



Harmonic Drive Systems Inc.

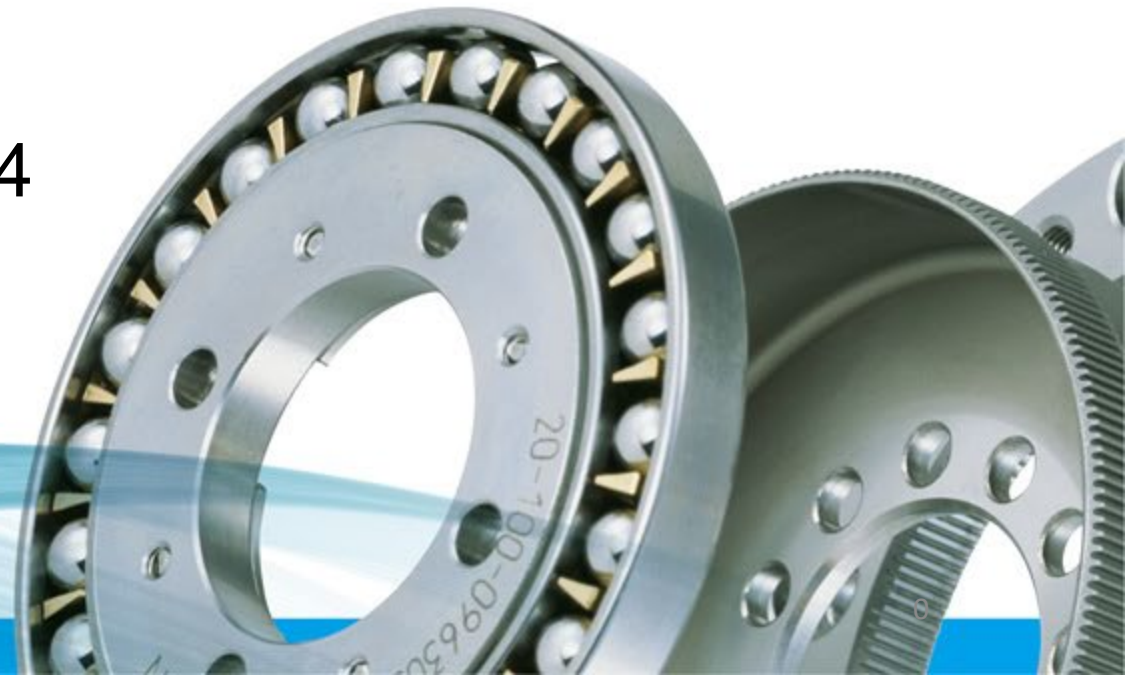
Harmonic Drive Systems Inc.

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Financial Results for the 1st-Half of the Fiscal Year Ending March 31, 2025

November 19, 2024

This presentation contains forward - looking statements relating to expected future performance as of November 19, 2024. Such statements are based on the views and assumptions of company management and involve risks and uncertainties such as changes in the business environment that may cause the actual results to differ materially from expectations.



Performance Summary for 1H FY03/25

Consolidated results for 1H FY03/25 (Vs. original forecasts)

(millions of yen)

	Original forecasts (announced May.13)		1H FY03/25 (actual)		Vs. original forecasts	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	27,000	100.0	26,559	100.0	▲440	▲1.6
Operating income	100	0.4	▲637	—	▲737	—
Ordinary income	100	0.4	▲828	—	▲928	—
Net income	100	0.4	▲850	—	▲950	—
EPS (yen)	1.05	—	▲8.95	—	▲10.00	—

*Net income (loss) refers to net income (loss) attributable to owners of parent.

Consolidated results for 1H FY03/25 (year-on-year change)

(millions of yen)	1H FY03/24		1H FY03/25		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	28,765	100.0	26,559	100.0	▲2,205	▲7.7
Operating income	872	3.0	▲637	—	▲1,510	—
Ordinary income	1,163	4.0	▲828	—	▲1,992	—
Net income	313	1.1	▲850	—	▲1,163	—
EPS (yen)	3.29	—	▲8.95	—	▲12.24	—
Capital investment	1,760	—	2,403	—	642	36.5
Depreciation	4,946	—	3,936	—	▲1,010	▲20.4
R&D expenses	1,659	—	1,936	—	277	16.7

*Net income (loss) refers to net income (loss) attributable to owners of parent.

*Depreciation includes depreciation of tangible assets and amortization of intangible assets and goodwill.

Performance of main group companies in 1H FY03/25

(millions of yen)		Equity stake	Net sales		Operating income	
			Amount	Year-on-year Change(%)	Amount	Year-on-year Change(%)
※2	HD Systems, Inc. (Harmonic Drive L.L.C.)(U.S.A)	100% (100%)	5,790	▲13.2	254	▲71.4
	Harmonic AD, Inc.	100%	978	▲1.5	▲13	—
	Harmonic Precision Inc.	100%	1,512	51.4	▲333	—
※3	Harmonic Drive Systems (Shanghai) Co., Ltd	100%	3,006	32.3	332	17.3
※4	Harmonic Drive SE (Germany)	100%	8,152	▲0.7	254	▲74.3

*1 For overseas subsidiaries, the fiscal year ends December 31.

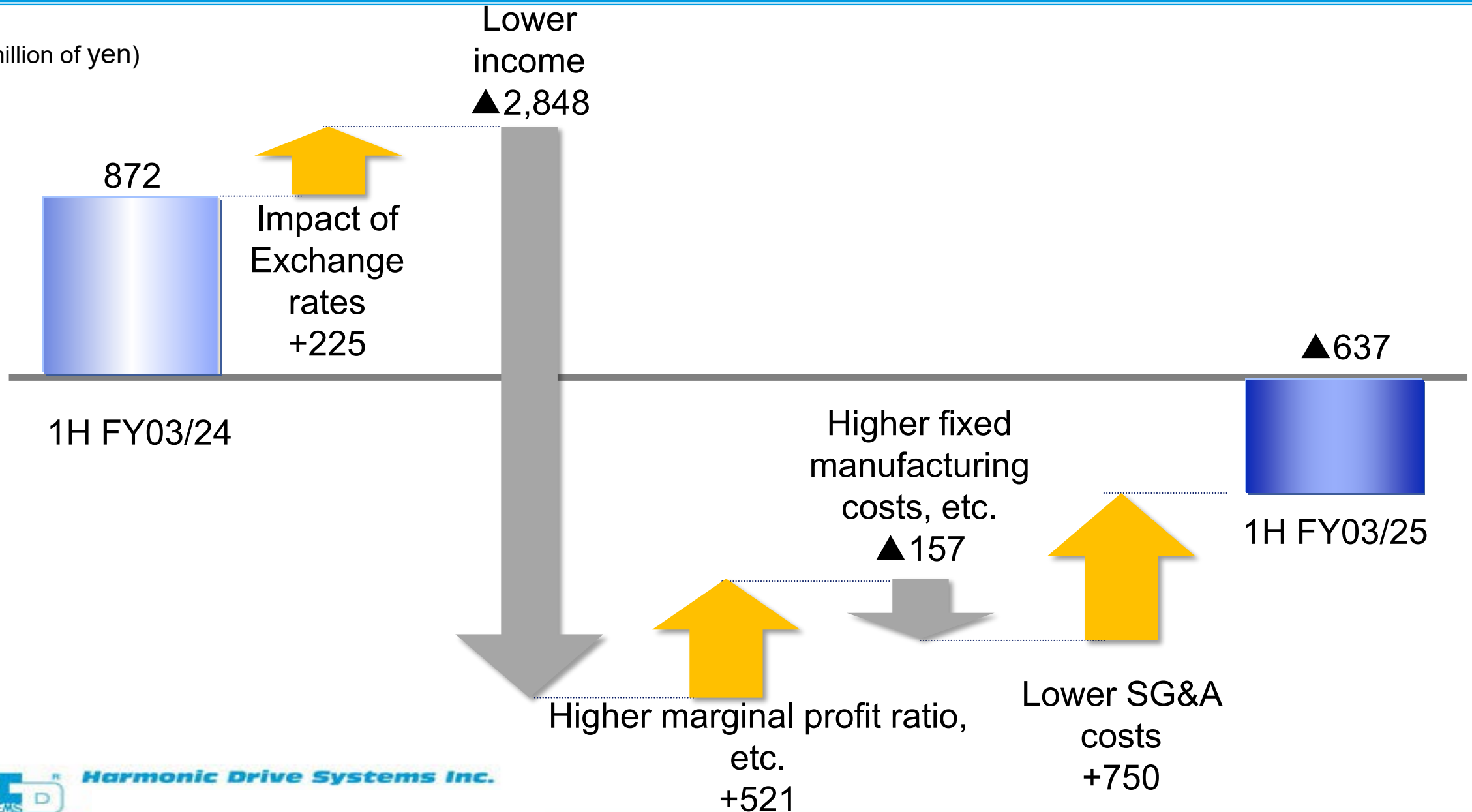
*2 Exchange rates: Jan–Jun 2023 1USD = ¥134.85 Jan–Jun 2024 1USD = ¥152.25

