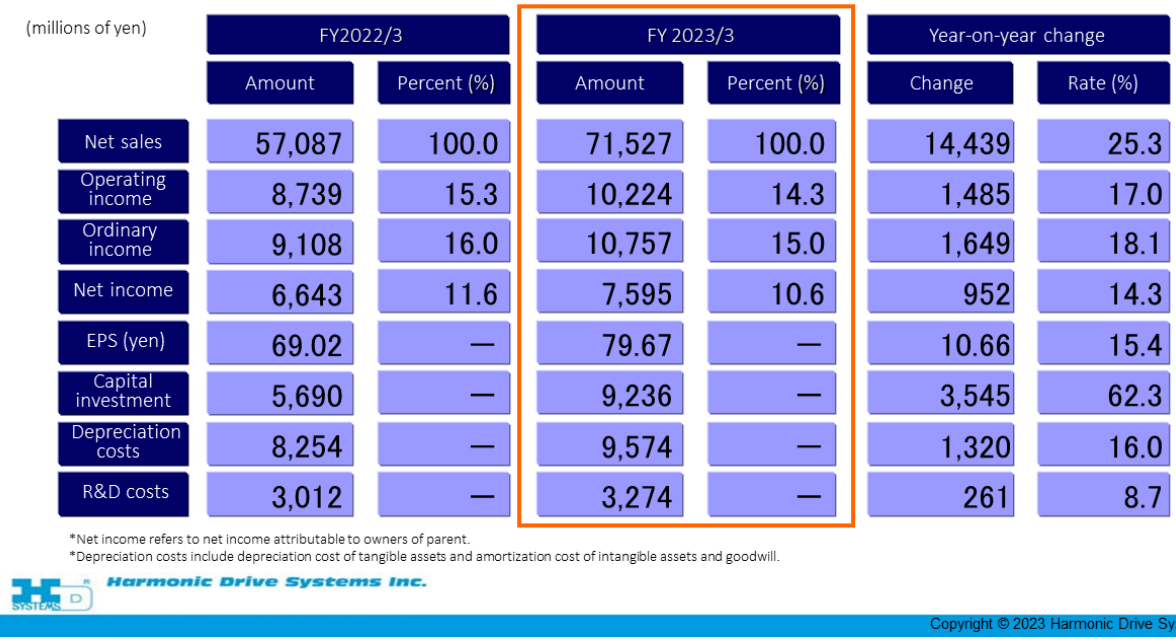
Please refer to page 2. Consolidated results compared to the forecast announced on February 8, 2023 are as you see. We believe that this was generally within our expectations. Both sales and income exceeded the forecasted amounts.

We had conservatively factored in the risks associated with the procurement of semiconductors and other electronic components and had made similarly conservative assumptions regarding the incurrence of expenses in our sales forecast, but the results exceeded the forecasts.

Consolidated results for FY 2023/3 (year-on-year change)



(millions of yen)

	FY2022/3		FY 2023/3		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	57,087	100.0	71,527	100.0	14,439	25.3
Operating income	8,739	15.3	10,224	14.3	1,485	17.0
Ordinary income	9,108	16.0	10,757	15.0	1,649	18.1
Net income	6,643	11.6	7,595	10.6	952	14.3
EPS (yen)	69.02	—	79.67	—	10.66	15.4
Capital investment	5,690	—	9,236	—	3,545	62.3
Depreciation costs	8,254	—	9,574	—	1,320	16.0
R&D costs	3,012	—	3,274	—	261	8.7

*Net income refers to net income attributable to owners of parent.
*Depreciation costs include depreciation cost of tangible assets and amortization cost of intangible assets and goodwill.

Please turn to page 3. Here are the consolidated results compared to those for the previous year. Both sales and profits increased.

First, we have been posting sales while sequentially increasing production capacity, supported by a high level of order backlogs that had been accumulated at the beginning of the fiscal year.

Looking at sales by region, sales in all main regions, including Asia and Japan, the US, and Europe, increased from the previous fiscal year.

Profitability increased with higher sales, despite higher component costs related to mechatronics products due to rising prices of semiconductors and other electronic components, as well as higher labor and depreciation costs in response to increased production of deceleration devices.

Capital investment increased from the previous year due to investment in increased production of wave gears at the Ariake Plant in Nagano Prefecture in response to current shipments and in anticipation of increased demand in the medium term.

Performance of main group companies in FY 2023/3

(millions of yen)

		Equity stake	Net sales		Net income	
			Amount	Year-on-year change (%)	Amount	Year-on-year change (%)
	Harmonic Drive Systems Inc.	—	50,883	23.7	8,927	6.8
*2	HD Systems, Inc. (Harmonic Drive L.L.C.) (U.S.A)	100% (100%)	10,877	63.3	1,431	87.7
	Harmonic AD, Inc.	100%	2,314	▲16.3	92	▲74.8
*3	Harmonic Drive Systems (Shanghai) Co., Ltd.	100%	4,862	20.4	354	33.5
*4	Harmonic Drive SE (Germany)	100%	15,965	20.1	2,106	37.5

*1 For overseas subsidiaries, the fiscal year ends December 31.
*2 Exchange rates: FY 21/12 1USD = 109.80 yen, FY 22/12 1USD = 131.43 yen
*3 Exchange rates: FY 21/12 1CNY = 17.03 yen, FY 22/12 1CNY = 19.48 yen
*4 Exchange rates: FY 21/12 1EUR = 129.89 yen, FY 22/12 1EUR = 138.04 yen

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Please turn to page 4. Here are the results of our major group companies.

The second from the top is the US subsidiary. Sales increased due to an increase in demand for semiconductor equipment and medical equipment. To meet these increases in demand, we proceeded with measures to increase production at our new plant, which began full-scale operations in the previous fiscal year. As a result, personnel expenses, depreciation, and other expenses increased, but the effect of higher revenues resulted in an increase in income.

Below that is Harmonic A.D. Inc., which manufactures planetary reduction gears in Japan. Planetary reduction gears, which are often used as gearheads for servo motors, were affected by our customers' postponement or curtailment of orders for reduction gears to meet the delivery deadlines for servo motors, which have become a bottleneck due to long delivery times. In addition to this, in H2, it was affected by declining demand for robots and semiconductor equipment. As a result of the above, both sales and income decreased.

Below that is the Chinese subsidiary. Sales and income increased compared to the same period of the previous year, although they did not reach expectations due to the impact of the lockdown and other factors.

The last is the German subsidiary. Sales to robot manufacturers were at the same level as the previous fiscal year, but sales to semiconductor equipment and machine tools, as well as general small-lot orders, increased. This resulted in an increase in operating income.

Non-consolidated results for FY 2023/3(year-on-year change)

(millions of yen)

	FY 2022/3		FY 2023/3		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	41,120	100.0	50,883	100.0	9,763	23.7
Operating income	8,358	20.3	8,927	17.5	569	6.8
Ordinary income	8,702	21.2	9,378	18.4	676	7.8
Net income	6,545	15.9	6,880	13.5	334	5.1
EPS (yen)	68.00	—	72.17	—	4.17	6.1
Capital investment	4,589	—	7,557	—	2,968	64.7
Depreciation costs	3,502	—	4,408	—	905	25.8
R&D costs	2,251	—	2,430	—	179	8.0

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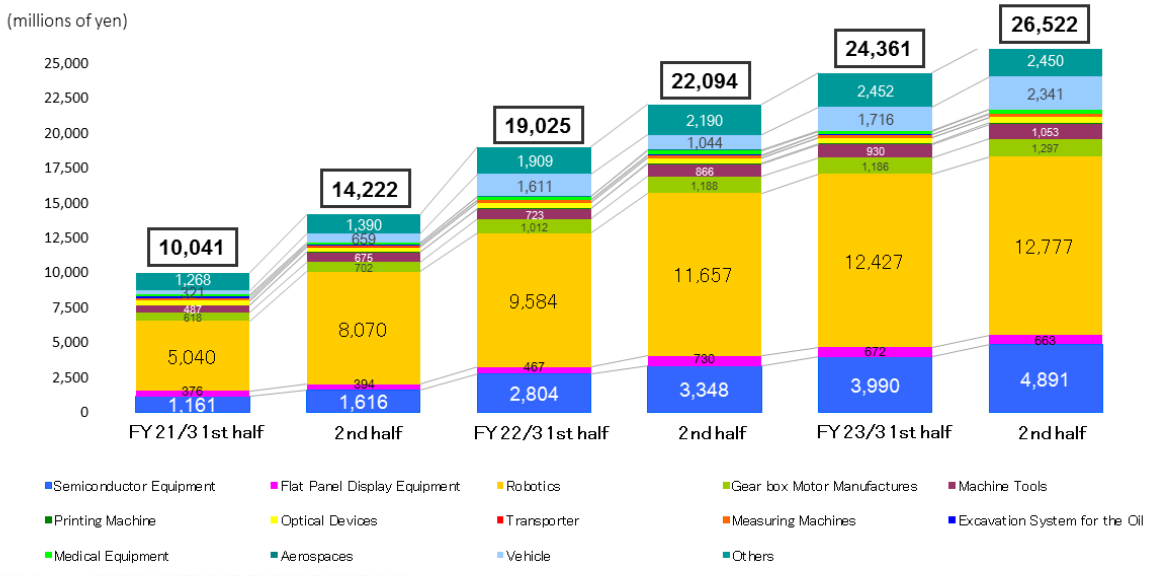
Please look at page 5. As you can see, both sales and profits increased on a non-consolidated basis. The factors behind the increase/decrease in sales and profit will be explained later in this report.

Non-consolidated net sales by application (half-yearly)



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Please refer to page 6. Here are the non-consolidated sales figures by application.

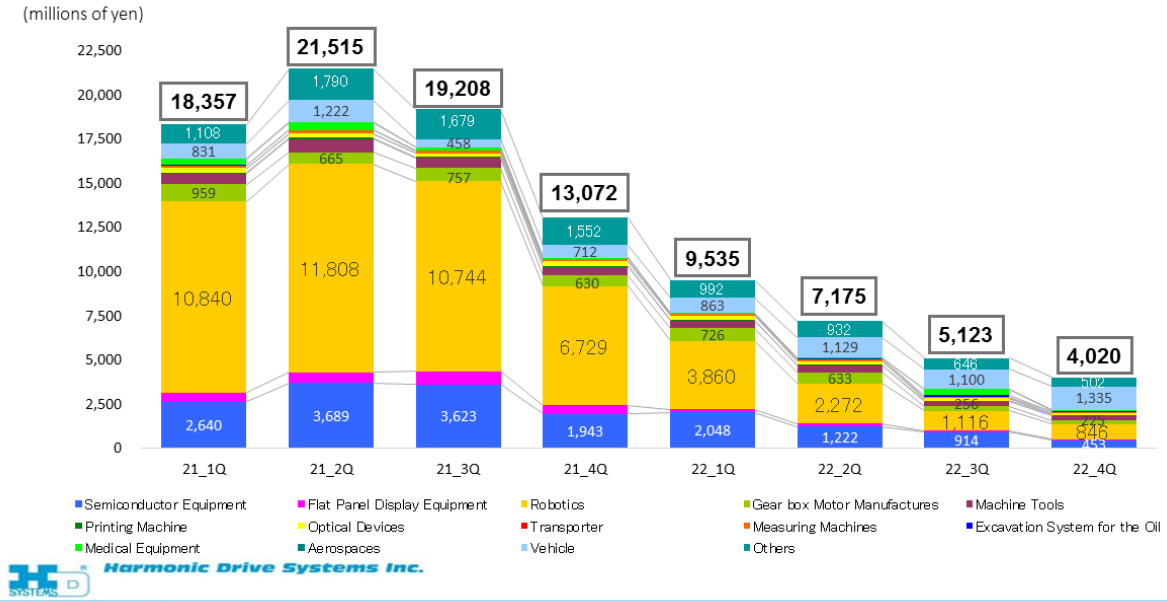
As you can see, for the third consecutive year, demand increased, especially for industrial robots and semiconductor equipment, resulting in an increase in sales.