*3 Exchange rates: Jan–Jun 2023 1CNY = ¥19.45 Jan–Jun 2024 1CNY = ¥21.05

*4 Exchange rates: Jan–Jun 2023 1EUR = ¥145.79 Jan–Jun 2024 1EUR = ¥164.60

Breakdown of year-on-year change in consolidated operating income

(million of yen)

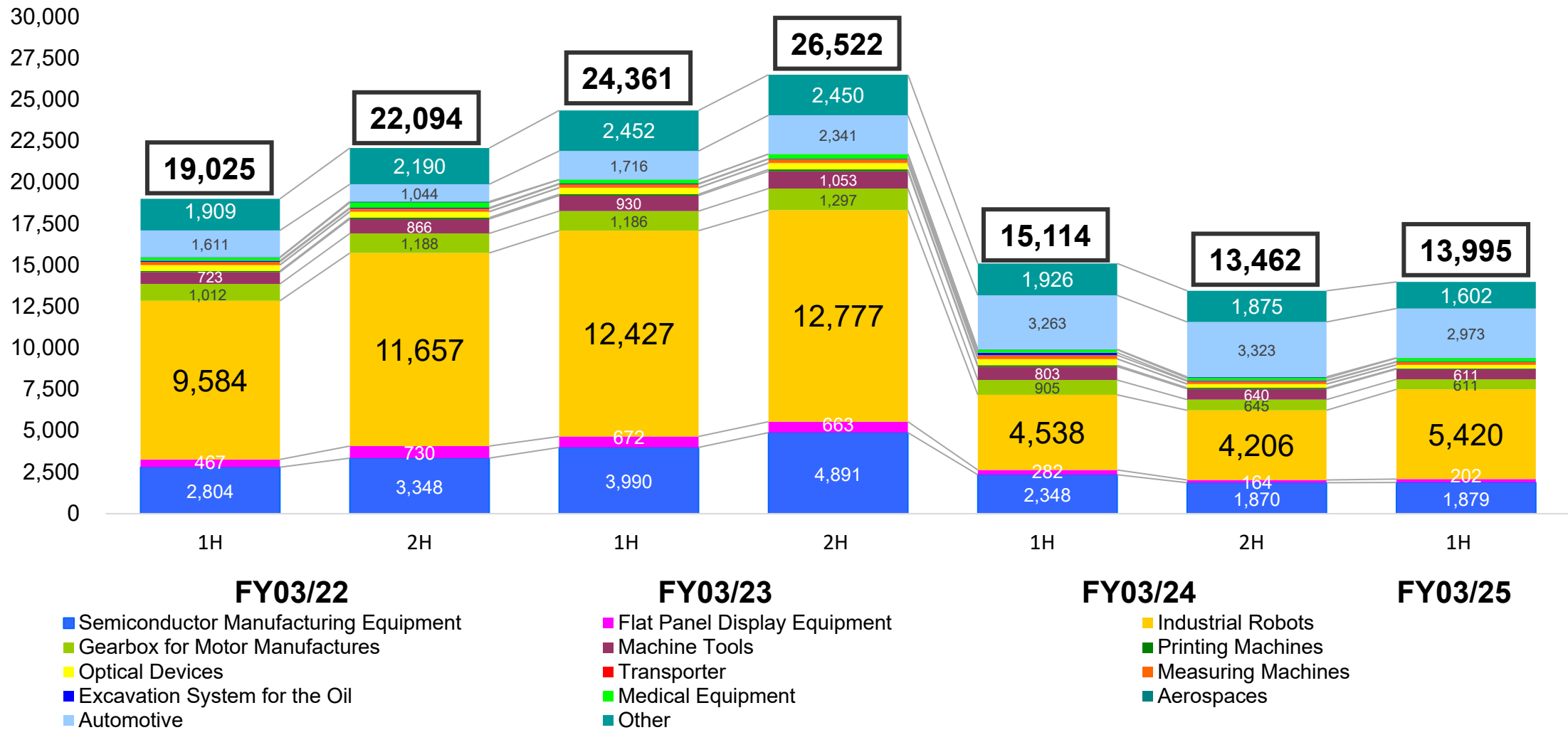


Non-consolidated results for 1H FY03/25 (year-on-year change)

(millions of yen)	1H FY03/24		1H FY03/25		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	15,114	100.0	13,995	100.0	▲1,119	▲7.4
Operating income	503	3.3	▲727	—	▲1,231	—
Ordinary income	3,299	21.8	▲699	—	▲3,999	—
Net income	3,028	20.0	▲701	—	▲3,729	—
EPS (yen)	31.86	—	▲7.38	—	▲39.24	—
Capital investment	959	—	1,343	—	383	40.0
Depreciation	2,228	—	2,175	—	▲53	▲2.4
R&D expenses	1,087	—	1,186	—	98	9.1