As for robots, sales of reduction gears for small robots from robot manufacturers, who are our customers, increased.

Demand for semiconductor equipment increased, mainly for front-end manufacturing equipment and wafer transfer robots.

Sales for in-vehicle applications did not reach the sales level assumed at the time of the initial forecast. However, sales of vehicles equipped with new engines that use our reduction gears expanded and the semiconductor procurement situation of our customers improved, resulting in an upward trend in sales.

Non-consolidated bookings by application (quarterly)



Please refer to page 7. This is the quarterly non-consolidated orders received by application.

As you can see, for approximately 18 months, orders received declined. As we have previously explained, this is mainly due to customers' ongoing order adjustments in reaction to the high level of orders received in the previous fiscal year, including advance orders.

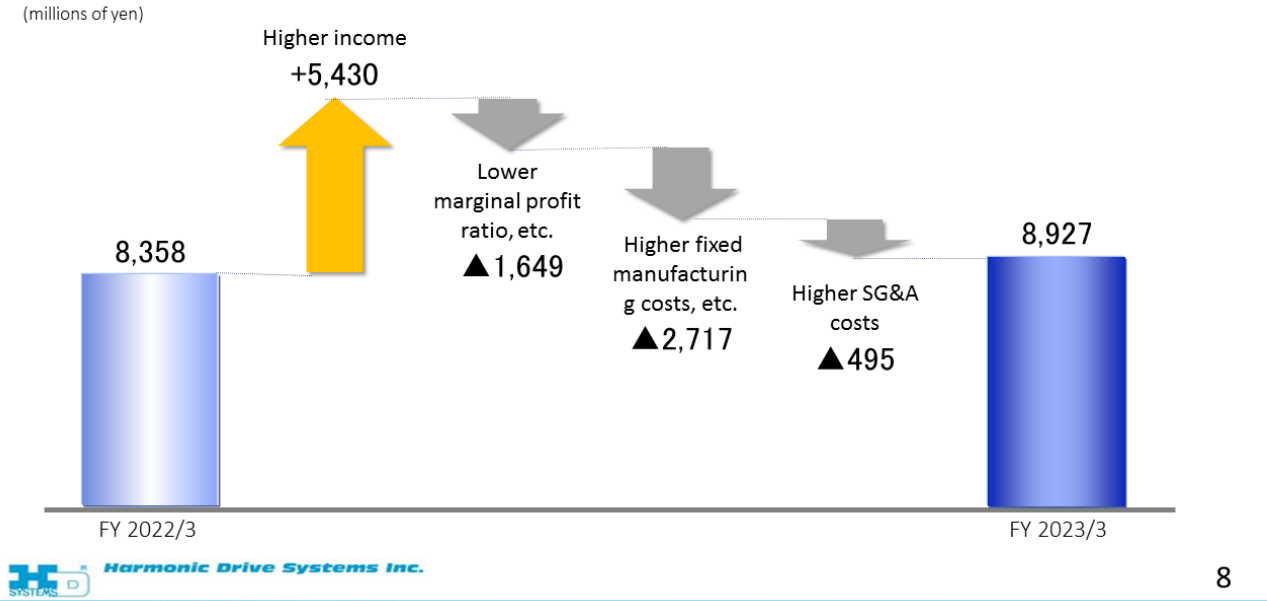
In addition to these order adjustments, demand for reduction gears for small robots used in electronic device manufacturing equipment has decreased since around the end of 2022, mainly in China. Demand for semiconductor production equipment also softened.

The combination of these factors, as you can see, resulted in a very difficult Q4, with orders received totaling approximately JPY4 billion.

However, the number of cancellations, which occurred separately from the order amount shown in the graph, decreased from approximately JPY1.7 billion in Q3 to JPY130 million in Q4. We believe that the cancellation of customer orders due to demand adjustments is almost complete.

In addition, there are signs of an increase in orders received on a monthly basis from March, after bottoming out in February of Q4. Although the outlook remains highly uncertain, we believe that the bottom of orders on a quarterly basis is likely to be in Q4 that just ended.

Factors in year-on-year change in non-consolidated operating income (FY 2023/3)



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Please refer to page 8. Here are the factors behind the increase/decrease in non-consolidated operating income.

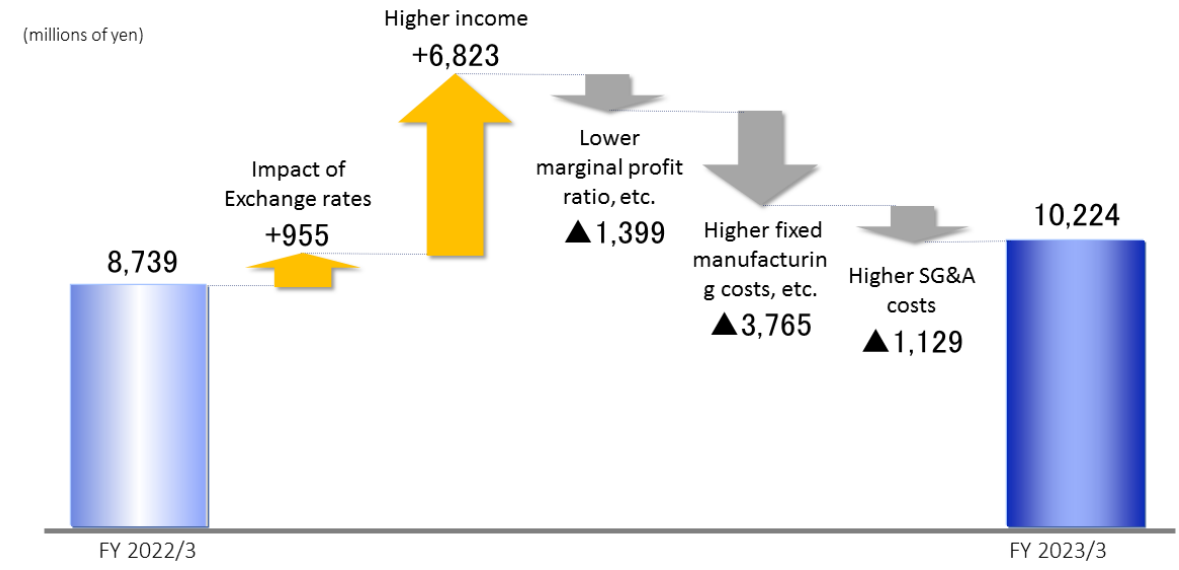
The impact of the revenue increase was JPY5,430 million. Changes in marginal profit margin and inventory changes were a negative factor of JPY1,649 million.

Of this amount, the negative impact of semiconductor price hikes is about JPY1.3 billion. The other part of the decrease is the effect of lower income due to changes in the sales mix, price fluctuations of metal materials and other products, and lower inventories of work in process and other products.

Fixed manufacturing costs and other expenses increased by JPY2,717 million. This was mainly due to an increase in personnel costs resulting from an increase in the number of employees in the manufacturing division, mainly to raise production capacity, and an increase in performance-based bonuses, as well as an increase in overhead costs due to higher factory utilization.

SG&A expenses were due to higher packaging and shipping costs and marketing costs.

Factors in year-on-year change in consolidated operating income (FY 2023/3)



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Please refer to page 9. Here are the factors behind the increase/decrease in consolidated operating income.

Foreign exchange fluctuations had a JPY955 million impact on operating income through the cost of sales, and increased revenue had a JPY6,823 million impact.

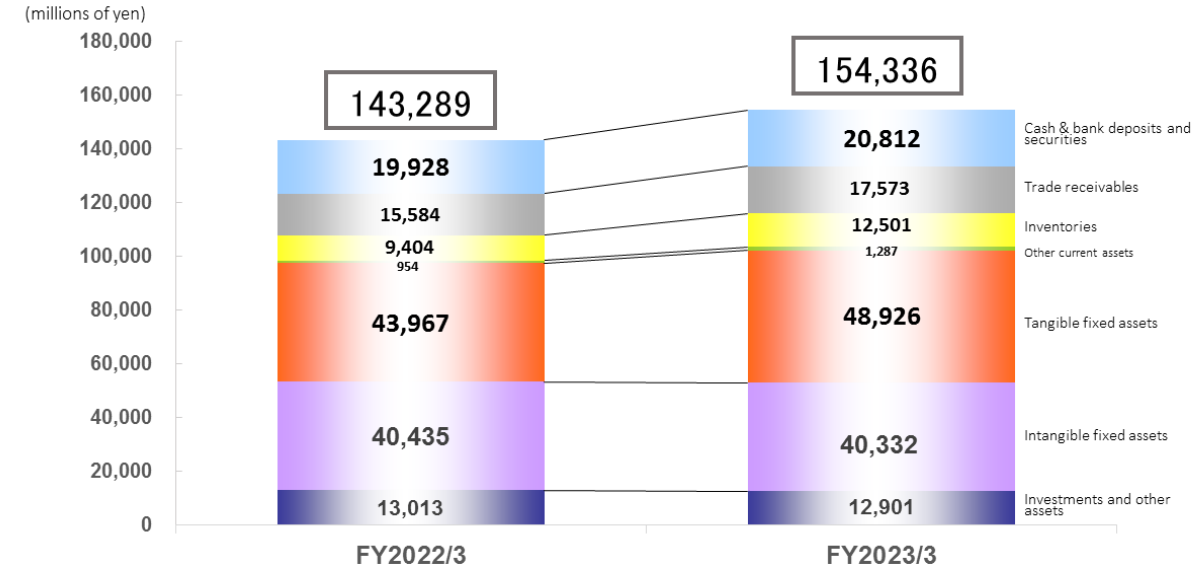
Next, the change in marginal profit margin and inventory change, etc. was approximately JPY1.4 billion, which is less than the amount incurred on a non-consolidated basis. This was due to a favorable difference in the so-called consolidated/non-consolidated difference due to changes in the sales mix at subsidiaries and other factors.

Manufacturing fixed costs and SG&A expenses increased on a consolidated basis as well from the previous year due to an expansion in the scale of production and an increase in sales.

These expenses are presented on a constant currency basis.

In the future, we would like to disclose the consolidated financial results in this manner, instead of the non-consolidated financial results.