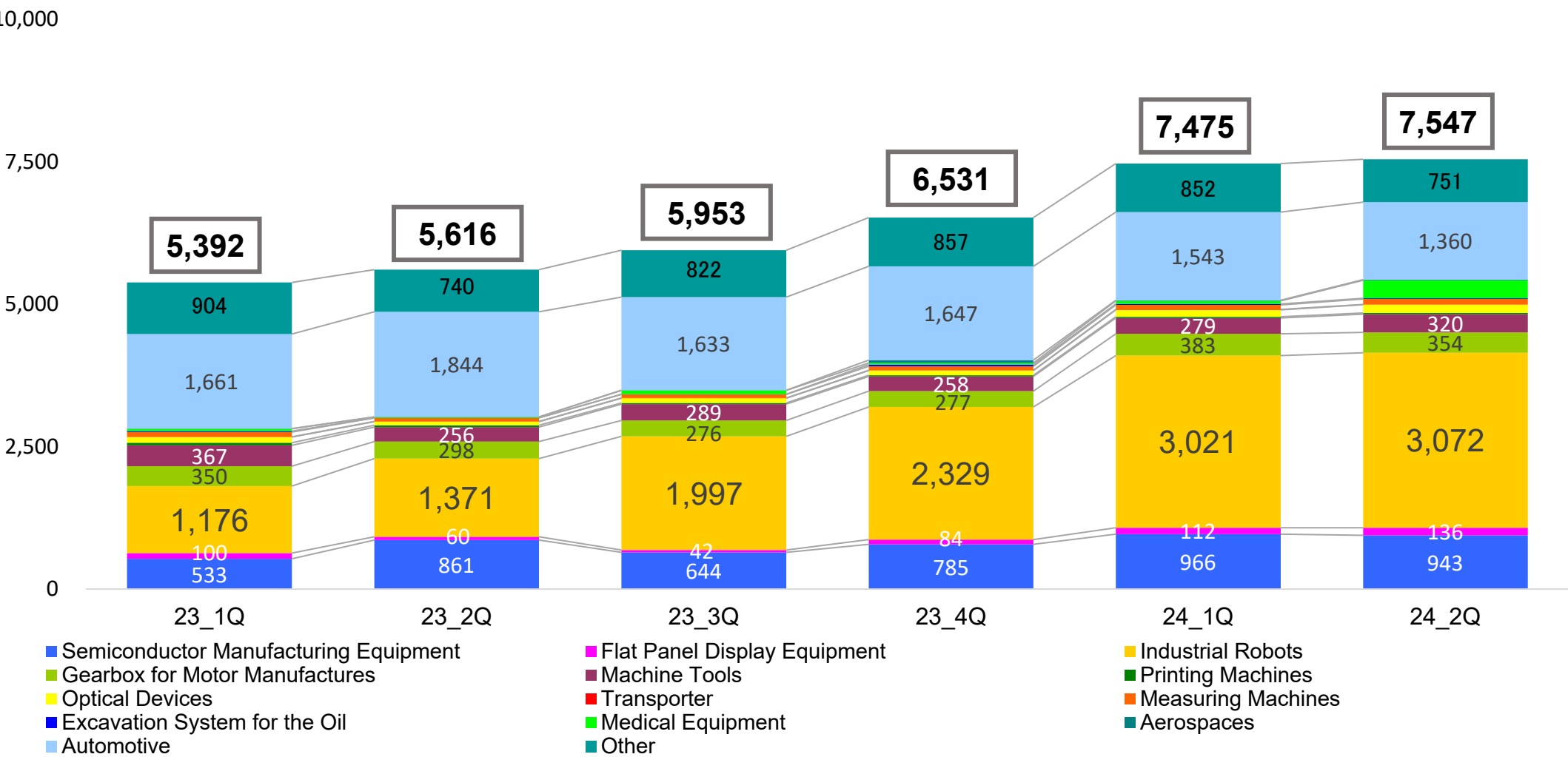
Non-consolidated net sales by application

(millions of yen)

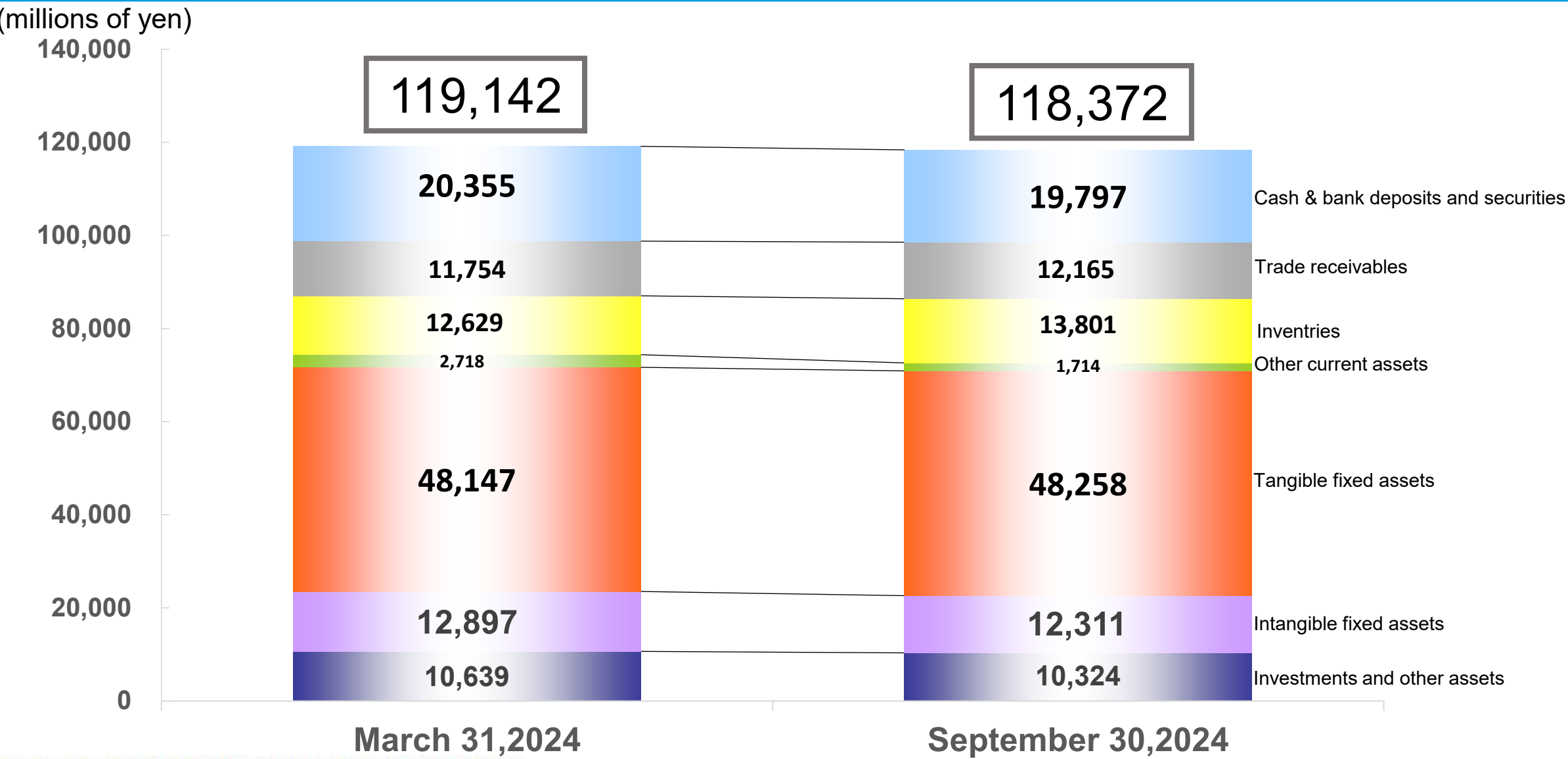


Non-consolidated bookings by application (quarterly)