Status of consolidated assets



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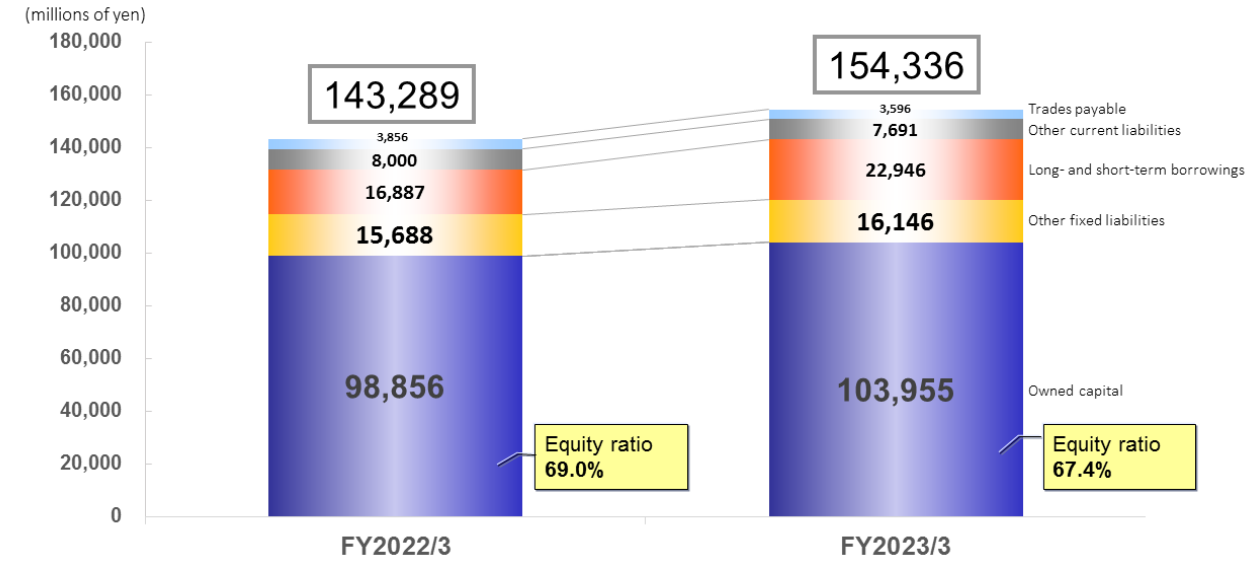
Page 10 shows the consolidated balance sheet. For details, please refer to the financial report.

Status of consolidated liabilities and net assets



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Same applies to page 11.

Status of consolidated cash flows

(millions of yen)	FY 2022/3	FY 2023/3
Cash flow from operating activities	9,881	10,850
Cash flow from investing activities	▲4,703	▲8,663
Cash flow from financing activities	▲6,663	▲1,599
Effect of exchange rate changes on cash and cash equivalents	256	567
Net increase (decrease) in cash and cash equivalents	▲1,229	1,154
Cash and cash equivalents at end of year	18,767	19,921

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Same applies to page 12, cash flow.

Consolidated performance forecasts for 1st-quarter FY 2024/3

(millions of yen)	1st-quarter FY 2023/3		1st-quarter FY 2024/3 (forecasts)		Quarter-on-quarter change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	15,692	100.0	14,700	100.0	▲992	▲6.3
Operating income	2,126	13.6	800	5.4	▲1,326	▲62.4
Ordinary income	2,297	14.6	700	4.8	▲1,597	▲69.5
Net income	1,204	7.7	450	3.1	▲754	▲62.6
EPS (yen)	12.55	—	4.73	—	▲7.81	▲62.3

* Assumed exchange rate for 1st–quarter FY 24/3 forecasts 1USD = ¥127.00 1EUR = ¥135.00 1CNY = ¥19.00
*Net income refers to net income attributable to owners of parent.

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I would now like to explain our consolidated performance forecasts for the current fiscal year.

Please refer to page 14. As we have already announced in our financial report, we have decided to announce only the Q1 forecast for the fiscal year ending March 31, 2024 at this time.

This is mainly due to the fact that it is extremely difficult to forecast future orders in Japan and other Asian countries with a high degree of accuracy. As I explained earlier, there are signs that orders have bottomed out, and we expect orders to gradually increase toward the end of the fiscal year. However, it is difficult to reasonably predict the angle and timing of the slope of the increase.

We were concerned that adopting either an optimistic or pessimistic assumption could result in misleading investors, so we have decided to treat the issue in this way.

We will closely monitor the situation for some time to come, as it is particularly difficult to determine when demand for small robots will recover and when the accompanying inventory adjustments by robot manufacturers and distributors will be completed, especially since the timing of such inventory adjustments differs for each customer and robot. We intend to disclose future forecasts at the appropriate time.

Consolidated earnings forecasts for Q1 are as shown. The main reason for the large YoY decline in income relative to sales is that the Japan segment, which is relatively more profitable than the US and Europe segments, posted declines in both sales and income, while the European and US segments performed relatively well.

Consolidated CAPEX and R&D Expenses FY 2024/3

(millions of yen)

	FY 2023/3		FY 2024/3 (forecasts)		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Capital investment	9,236	—	7,300	—	▲1,936	▲21.0
Depreciation costs	9,574	—	9,600	—	25	0.3
R&D costs	3,274	—	3,500	—	225	6.9

* Assumed exchange rate for 1st–quarter FY 24/3 forecasts 1USD = ¥127.00 1EUR = ¥135.00 1CNY = ¥19.00
*Depreciation costs include depreciation cost of tangible assets and amortization cost of intangible assets and goodwill.

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Please turn to page 15. This is the projected amount of CapEx, depreciation and R&D expenses. This information will be provided on a full-year basis, not on a quarterly basis.

With regard to capital investment, we plan to reduce the total amount of capital investment compared to the previous fiscal year, but we intend to carry out capital investment that is essential for future growth. We will also invest in capacity expansion for products for which demand is expected to increase in the future but for which capacity is limited, in order to prepare for the next phase of demand expansion.

We also plan to increase R&D expenses. Although we anticipate that our performance in the current fiscal year will be challenging in the short term, we intend to maintain and expand our competitiveness in the medium to long term.

Non-consolidated performance forecasts for 1st-quarter FY 2024/3

(millions of yen)

	1st-quarter FY 2023/3		1st-quarter FY 2024/3 (forecasts)		Quarter-on-quarter change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	11,608	100.0	8,000	100.0	▲3,608	▲31.1
Operating income	2,108	18.2	200	2.5	▲1,908	▲90.5
Ordinary income	2,425	20.9	2,350	29.4	▲75	▲3.1
Net income	1,359	11.7	2,300	28.8	940	69.1
EPS (yen)	14.17	—	24.19	—	10.03	70.8

* Assumed exchange rate for 1st–quarter FY 24/3 forecasts 1USD = ¥127.00 1EUR = ¥135.00 1CNY = ¥19.00

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Page 16 shows non-consolidated performance forecasts. The reason why ordinary income is larger than operating income is because we expect to record dividends received from subsidiaries, which is a non-consolidated event only.

Non-consolidated CAPEX and R&D Expenses FY 2024/3

(millions of yen)

	FY 2023/3		FY 2024/3 (forecasts)		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Capital investment	7,557	—	4,800	—	▲2,757	▲36.5
Depreciation costs	4,408	—	4,700	—	291	6.6
R&D costs	2,430	—	2,500	—	69	2.9

* Assumed exchange rate for 1st–quarter FY 24/3 forecasts 1USD = ¥127.00 1EUR = ¥135.00 1CNY = ¥19.00
*Depreciation costs include depreciation cost of tangible assets and amortization cost of intangible assets and goodwill.

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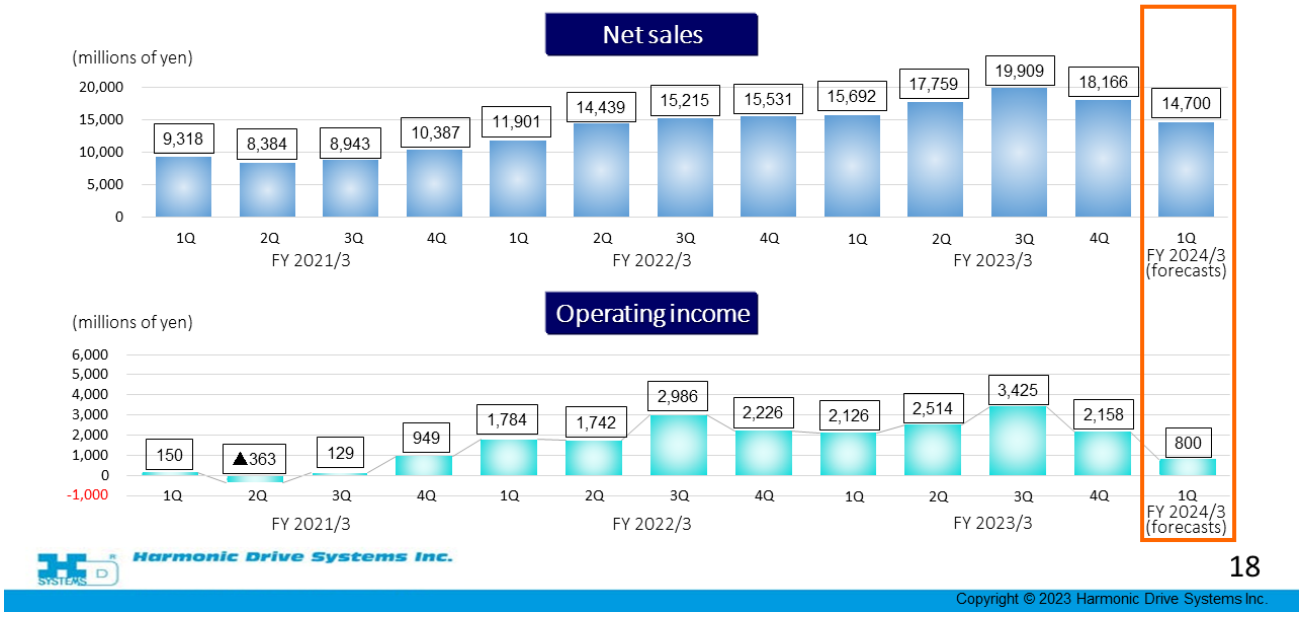
Page 17 shows planned CapEx, etc. on a non-consolidated basis.



Page 18 shows consolidated net sales and operating income on a quarterly basis.

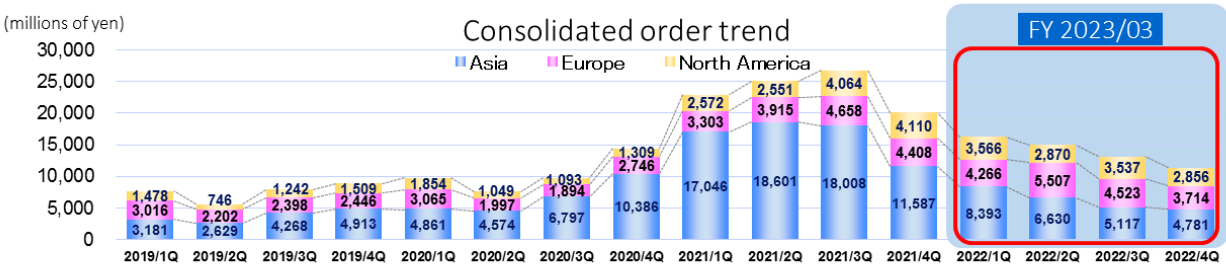
In Q1, the sales level is expected to be lower than the previous quarter, so the amount of profit is also expected to decrease correspondingly. However, we will use this period to prepare for the next period of business expansion, to strengthen our footing, and to prepare for the next leap forward.

This is the end of my explanation. Thank you very much for your attention.

Moderator: Next, President Nagai will give an explanation.

1-1. Demand for HDSI's products

■Decline in domestic orders: Inventory adjustment due to advance orders placed in FY 2022/03
■Difficult to forecast when inventory held by distributors and customers will be exhausted



Asia	Demand for small 3C-oriented robots has decreased due to a slowdown in the Chinese market, though signs of partial recovery are becoming visible
Europe	The effects of the Ukraine conflict have been minimal, and as capital investments have continued, demand has remained consistently stable
North America	Order intake for sectors such as semiconductors, medical, and amusement have shown robust trends

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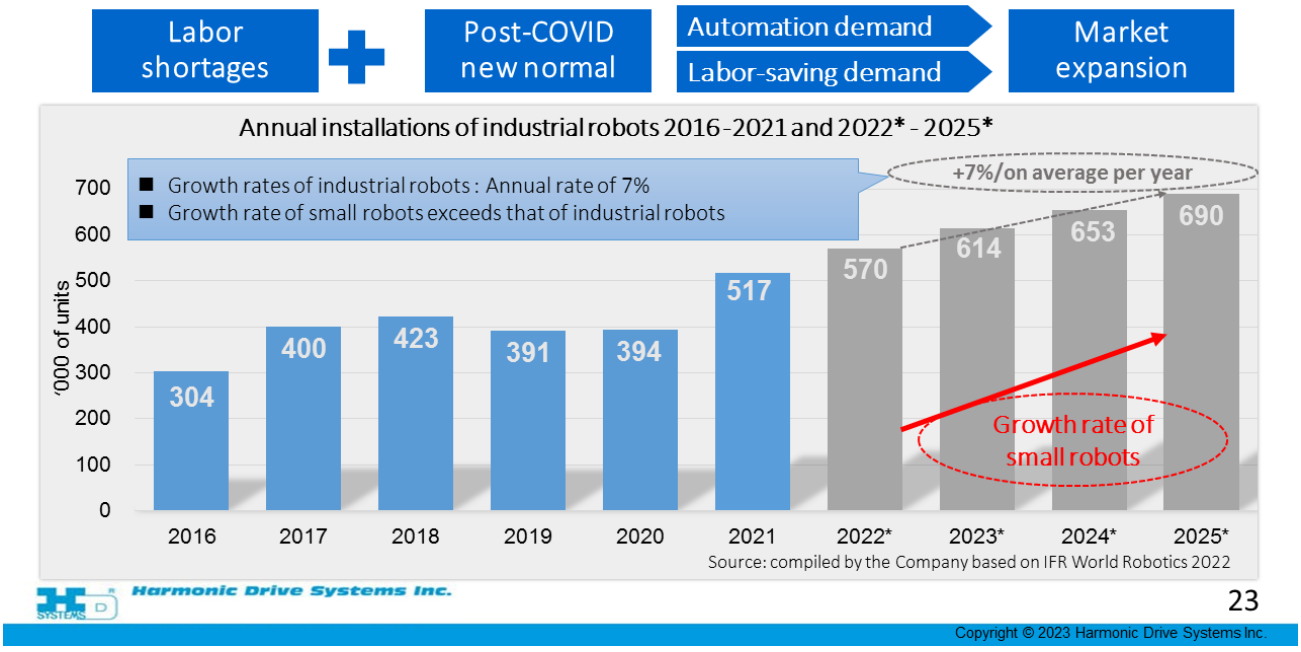
Nagai: My name is Nagai, the President of the Company. Next, I would like to explain the future outlook.

I will explain the current environment surrounding the Company. Please see page 21.

As explained by Mr. Kamijoh earlier, there are still inventories of our parts at distributors and customers, and it is difficult to predict when these inventories will be used up, so we announced the forecast for Q1 only. However, we feel that it has almost bottomed out in Q4, so we will be able to tell a more accurate story in a while.

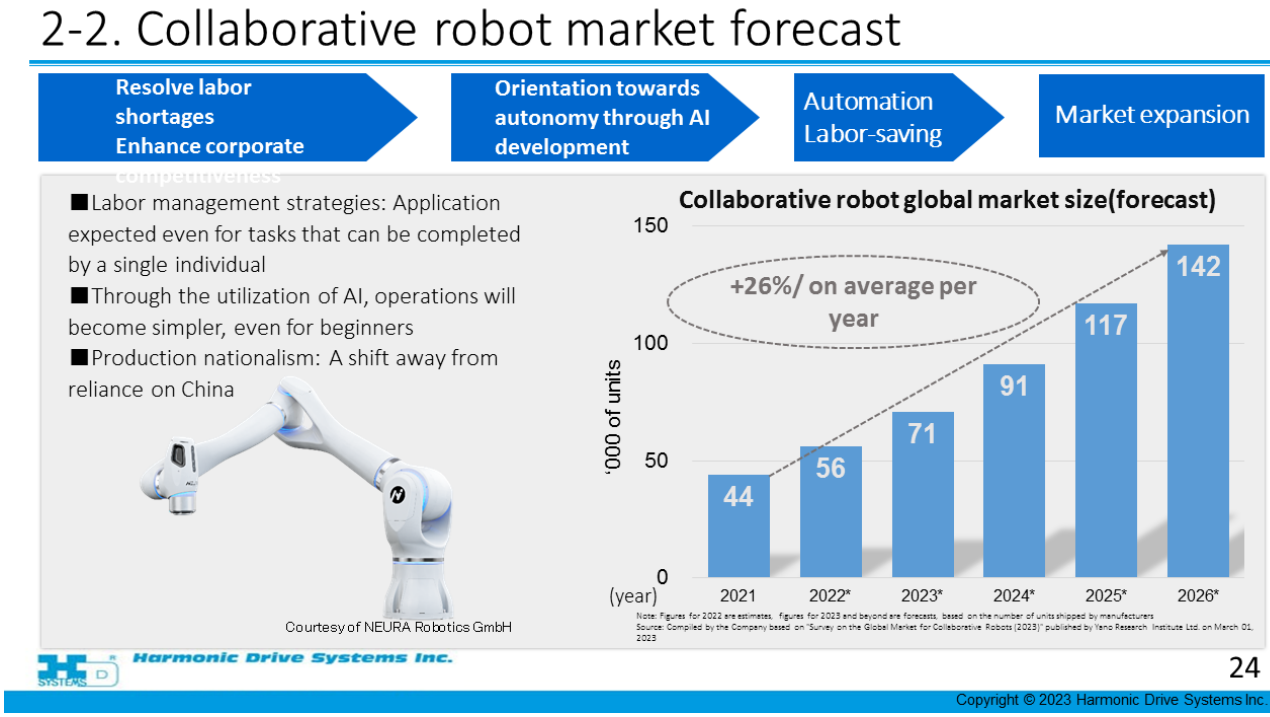
2-1. Factory automation robot market forecast



Page 23 shows trends in our major applications.

The main application of our products is FA robots. In the first place, robots are used due to labor shortages, and as this IFR data shows, even if there are some ups and downs, I have no doubt that the FA robot market will grow at an average annual rate of about 7%.

Demand for small robots, a particular strength of our company, is now falling, partly because capital investment in the 3C market in China has come to a standstill. However, there is no doubt that in the long term, the growth rate of small industrial robots will be higher than that of large industrial robots. We believe this market will expand further in the future.



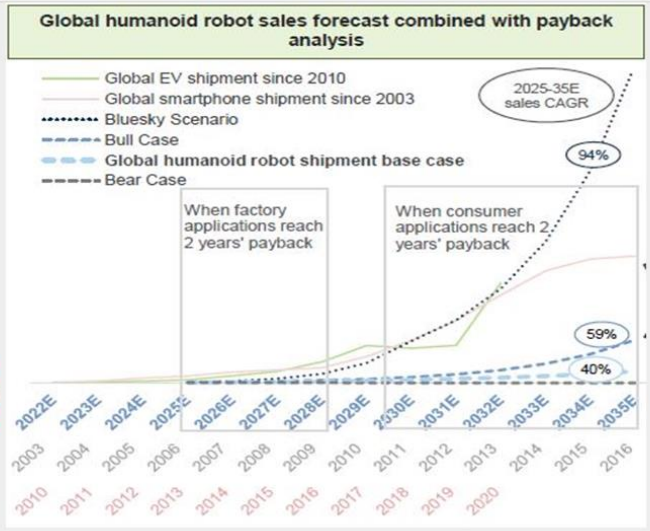
Page 24 discusses the collaborative robotics market. Starting with European cooperative robot manufacturers, other companies have already introduced their products, including Taiwan's Techman Robot Inc. and CRX series of FANUC CORPORATION.

My own interpretation of a cooperative robot is that it is only a lightweight industrial robot. The difference from conventional large industrial robots is that they are easier and safer to handle and thus move slower. In other words, I believe that they are only worker-friendly robots.

In any case, there are plenty of uses for this. Furthermore, it is also in the category of small robots. So, there is no doubt that this is an area in which we have very high expectations.

2-3. Anticipating growing demand for humanoid robots

- Full-fledged industrial applications
  - –Tesla has unveiled its “Optimus” robot
  - –Saudi Arabia plans to deploy humanoid robots in its Smart City Project
- Relentless pursuit for superior human motion
- Difference from co-bots: “Humanoid Hand”
- Despite the high technical and cost barriers, the ultra-compact speed reducers, which are our strength, are indispensable for humanoid robots



Source : The Goldman Sachs Group, Inc. “Global Automation_ The investment case for humanoid robots”

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The title on page 25 is expectation of the growing demand for humanoid robots. I dare to add the word "expectation" because it is not yet clear to the industry that humanoid robots will definitely play an active role in society and industry.

As I mentioned earlier, robots have grown significantly in the first place, as the working population has been declining. One on-site solution to this is FA, automated machinery.

On the other hand, the shortage of human resources is uncontrollable. What defines a person is his or her brain and body. The body part, or kinetics, has been solved to some extent with cooperative robots, dual-armed robots, and dollies. My expectation is that apparently the development of the brain part is much more advanced.

Elon Musk's presentation at the recent Tesla shareholder's meeting mentioned humanoid robots. In this context, he is clearly confident that the AI developed in EVs can be used for this. So, perhaps, people's brains and bodies are getting ready.

So, although we don't know the figures yet, and we have no evidence at all, we have a feeling that this will grow.

In fact, Tesla has announced about a humanoid robot called Optimus.

The major difference from cooperative robots is the humanoid hand. The wrist has already been done by small cooperative robots, etc., so the big difference is from this point forward.

We, too, have a picture of a three-finger module in our company brochure, and we have had a system in place for supplying this finger section for several years. If this is further developed in the future and demand for humanoid robots, especially the humanoid hand portion, grows, we believe we will be able to respond adequately.