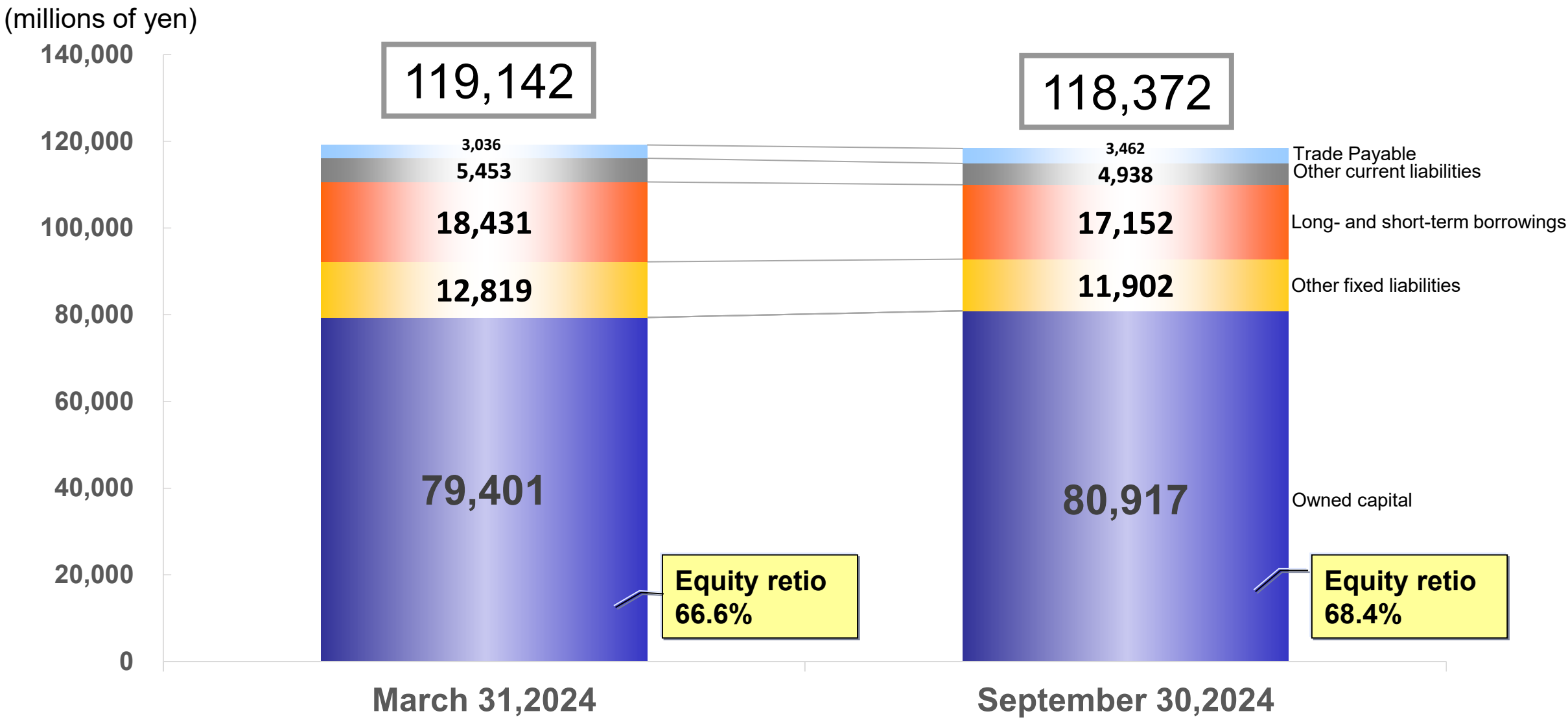
(millions of yen)



Status of consolidated assets



Status of consolidated liabilities and net assets



Status of consolidated cash flows

(millions of yen)

	1H FY03/24	1H FY03/25
Cash flow from operating activities	8,246	3,161
Cash flow from investing activities	▲4,379	▲3,501
Cash flow from financing activities	▲5,164	▲2,600
Effect of exchange rate changes on cash and cash equivalents	362	1,253
Net increase (decrease) in cash and cash equivalents	▲936	▲1,686
Cash and cash equivalents at end of period	18,985	17,254

Performance Forecasts for Full-year FY03/25

Consolidated results for FY03/25 (Vs. original forecasts)

【Versus original forecast】

(millions of yen)	Original forecasts (announced May. 13)		Revised forecasts (announced Nov. 12)		Versus original forecast	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	58,500	100.0	54,000	100.0	▲4,500	▲7.7
Operating income	2,700	4.6	▲400	—	▲3,100	—
Ordinary income	2,700	4.6	▲500	—	▲3,200	—
Net income	2,000	3.4	▲400	—	▲2,400	—
EPS (yen)	21.06	—	▲4.21	—	▲25.27	—

*Assumed exchange rate for FY03/25 forecasts: 1USD = ¥148.50 1EUR = ¥160.50 1CNY = ¥20.50

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

Reason for revisions

- ◆ While we expect bookings (in value terms) to increase primarily in Japan and other parts of Asia in 2H, we have revised down the net sales forecast due to a slower-than-expected recovery or expansion in the markets for industrial robots and semiconductor manufacturing equipment—the main applications for our Group's products.
- ◆ The profit forecasts were revised down as well, primarily reflecting the downward revision to the net sales forecast.

Revisions to non-consolidated full-year earnings forecasts

【Versus original forecast】

(millions of yen)	Original forecasts (announced May. 13)		Revised forecasts (announced Nov. 12)		Versus original forecast	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	34,000	100.0	30,000	100.0	▲4,000	▲11.8
Operating income	600	1.8	▲700	—	▲1,300	—
Ordinary income	600	1.8	▲750	—	▲1,350	—
Net income	450	1.3	▲500	—	▲950	—
EPS (yen)	4.74	—	▲5.26	—	▲10.00	—

*Assumed exchange rate for FY03/25 forecasts: 1USD = ¥148.50 1EUR = ¥160.50 1CNY = ¥20.50

Reason for revisions

◆ Same as for consolidated forecasts (see previous slide)

Consolidated performance forecasts for full-year FY03/25

(millions of yen)	FY03/24		FY03/25 (forecast)		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	55,796	100.0	54,000	100.0	▲1,796	▲3.2
Operating income	124	0.2	▲400	—	▲524	—
Ordinary income	570	1.0	▲500	—	▲1,070	—
Net income	▲24,806	—	▲400	—	24,406	—
EPS (yen)	▲261.00	—	▲4.21	—	256.79	—
Capital investment	4,955	—	7,200	—	2,244	45.3
Depreciation	10,362	—	8,100	—	▲2,262	▲21.8
R&D expenses	3,613	—	3,700	—	86	2.4

*Assumed exchange rate for FY03/25 forecasts: 1USD = ¥148.50 1EUR = ¥160.50 1CNY = ¥20.50

*Net income (loss) refers to net income (loss) attributable to owners of parent.