2-4. Semiconductor equipment and Automotive

Semiconductor equipment

- Although demand is slowing, we are closely monitoring the timeframe for rebound in anticipation of large-scale investments over the medium to long term
- As long as technological advancement continues, semiconductor demand will grow
- US-China conflict ➡ Various governments are backing their own semiconductor industries
  - US: Provides production and developmental aid via the CHIPS and Science Act
  - Japan: Semiconductor factories to be constructed in Hokkaido and Kumamoto
  - China: Pursuing a policy of domestic semiconductor production

Automotive: Used in variable compression ratio (VCR) engines

- Semiconductor shortages are keeping production volume flat
- Achieved improvements in ease of installation, fuel economy, and quietness at high speeds
- This will become the center of Nissan's next-generation engines
- Also used for e-POWER in exclusive power generator engines

Harmonic Drive Systems Inc.

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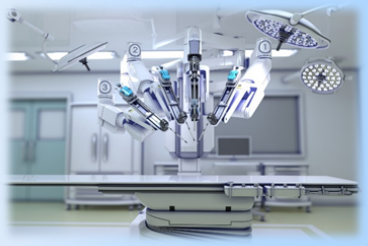
Page 26 is about semiconductor equipment and automotive applications. As you know, there are changes in the semiconductor industry, and we are responding to them.

As for the automotive market, Nissan's production volume has been falling due to the shortage of semiconductors, but the supply seems to have finally recovered a little, and we expect the monthly sales volume to remain at around JPY500 million.

2-5. Medical and health care

Surgical robots

- Top medical equipment manufacturers from Japan, the US, and Europe have entered the market
  - ➡With the broadening of therapeutic areas, the market is anticipated to expand further
  - ➡Advancements in communication speeds (from 5G to 6G) are expected to facilitate remote surgeries
- The major manufacturers of surgical robots in Japan, the US, and Europe, being rise to oligopoly by our products



Other potential healthcare applications

Medical equipment

- Specimen analysis/test equipment/PCR test applications

Exoskeleton

- Moving into a phase of practical adoption with expanded insurance coverage and subsidies

Electric wheelchairs

- Autonomous driving enhances convenience

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Page 27 is medical and health care. Major medical device manufacturers in Japan, the US, and Europe have entered this field.

Our products have been adopted by various companies. Although the amount of money involved is still small, we expect that our technology will continue to occupy important place in this field.

3-1. Robots for Infrastructure Inspection

Float Arm: A snake-like robot arm designed for infrastructure inspection

(Hibot Corporation)

- Multi-articulated robot arm, enabling maintenance and inspection in confined or elevated spaces without the need for scaffolding, such as in petrochemical plants
- Companies like BASF and Mitsui Chemicals have implemented Float Arm in their operations
- Members of the DeepStar®* consortium have also opted for its adoption
- The reasons for selecting HarmonicDrive® include:
  - Reliable performance even in harsh environments
  - Broad operational range (5 meters) while maintaining a lightweight design (35kg)

Photo credit: Hibot Corporation

*DeepStar® is an international offshore technology development consortium comprising "upstream" companies including Chevron (US), ExxonMobil (US), Shell (UK), and Petrobras (Brazil) that are engaged in the exploration, development, and production of offshore oil and natural gas around the world, and companies, universities, research institutes, and other organizations that provide products and services to these upstream companies.

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About the new application.

In the first place, as I mentioned earlier, the shortage of labor and people led to the demand for robots. Apart from that, we believe that new applications will be created with the aim of making troublesome, time-consuming, and dangerous tasks more convenient at production sites and in daily life.

Please refer to page 29. Hibot Corporation's robots for infrastructure inspection have already been deployed at sites of Mitsui Chemicals, Inc. and BASF SE.

As some of you may know, on sites with complicated piping runs, such as the one in the photo, we first build a scaffolding for inspection, remove it, and take it to another position again.

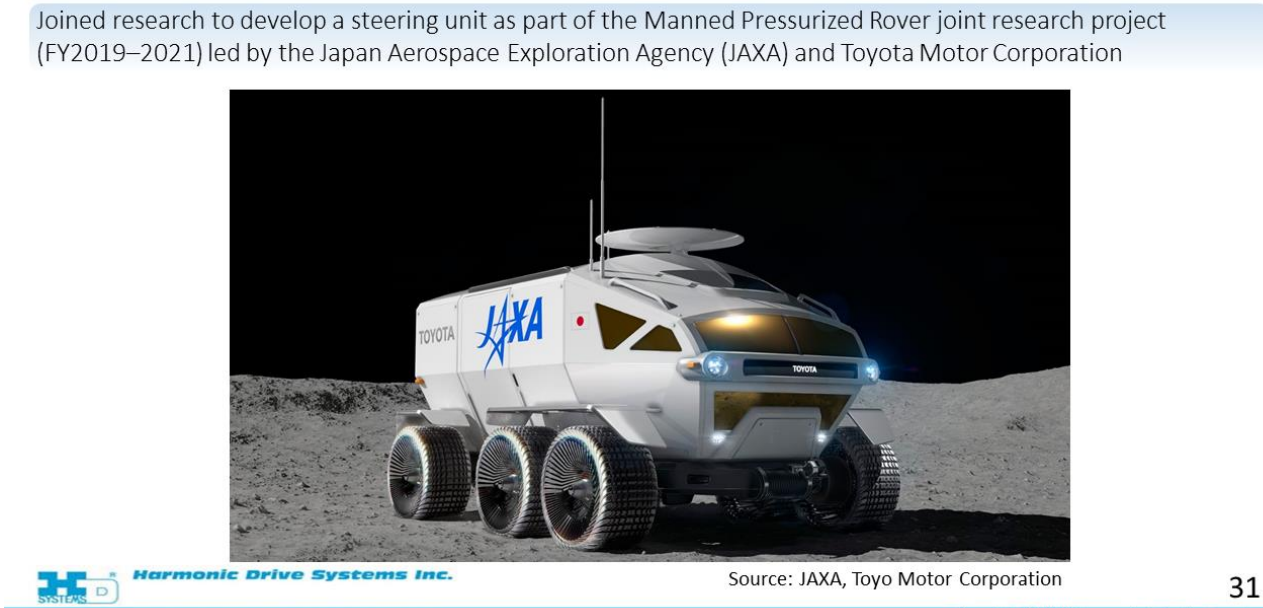
This product requires very little scaffolding and has been very well received. Recently, during the Golden Week holidays, there was a maintenance trade show of DeepStar(DeepStar Technology Symposium 2023?) in Houston, and Hibot also displayed this product. It seems that the product has received the approval for full-scale adoption from DeepStar members. Thus, we believe this is a growing field.

3-2. Aviation and Space

Please see page 30. As announced in newspapers and other media, electric eVTOLs, small flying objects with vertical takeoff and landing, will operate at the "EXPO 2025 OSAKA, KANSAI, JAPAN", and our products are fully used by one of these companies.

This is one area of potential growth for urban commuters in the future.

3-2-2. Space: Lunar Exploration with Manned, Pressurized Rover



Please refer to page 31. As reported in the newspapers, we are participating in a JAXA's project to go to the moon in cooperation with Toyota Motor Corporation, and our products are being used in the steering unit.

3-2-3. Marketing and Public Awareness Activities

Exhibited at the concurrent exhibition of the Japan Society for Aeronautical and Space Sciences (one of the largest in Japan)

- 66th Space Sciences and Technology Conference (Held from November 1-4 at Kumamoto Castle Hall)
- Presented our proven record of product adoption and corresponding technologies
- The event was attended by 63 individuals, including researchers and developers from various universities and corporations

Concurrent exhibition

Exhibited at the 2023 International Space Industry Exhibition (Held from February 1-3 at Tokyo Big Sight)

- Showcased our proven track record in the space-related market
- Delivered a presentation themed "Exploring the Current State and Future Prospects of Tribology in Wave Gear Systems Designed for Space" (with 49 attendees)
- A total of 220 people visited our booth

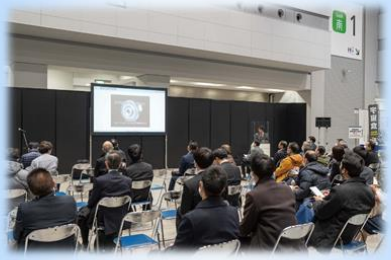


Photo of lecture

Harmonic Drive Systems Inc.

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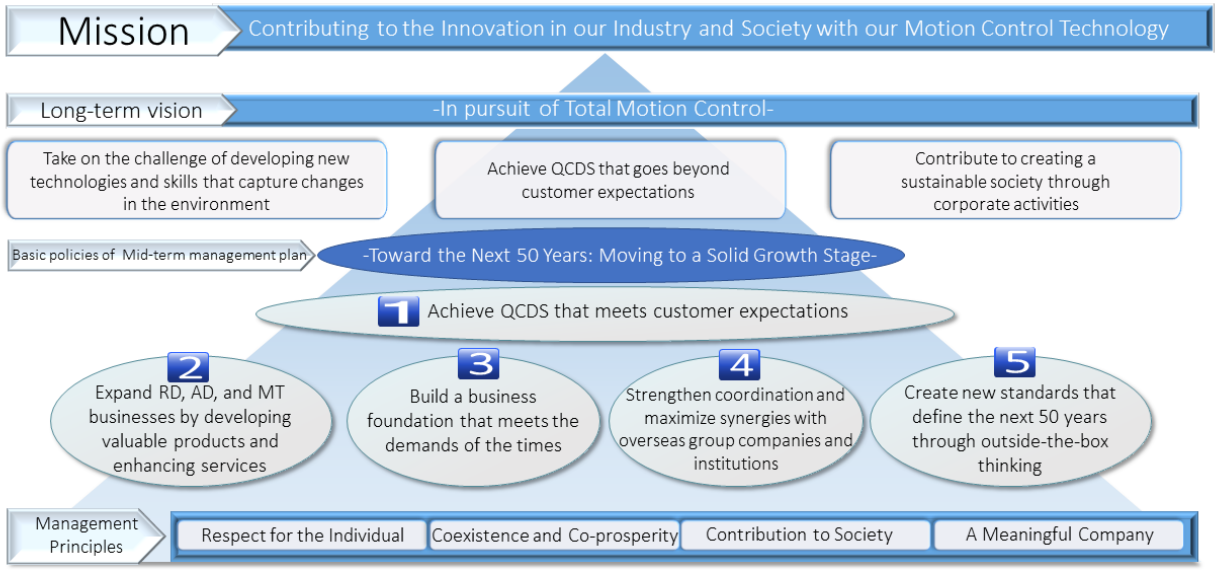
Please refer to page 32. As I have already explained, in order to promote our presence in space-related fields, we exhibit at space conferences and space industry exhibitions sponsored by the Nikkei.

4-1. Mission, Long-term vision and Basic policies of Mid-term management plan



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Next is the progress of the medium-term management plan.

Please refer to page 34. This is the same figure as before. We have clearly defined our position, or mission, based on the four pillars of our management philosophy. We recognize that our role is to contribute to technological innovation in society and industry.

4-2. Opportunities for Long-term Growth

External environment (growth opportunities)

- The shrinking labor force contributes to a sustained demand for industrial robots
- Growing consciousness of economic security globally propels the establishment of semiconductor supply chains, reflected in increased investment in semiconductor equipment
- Efforts towards carbon neutrality are reshaping strategic initiatives, including the manufacture of eco-friendly products
- Application areas are expanding : medical, space, e-VTOL, amusement, humanoid robots, and beyond

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Page 35 is about long-term growth opportunities. As I mentioned earlier, as the demand for robots grows, we have an expectation that humanoids will grow in terms of applications.

4-3. Increasing production capacity and enhanced productivity at Ariake Plant

- Completed investment to expand production capacity at Ariake Plant: total investment of 6.5 billion yen
- Promoting DX within the plant

Introduction of AGV

Increased production capacity

Additional 70,000 units
(Industrial: 40.000 units; Automotive: 30,000 units)

Increased productivity

Improve automation and save labor
(more than doubled the productivity per employee from the previous line)

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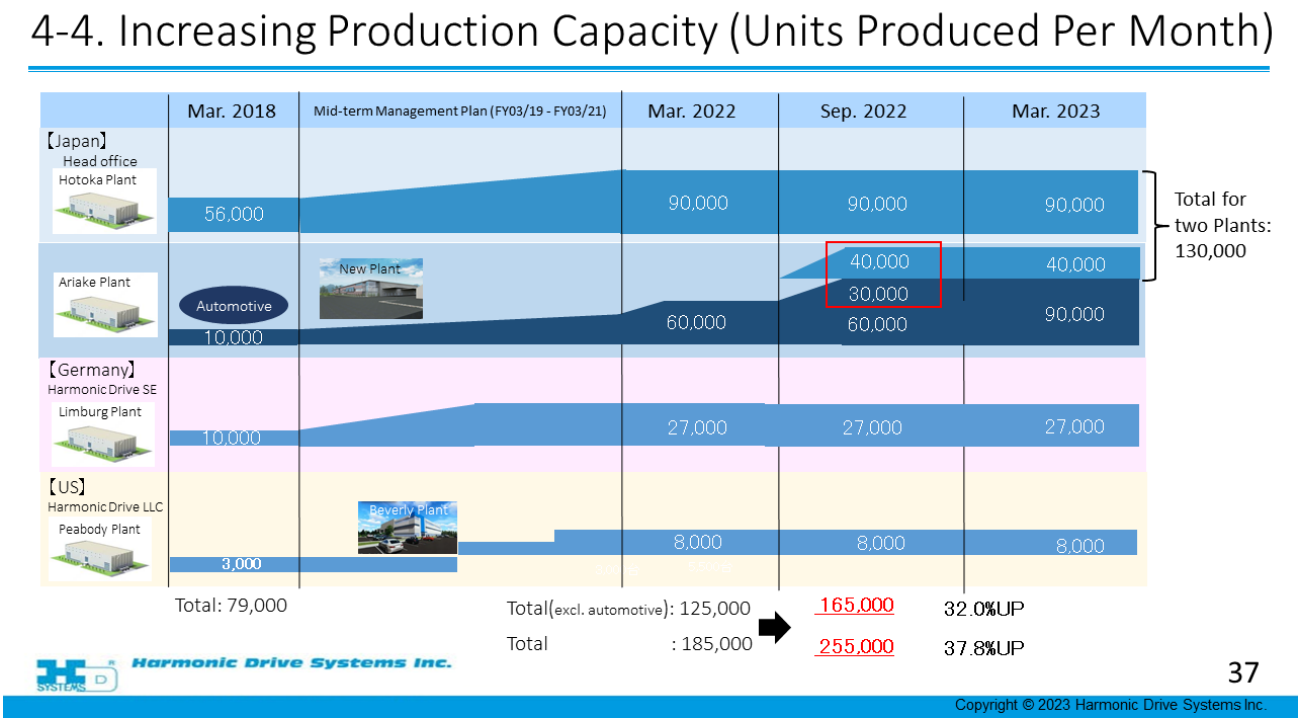
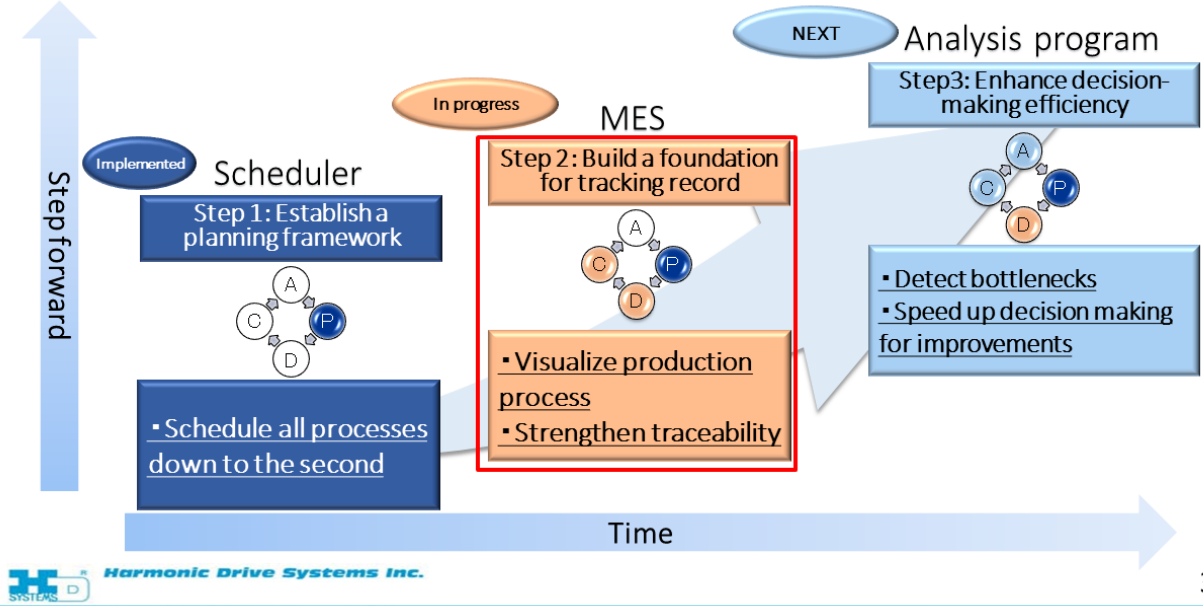
Please refer to page 36. We had a difficult time in 2017 and 2018, causing great inconvenience to our customers because our production capacity could not keep up with demand. By 2019, we have had a new plant up and running, and as you can see here, we have also increased our production capacity. In this new Ariake Plant, we have also made considerable efforts to automate and DX the factory.



On page 37 is the same table as before, which shows the production capacity of each of our bases around the world. In Japan, especially in the upper two rows, the blue part, we envision a monthly production of 200,000 units at these two plants in the near future, and we are continuing to invest in various facilities.

Although our production capacity in the US is somewhat smaller than in Germany and other countries, the new plant has the space to accommodate twice as much equipment.

4-5. QCDS Enhancement through Factory Digitalization



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Please see page 38. As I mentioned earlier, we have been investing to some extent in DXing our plants for some time, especially at the Ariake Plant. We intend to introduce a scheduler, MES, and various analysis programs in the future to increase accuracy and reduce manpower.

4-6. Developing Valuable Products and Services

RSF-5B-IDT Supermini Actuator (Developed by Harmonic Drive LLC)

- This ultra-compact actuator utilizes size 5 and integrates a servo driver, eliminating the need for an external driver
- Its streamlined, compact design combines several cables into one
- It has been implemented in diverse settings, ranging from amusement to semiconductor manufacturing equipment

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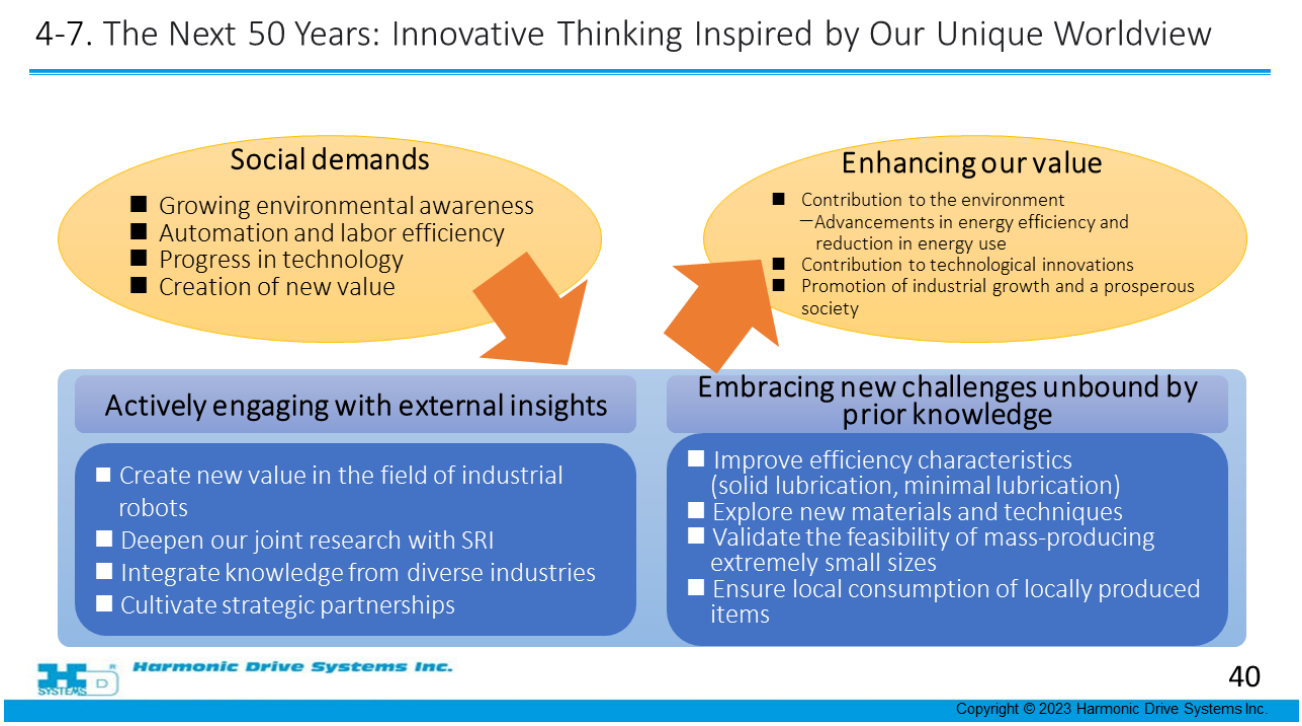
On page 39, you will find an example of our mission to provide products of value to society, number two in our mid-term plan. Conventionally, a servo driver was required for the leftmost actuator in the figure

underneath, which includes the motor and reduction gear. This is now being used in the field of animatronics and other fields because it is now very compact with the driver integrated into a single unit.

Naturally, we believe that these products will expand into semiconductor equipment and medical equipment in the future.