*Depreciation includes depreciation of tangible assets and amortization of intangible assets and goodwill.

Performance forecasts on main group companies for full-year FY03/25

(millions of yen)		Equity stake	Net sales		Operating income	
			Amount	Year-on-year Change(%)	Amount	Year-on-year Change(%)
※2	HD Systems, Inc. (Harmonic Drive L.L.C.) (U.S.A)	100% (100%)	11,600	▲12.8	800	▲54.1
	Harmonic AD, Inc.	100%	2,000	4.0	▲30	—
	Harmonic Precision Inc.	100%	2,900	37.6	▲550	—
※3	Harmonic Drive Systems (Shanghai) Co., Ltd	100%	5,500	28.0	450	6.5
※4	Harmonic Drive SE (Germany)	100%	16,300	▲2.6	600	▲69.8

*1 For overseas subsidiaries and affiliates , the fiscal year ends December 31.

*2 Exchange rates: Jan–Dec 2023 1USD = ¥140.56, Jan–Dec 2024 1USD = ¥148.50

*3 Exchange rates: Jan–Dec 2023 1CNY = ¥19.82, Jan–Dec 2024 1CNY = ¥20.50

*4 Exchange rates: Jan–Dec 2023 1EUR = ¥152.00, Jan–Dec 2024 1EUR = ¥160.50

Non-consolidated performance forecasts for full-year FY03/25

(millions of yen)

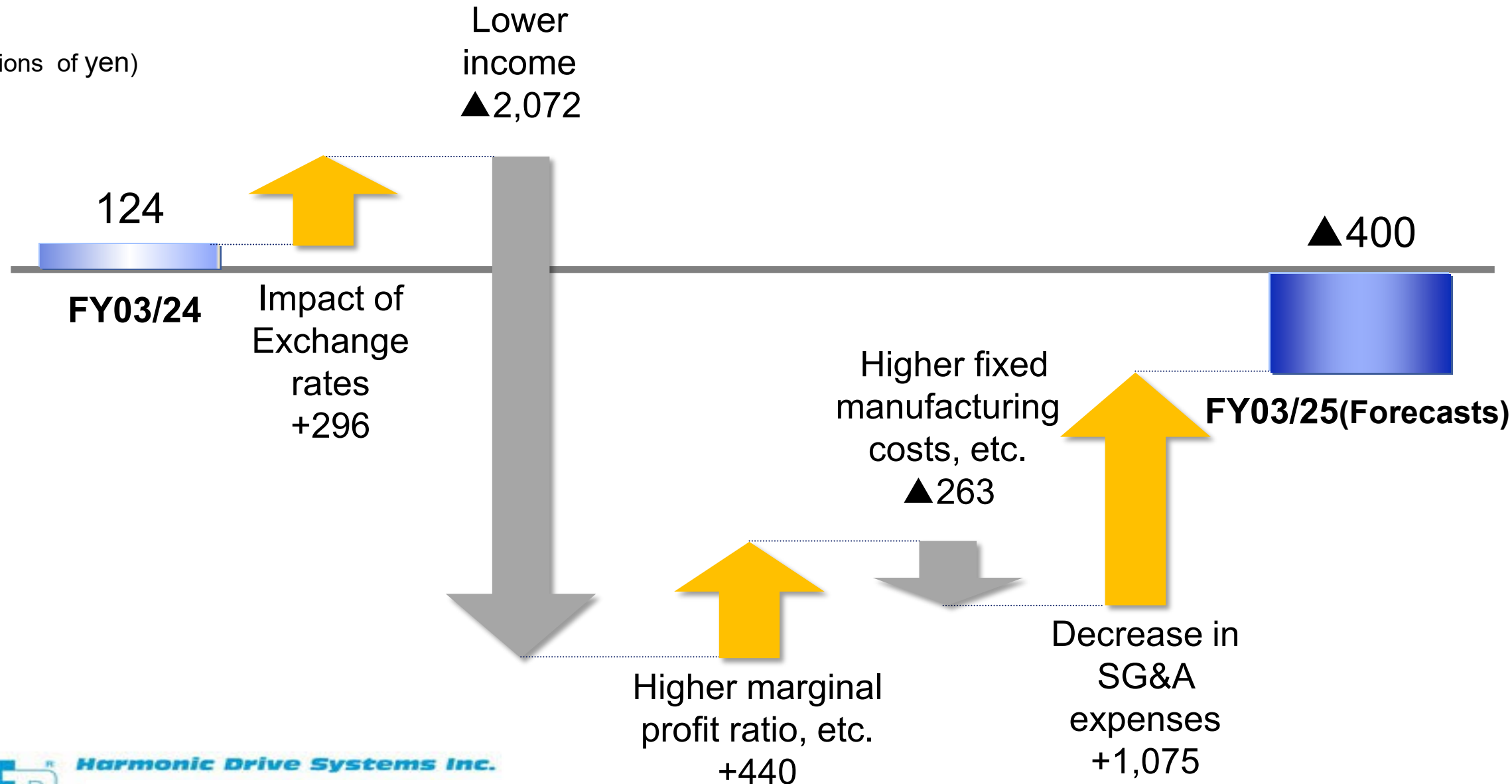
	FY03/24		FY03/25 (forecast)		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	28,577	100.0	30,000	100.0	1,422	5.0
Operating income	▲542	—	▲700	—	▲157	—
Ordinary income	2,288	8.0	▲750	—	▲3,038	—
Net income	▲18,460	—	▲500	—	17,960	—
EPS (yen)	▲194.23	—	▲5.26	—	188.97	—
Capital investment	3,275	—	4,900	—	1,624	49.6
Depreciation	4,761	—	4,500	—	▲261	▲5.5
R&D expenses	2,327	—	2,300	—	▲27	▲1.2

*Assumed exchange rate for FY03/25 forecasts: 1USD = ¥148.50 1EUR = ¥160.50 1CNY = ¥20.50

*Depreciation includes depreciation of tangible assets and amortization of intangible assets and goodwill.

Factors in year-on-year change in consolidated operating income (fiscal year ending March 31, 2025 forecasts)

(Millions of yen)