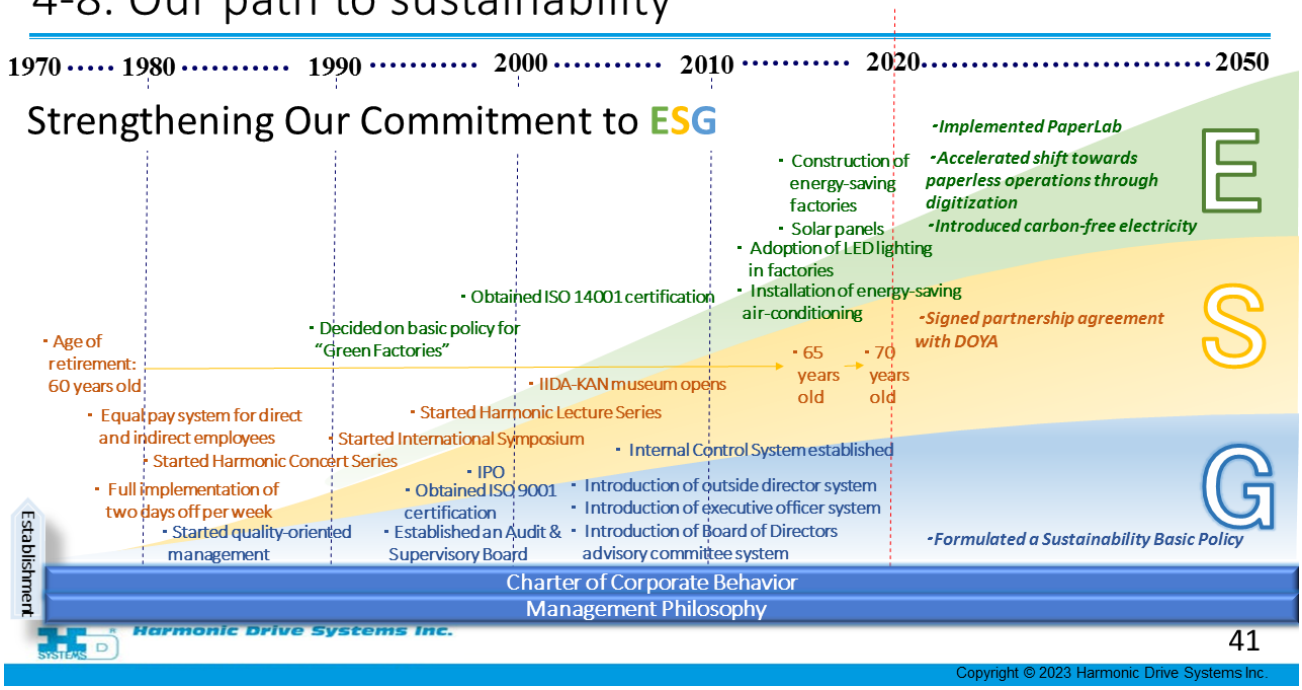


Please refer to page 40. It describes the next 50 years. We celebrated our 50th anniversary in 2020. The world has completely changed, so we did not consider the following year as our 51st year, but have been working on it as a zero-year-old with the intention of tackling it with a new set of values.

This is not an area where results can be achieved overnight, but we will change our own thought processes and approaches.

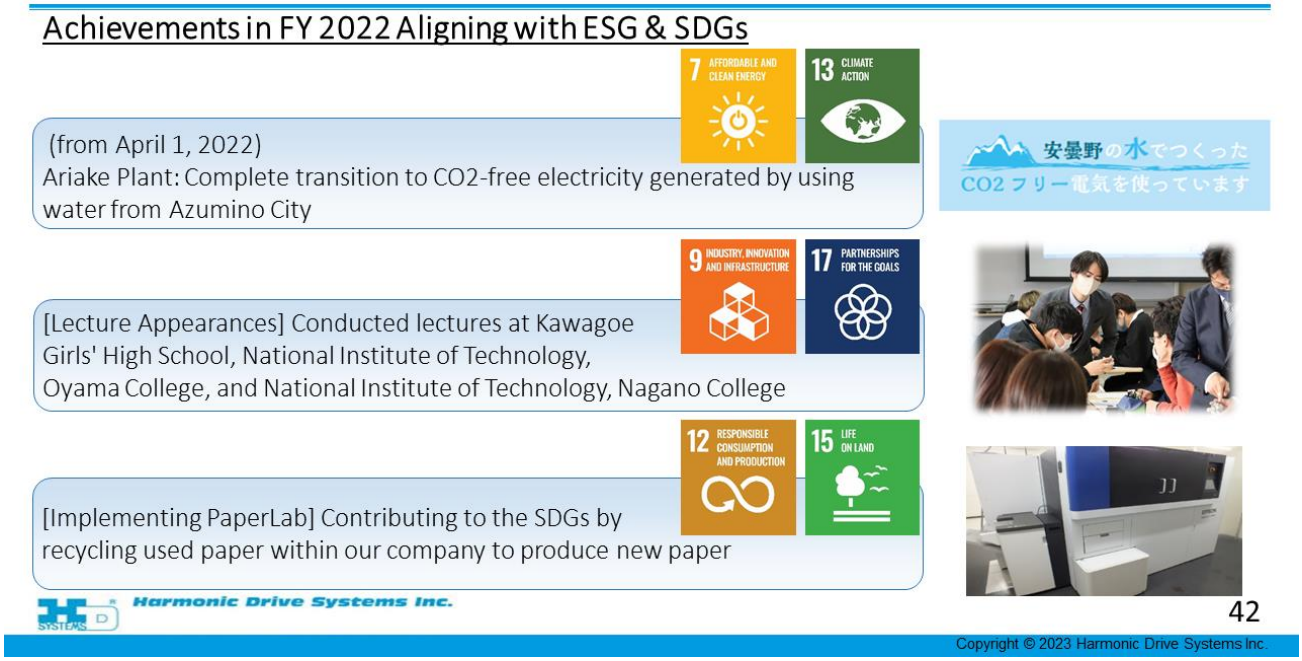
In particular, until now we have only had production bases in Japan, the US, and Germany. As you can see here, considering production nationalism, the decoupling of China and the US, and other factors, we believe that a more flexible response may be necessary in the future.

4-8. Our path to sustainability



Please refer to page 41. We have also published our sustainability basic policy on our website. The following is a chronological list of our past efforts that fall under ESG. Especially after 2020, we are working on what is written on the right side.

4-9. Activities borne from strong employee awareness



Please refer to page 42. We believe that the SDGs should not be imposed by the Company from above, but rather should emerge spontaneously from the high awareness of each and every employee. For example, our development team goes to technical colleges and other institutions to give classes. We also have a paper

equipment “PaperLab” in the Hotaka plant that can recycle used copy paper. All of these things were born from the ideas of our employees.

The last page shows the main topics of the last year.

What makes us a little proud is that our ULW, Ultra Lightweight design, product won the GOOD DESIGN AWARD 2022.

This concludes my presentation.

Question & Answer

Moderator [M]: We will now move on to the Q&A session.

Isayama [Q]: Thank you for your explanation. My name is Isayama of Goldman Sachs. Thank you. I would appreciate it if you could briefly tell me three things.

There was talk of order trends bottoming out and then turning up. The 3Cs were also mentioned in the document.

Other companies are also talking about the investments of the largest company in the United States here and there. Can you please tell me more about this? Is it about this year? India and other stories are probably in the future. Are we talking about this season or further into the future?

I understand that you have announced an order forecast for Q1 only. But what is your feel for Asia 3C? If possible, could you elaborate a bit more on that?

Maruyama [A]: Regarding orders, as I said at the beginning, what is the timing of inventory clearance by robot manufacturers, mainly due to advance orders, and what is the level and angle of the order increase? I believe that the key factors that will determine this are electronics, which we have been relying on China, and small robots for 3C.

As for robot manufacturers, the large robot market has been very active over the past year with very high growth.

On the other hand, for small robots, low demand has been noticeable since about H2 of last year. I believe that this is due in large part to the influence of China.

However, as Mr. Isayama just mentioned, in terms of the prospects outside of China and with regard to small robots, to be honest, we do not have a concrete view.

However, there are many top executives of robot manufacturers who mention H2 of this fiscal year as a keyword, although I am not sure which grounds they have.

However, it is very difficult for us to judge this rationally, and it is difficult to forecast the situation, including partial downside factors.

There are some prospects for an upward swing, which can be covered in part by the current inventory. There has already been some smartphone-related investment activity, although it is small. Correspondingly, we are also receiving orders from robot manufacturers that cannot be covered by our inventory.

Also, I am not sure if this is the catalyst for the expansion of demand for related peripheral equipment, but it is starting to appear. The outlook is not that there will be no projects at all. There are projects, but we don't know for sure from the manufacturer whether it can be covered by inventory or whether it will require new robotic equipment. Therefore, we have taken a cautious stance on this prospect.

Isayama [Q]: Thank you very much. When the time comes to issue guidance, we would be glad to learn a little more about the prospects.

My second question is about shareholder returns and the Prime Market. This time last year, there was a discussion about buybacks, in light of the stock price.

The stock price has not much changed. As you are aware, there has been a great deal of talk recently about the need to strengthen shareholder returns.

I am not suggesting that your company should aim for a P/B ratio of 1x. You were sending out messages like that at the time, the price was at the bottom, and you had previously said that Nabtesco Corporation's shares were no longer meaningful as policy holdings and that you intended to sell them, and I think you could have taken some action. I would appreciate an update on the shareholder return stance, Nabtesco's stock, and the prime market.

Kamijoh [A]: In terms of share buybacks, we purchased JPY5 billion of our own stock last year based on our judgment that the stock was undervalued, taking into account the sharp fluctuations in the stock price due to supply and demand.

This was done based on management decisions at the time in question. As Mr. Isayama just mentioned, the stock price is about the same now as it was then, so I think there is a natural opinion that we should do it again, and we are not abandoning that option at all. However, while performance this year will be quite variable, we must also secure some funds for capital investment and other expenditures.

We are now leveraging debt quite thickly. Under such circumstances, we would like to make share buybacks based on rational business judgment on a case-by-case basis.

Naturally, we are considering the possibility of selling our Nabtesco Corporation's shares and using the proceeds to fund share buybacks or capital expenditures. We have already talked about this last year, and although Mr. Isayama is right in pointing out that we have yet to do so, we have not changed our direction of wanting to do so at the optimum timing from a management standpoint. We would like to do this at an appropriate time based on management decisions, so we ask that you please wait a little longer.

We are well aware that investors and shareholders have high expectations for the Prime Market. However, it is not possible to go to Prime if we wish. We would like to consider how to prepare for overcoming various processes such as listing examinations.

Isayama [Q]: Thank you very much. My third question. There is no guidance for the full term, but there are several factors that I would like to know about, even if only direction. I am wondering if you could give us a hint about this year's forecast using the slides on page 9.

Broadly speaking, there are two things. Regarding the impact of marginal profit margin and inventory changes, you said that the impact of semiconductors was JPY1.3 billion, and that there is an additional amount due to the impact of various other factors on a non-consolidated basis. How is this expected to play out this year?

Some have said that supply and demand may be loosening to some extent. On the other hand, I think some of you are saying that energy costs remain high. Do you expect that this will still be a negative factor this year, or is it likely to become a positive factor as you make progress in cost reduction and price shifting?

I don't think you can predict the amount yet, so I would love to get an idea of what direction you envision.

Kamijoh [A]: Regarding the cost of materials, especially semiconductors, price hikes have stopped, the worst period of procurement has passed, and we have enough inventory for the time being.

On the other hand, sales from urgently purchased parts inventory will be recorded in the current fiscal year, especially in mechatronics product actuators. The situation continues where ICs purchased at that high price constitute cost of sales.

However, we believe that the impact on the current fiscal year will be less than the JPY1.3 billion for the period that ended, probably about half. This is due to the fact that they are switching to new ICs that are a bit more readily available due to design changes, and prices are also gradually calming down. We believe that costs will still be higher than they were two years ago, but that this negative impact, relative to last year, will gradually diminish.

Isayama [Q]: Thank you very much. I would very much like to ask the president. With such a high market share, there will be a change in thinking regarding price. Regarding price pass-through, I think you have been wary of competition so far. However, given the fact that inflation is so high and the yen is so weak, I feel that there should be an effort to raise prices. Can you say something about this?

Nagai [A]: As you said, we would like to pass on the price if possible, but we have tough competitors and we are not in a position to make an announcement to domestic robot manufacturers, at least not at this time.

Mr. Isayama, you understand our products well and say that our share is high, but our products are components. Therefore, it is difficult to raise prices as we wish.

However, the cost of electricity and other infrastructure has risen considerably, so we may make an announcement when the time comes. It is very difficult at this time.

Isayama [M]: Thank you very much.

Moderator [M]: Please state your affiliation and name.

Fukuhara [Q]: My name is Fukuhara from Jefferies. Thank you. I have two questions.

First, consolidated orders received overseas, especially in the US, have so far been in the JPY3 billion per quarter range. In contrast, there is a slight slowdown in Europe. Since the overseas fiscal year is off by three months, could you please let us know the results for the January to March period and any changes for the April to June period.

Kamijoh [A]: It is relevant that the fiscal year is off by a quarter. However, orders for the January to March period in the US, which are recorded in the April to June period in Japan, are down slightly compared to the strong Q4.

However, in the US, most are for medical equipment, SPs, and other amusement robots, rather than for robot manufacturers. Overall, the decline in orders is not as sudden as it is in Japan, but is temporary. Overall, we believe that a high level can be expected in the future.

Germany's January to March quarter is expected to be almost flat compared to the October to December quarter that ended. Here, too, we are seeing a slight softening in orders for robot manufacturers, but we do not expect a drastic decline in orders as we have seen in Japan.

Fukuhara [Q]: Thank you very much. Second, orders for in-vehicle applications have been increasing steadily recently, despite some production delays at our customers.

Will there be more orders in this area in the future? Or are there any risk factors?

Also, this may be difficult to comment on, but could you also tell us what the level of profitability is compared to other products?

Maruyama [A]: Certainly, the number has gradually increased over the years, but it is still at a considerably lower level compared to the plan at the stage when we started this project.

However, Nissan's sales volume is still very low, but the decline in production volume caused by semiconductors is improving considerably. Considerably, but not quite enough yet.

At the moment, as Mr. Nagai mentioned, we are projecting about JPY500 million per month. The certainty of this will increase through H2.

According to the information we have received, there is a possibility that in some cases we may be able to exceed the plan a bit.

However, it was difficult to announce the full-year forecast because the certainty was still low.

Regarding profitability, production is done through a fairly high level of automated processes. This has led to a very high rate of in-house production.

Simply put, automotive products have higher marginal profit margins than general products. However, of course, depreciation and other investments were large, and the time will come when such items must be recovered.

In any case, it seems unlikely that orders will decrease from what they are now, so we will continue to work solemnly.

Fukuhara [M]: I understand. Thank you very much.

Moderator [M]: Please state your affiliation and name.

Mizuno [Q]: My name is Mizuno from UBS Securities. I have two questions.

The first is a question regarding the order or the cancellation of the order. In terms of large robots, looking at robot production statistics, I think orders are slowing down a bit, or it is not surprising that it is entering a production adjustment phase. Should we anticipate the risk of production schedule delays, order reductions, and cancellations, even for customers making large robots?

Maruyama [A]: Demand for large robots is indeed a little weak. Orders were high to begin with, and we are aware that they are falling. I don't know if that will affect the cancellation of orders or anything. If we assume that the large robots sold today are between 160 kilos and 200 kilos, HarmonicDrive®'s share of that market is unfortunately very low. Therefore, I think the direct impact of that weakness on us will be very minor.

Mizuno [Q]: Understood. Thank you very much. The second question relates to capital investment.

In your explanation, Mr. Nagai, you mentioned that you would increase the number of industrial applications in Japan from 130,000 to 200,000. Can you give me a rough idea of the amount of investment needed for this and where the investment needs to be made in terms of buildings, equipment, etc.?

CapEx was JPY24 billion in 2018, but cash on hand now is roughly JPY20 billion. This area helps us to think about the use of Nabtesco's shares mentioned earlier. Can you give us a rough idea of the amount of money needed for the 200,000 units and the areas it would be used for?

Nagai [A]: I mentioned that relatively early in the 2020s, HarmonicDrive® expects to produce 200,000 units per month. We will not build the plant all at once, but will gradually invest in facilities and add machines as needed in the Ariake Plant that we have now. As for how much it would cost to add another 70,000 units to the current 130,000 units, Mr. Kamijoh will answer.

Kamijoh [A]: In light of past performance, the investment tends to be a bit larger since the rate of automation has recently increased. It is assumed that it will cost JPY1.5 billion to increase monthly production by 10,000 units.

So, if we increase the number of machines by 70,000, 15 times 7 would be a rough estimate of the investment in machinery and equipment. There is still space in the Japanese plants to put in enough machines to produce 30,000 to 40,000 units, and to that extent, I think it is possible to increase production without additional investment in buildings.

If it exceeds that level, it must be erected. The last factory we built in Ariake cost about JPY6 billion, so if we build the same one, we will need to invest that much in the building.

Mizuno [Q]: I understand. Thank you very much.

One last, question about sustainability. A year ago, you set the materiality of sustainability. When I looked back at the contents in order to consider the Company's future, I found it difficult to connect them to the specific goals of the Company.

Personally, I found it a little difficult to think about how these specific items, such as setting KPIs, would lead to increased corporate value.

The TSE just issued a disclosure request on human capital. You published your materiality just a year ago, and have you any thoughts on your policy for sustainability-related disclosures?

Nagai [A]: We are currently preparing on that point. We are making various preparations, led by Executive Officer Ono, who is here today, and we intend to disclose what we can. We do not have any materials available today on specifics.

Mizuno [M]: Thank you very much.

Moderator [M]: Please state your affiliation and name.

Jiang [Q]: My name is Jiang from Mitsubishi UFJ Morgan Stanley Securities. I would like to make one point regarding profitability. In FY2022 results, the top line was the highest ever, with an operating margin of about 14%. I think you are probably being affected by the severity of the automotive business and the major impact of cost increases. If the top line returns to more than JPY70 billion again in the future, say within two or three years, what would happen to profitability?

Kamijoh [A]: For the same JPY70 billion, it is unlikely that profitability will change significantly. However, it depends on the product mix. In particular, at the Ariake Plant where we invested, we are aiming for a highly profitable line with considerable automation for projects with a certain amount of volume for robot manufacturers. If the mix is as expected to fully demonstrate such functions, profitability can be expected to improve.

As for material prices, etc., they will not change significantly from current prices, so the marginal profit margin will not change significantly. Also, we are preparing various fixed costs, not for the same JPY70 billion, but for

a higher top line. We would like to achieve not JPY70 billion, but beyond that, and eventually achieve a situation where the OP margin exceeds 20% again.

Jiang [Q]: Sorry to ask a detailed question, but do you think you can steadily improve profitability in the automotive business, for example, compared to FY2022?

If possible, could you give us some more clues as to the profitability of the automotive business in FY2022, although it is probably in the red?

Kamijoh [A]: For the fiscal year ended March 31, 2023, the business was unfortunately in the red in H1, but in H2, it recovered a little and is now slightly above the break-even point.

We are investing in equipment to reach the 90,000-unit level. We have not used that machine yet, but as we use it in the future, depreciation costs will increase. However, as Ms. Jiang mentioned, the automotive business has been more of a dragging-down business to now, but as the top line rises a bit more, I fully expect it to become a business that contributes to profits.

Moderator [M]: Your affiliation and name, please.

Pan [Q]: My name is Pan from Macquarie Capital Securities. Thank you very much for your explanation. Earlier you mentioned the Tesla shareholders meeting. Following Mr. Elon Musk's comment that in the future the humanoid robot market, for example, will be as big as the car market, the stock price of the Chinese competitor went up about 8% in one day.

As an investor, I would like to ask you about your company's technological superiority. Of course, your company has technological superiority in the humanoid field. For example, the design of the wrist, fingers, and whether or not there are fingers is different between Tesla and its competitors. If the entire market for humanoid robots is similar in size to, say, the car market, I would appreciate any comments on cost, production capacity, or technological superiority.

Nagai [A]: Regarding humanoids, as I mentioned earlier, I just have an expectation that it will grow. However, looking at Mr. Elon Musk's announcement, he is clearly confident in making humanoid robots.

As I mentioned earlier, our understanding is that conventional robots already have human-level skeletons up to the wrist, so we believe that not only our products but also our competitors' parts can handle this.

The part from the wrist to the end of the hand, which we call the humanoid hand, conventionally uses pneumatic pressure or a solenoid. If we really want to reproduce human-like grasping and dexterity in this area, we have to make fingers that can be driven firmly using small reduction gears. We have a proven track record. Elon Musk says the number will be astronomical. If it has five fingers, each finger uses three reducers, so 3 times 5 equals 15, and 30 reducers for both arms. Each robot will use 30 very expensive small reduction gears. I have such faint hopes.

However, it is not yet clear whether such an era will come. According to a Goldman Sachs prediction about humanoid robots made long ago, this is 0 or 100.

I believe that this is a field that will not grow slowly like industrial robots but will leap from 0 to 100 in a single bound. This is the same way that when Tesla announced its EVs, the number of units grew all at once, rather than slowly.

When that happens, our challenge will be what to do about production. I mentioned 200,000 units earlier, but that may not be sufficient. We would like to gather some more information on this and prepare for it.

Pan [Q]: I would like to make one last confirmation. Without fingertips, there is not much difference from a cooperative robot. From your company's point of view, unless it is a humanoid robot with attached fingertips, is it unlikely that it will grow to a scale of, say, 1 million units at once?

Nagai [A]: Naturally, we are developing lightweight and compact reduction gears, and even ultra-lightweight reduction gears. From shoulder to arm can be done by the cooperative robot, but the speed will definitely be different, at least by my own estimation.

Right now, it is operated slowly on the assumption that there is a person next to it, but I believe that factories will be completely unmanned in the future. This would also speed up the arm tremendously. This would require a lightweight reducer.

In this sense, I believe we have a significant advantage in the arm area too.

Pan [M]: I understand very well. Thank you very much.

Moderator [M]: Now, since the time has come, we will conclude the question-and-answer session.

Thank you very much for watching until the end.

This concludes the financial results briefing for the fiscal year ended March 2023. Thank you very much for your participation today.

[END]

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Document Notes

1. *Portions of the document where the audio is unclear are marked with [Inaudible].*
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