Future Outlook

1. Review of demand trends in the first half of the year

1-1. Consolidated Bookings Status by Region

North America

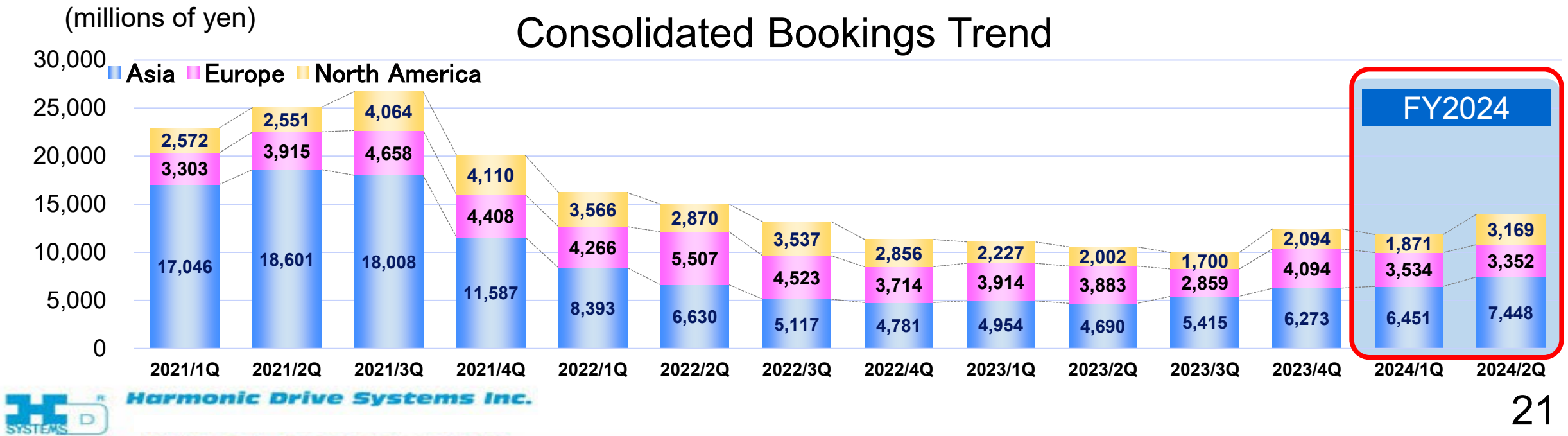
While there were bulk bookings from some customers in Q2, inventory adjustments continued at semiconductor-related customers

Europe

Bookings were robust, despite a stagnation in the European economy

Asia

Despite steady progress in customers' inventory optimization of our products, the recovery in bookings has been slower than anticipated due to weak end-market demand in China and Europe



1-2. Bookings by non-consolidated application

(millions of yen)

Trends in bookings received by non-consolidated application

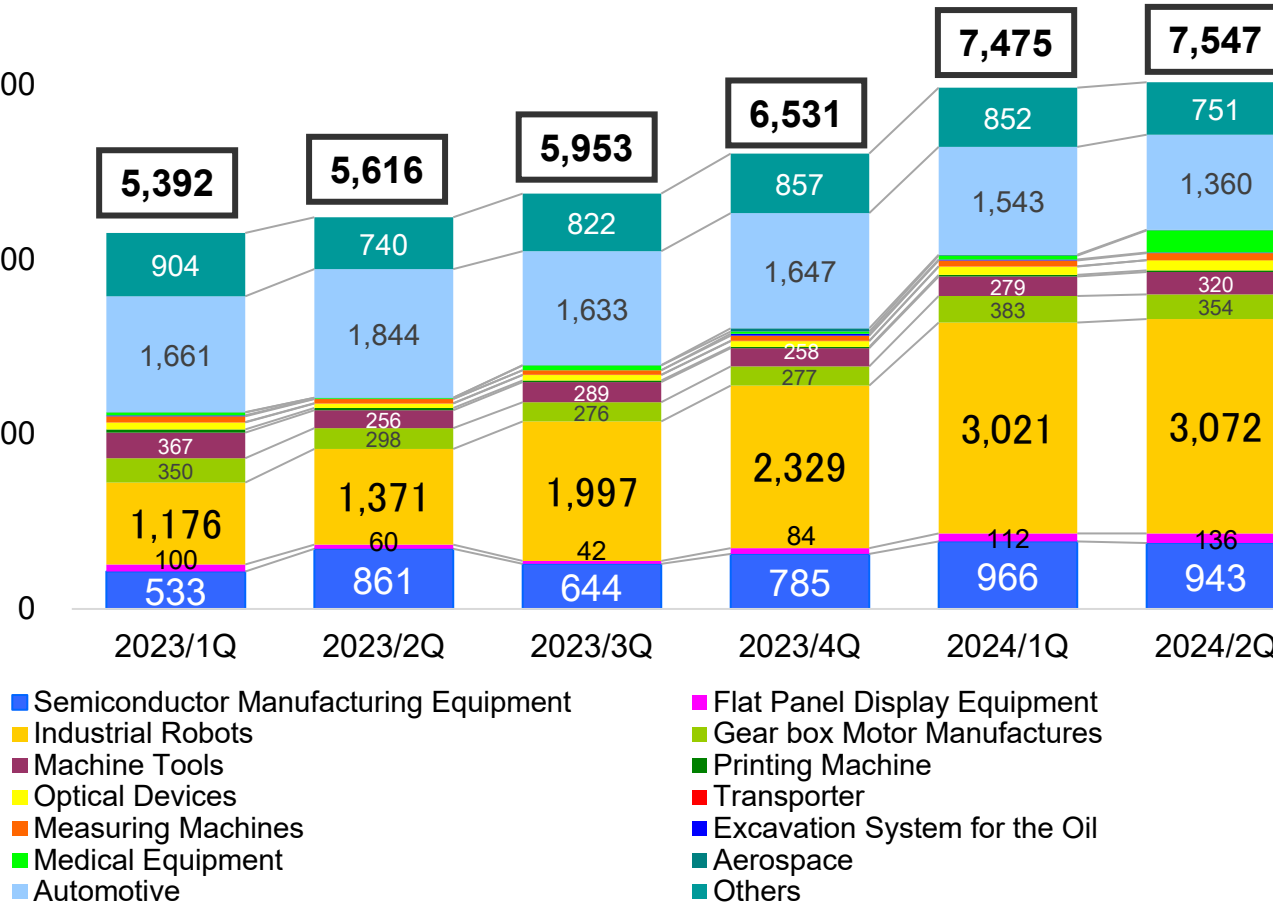
10,000

7,500

5,000

2,500

0



Status in the first half of FY2024

Automotive

- Declined due to the sluggish sale of the Japanese auto manufacture in the Chinese market

Industrial Robots

- Bookings from new customers contributed to bookings growth
- Despite steady progress in inventory optimization of our products at existing customers, recovery was slower than anticipated
- The increasing preference for high-end products among local Chinese robot manufacturers contributed to bookings growth

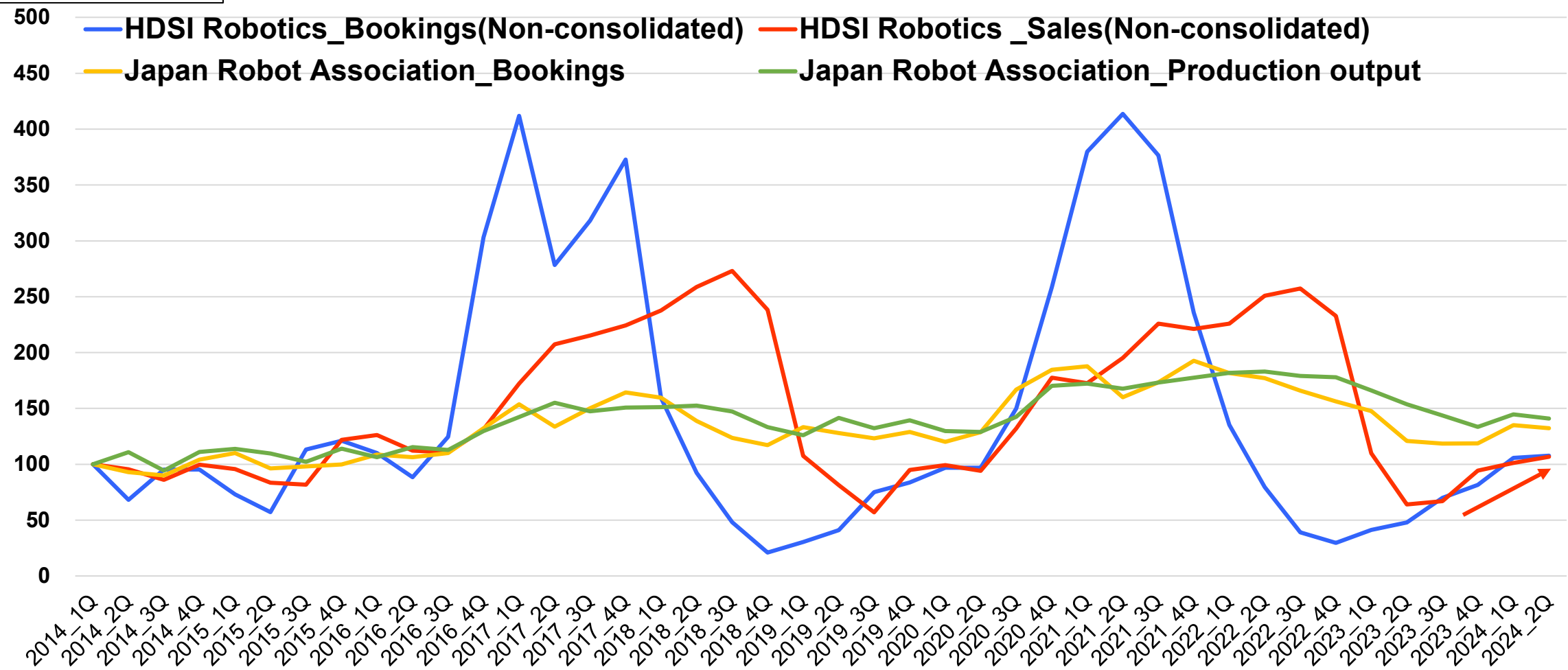
Semiconductor Manufacturing Equipment

- Bookings for AI applications drove growth
- Although recovery gained momentum in Q1, bookings have since plateaued
- Recovery was slower than expected (delay?)

1-3. HDSI bookings and net sales vs. Japan Robot Association bookings and production output

Quarterly trend with Q1 2014 indexed at 100

Our bookings and net sales are gradually increasing

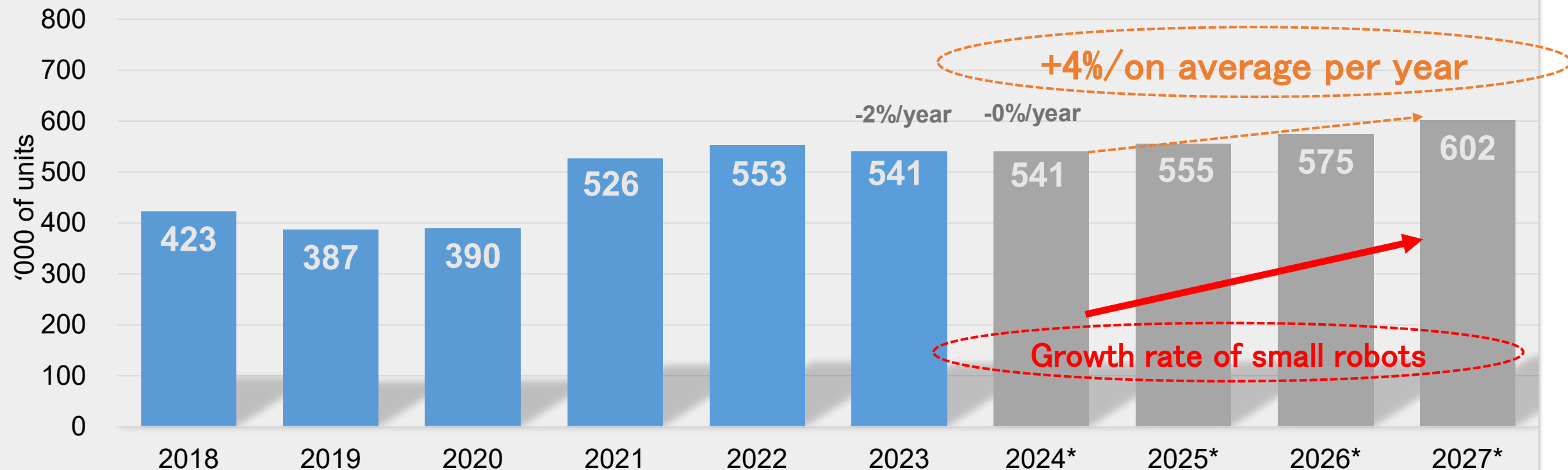


2.Future Trend

2-1. Factory automation robot market forecast

- Growth rates of industrial robots : Annual rate of 4%
- We have maintained our assumption that the growth rate for small robots will exceed that of industrial robots

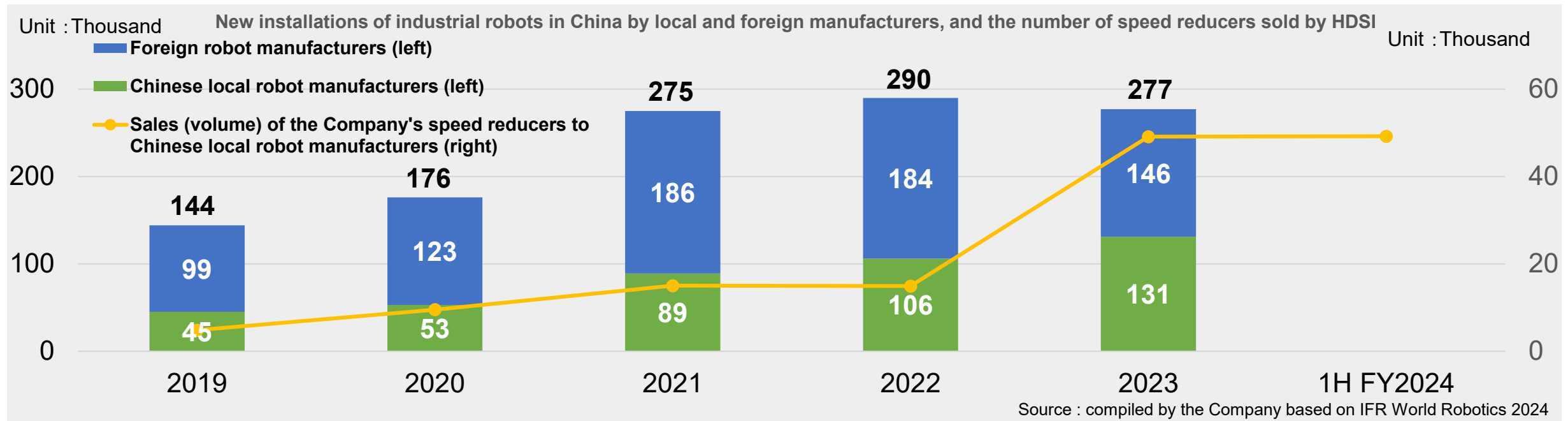
Annual installations of industrial robots 2018 -2023 and 2024* - 2027*



Source: compiled by the Company based on IFR World Robotics 2024

2-2. Emergence of local manufacturers in Chinese robotics market

- Share of local manufacturers in Chinese robotics market
 - The share of local manufacturers for collaborative robots and small size robots has expanded
- Growing preference for high-end products by local robot manufacturers in China
 - The polarization between low-cost models and high-reliability models is accelerating
 - Our market share is on a clear uptrend



2-3. Semiconductor Manufacturing equipment and Automotive

Semiconductor Manufacturing equipment

■ Demand for semiconductor-related customers is showing signs of improvement, but the recovery remains moderate

- Sales of semiconductor manufacturing equipment for AI semiconductors used in servers were robust
- Demand for semiconductor manufacturing equipment for power semiconductors and automotive semiconductors remained subdued
- For memory devices, corporate investment is anticipated in 2025 or later



Automotive

■ The impact of weak sales of the Japanese auto manufacturer was offset by increased adoption of our products in new vehicle models

- Sales were sluggish in China
- Expansion of installation in new vehicle models in North America

3. New Applications

3-1. Humanoid robots

■ Emergence of humanoid robot market driven by advances in AI

- We have identified demand for humanoid robots in workplaces as an advanced form of collaborative robots
- We will continue providing prototype products to multiple startups
- We have begun mass production for some customers
- The launch of fully operational humanoid robots requires AI and GAI capable of processing vast amounts of data received through cameras and sensors to enable autonomous operations. The development of these advanced technologies will require more time.

<Humanoid robots remain the next growth driver>



<Our response>

While fully utilizing our development capabilities in the operational design of individual projects, we will make timely and necessary capital investments with an eye to the transition to the mass production phase

3-2. Space

FY2026 sales target: Over 3 billion yen (more than double the FY2023 sales result)

➤ Optical Satellite Communication

- Laser Communication System is a method of communication between artificial satellites and the ground using laser light.
- Our group's products are adopted for TESAT 's OPTICAL Communication Terminal
- Highly praised for its high precision and long life in space



Source : Tesat-Spacecom GmbH & Co.KG

➤ eVTOL(Electric Vertical Takeoff and Landing vehicle)

- Customers are expanding production capacity and preparing to obtain international certifications to achieve the earliest possible start of commercial operations
- To support the launch of customers' commercial operations, we have begun preparations for the mass production of speed reducers for eVTOLs



3-3. Mobility

➤ Lean Mobility

- Urban compact EVs
- Realize safe and exhilarating driving through state-of-the-art sensing and control technologies
- Our products are integrated into active lean technology, which optimally controls vehicle tilting during a drive
- Mass production slated to start from 2025



Source : Lean Mobility Inc.

4. Initiatives for FY03/25

4-1. Sustainable growth of all businesses with an emphasis on profitability

Key Measure

- Develop new technologies and skills for next-generation applications
 - High-performance actuators, high torque, flat and compact design
- **Price revisions: Led by top management, begin negotiations to raise prices to reflect higher costs**

Key Measure

Launch a new company-wide cost reduction project

- Aim to develop low-cost manufacturing methods
- Expand procurement sources and assess quality and costs
- Expand overseas production capability, focusing exclusively on assembly lines (Asia, including China)

EBITDA = 25% or above

R&D expenses
5%

↓ Decrease

Cost of sales
+ SG&A
70% or below
(excluding depreciation)

↑ Increase

Operating income
15% or above

Depreciation
10%

↑ Increase

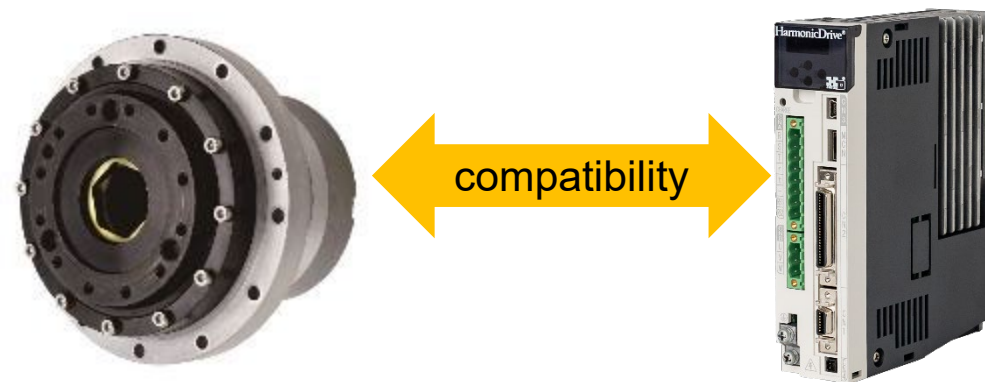
Sales of
amount
100%

4-2. New Product Releases

Enhancement and expansion of high-value-added mechatronics products

➤ AC Servo Driver HA-900A Series

- Successor to the HA-800 A series (upward compatibility)
- Position control performance: 2.5x improvement (compared to our previous model)
- Enhanced usability: Dedicated utility software
- Improved customizability: Able to accommodate customer-specific requirements

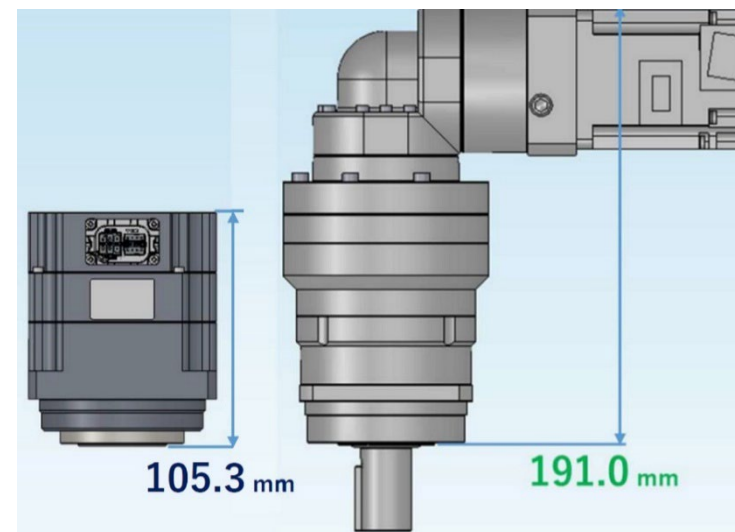


New/old actuator

HA-900 series

➤ High-precision Planetary Speed Reducer-type Servo Actuator

- Advantages over conventional right-angle planetary gears + servo motors
 - High performance
 - Low power loss
 - Space-saving design
 - Enhanced profitability



Product under development (L) and competitor product (R) 34



Harmonic Drive Systems Inc.

Topics for the first half of FY2024

April: Hold the 38th Harmonic Concert

May: Sponsored the Robotics Summit 2024 (Boston)

May: Hold the 22nd Harmonic Lecture

May: At the 47th Aerospace Mechanisms Symposium
Announcement of joint research with JAXA

June: Sponsored Shinshu Azumino Half Marathon as Gold Partner

July: Hold a three-company (SMC, THK and HDSI)
mechatronics exhibition

July: Exhibited at Farnborough International Airshow

