

Harmonic Drive Systems Inc.

Presentation on Business Results for the Fiscal Year Ended March 31, 2019

May 17, 2019

This presentation contains forward-looking statements relating to expected future performance as of May 17, 2019. 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.

The title is centered and surrounded by several decorative, hand-drawn style blue swirls that frame the text.

Performance Summary for FY 2019/3

Consolidated results for FY 2019/3 (versus original forecasts)

(millions of yen)

	Forecast (announced Nov 8, 2018)		FY2019/3 (actual)		Vs. original forecasts	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	67,000	100.0	67,809	100.0	809	1.2
Operating income	16,100	24.0	16,903	24.9	803	5.0
Ordinary income	16,500	24.6	17,464	25.8	964	5.8
Net income	10,600	15.8	11,601	17.1	1,001	9.5
EPS (yen)	110.11	—	120.52	—	10.41	9.5

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

Consolidated results for FY 2019/3 (year-on-year change)

(millions of yen)

	FY2018/3		FY2019/3		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	54,339	100.0	67,809	100.0	13,469	24.8
Operating income	12,598	23.2	16,903	24.9	4,304	34.2
Ordinary income	12,228	22.5	17,464	25.8	5,236	42.8
Net income	8,059	14.8	11,601	17.1	3,542	43.9
EPS (yen)	86.90	—	120.52	—	33.62	38.69
Capital investment	8,757	—	23,876	—	15,119	172.6
Depreciation costs	5,852	—	6,247	—	394	6.7
R&D costs	2,114	—	2,476	—	361	17.1

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.

Performance of main group companies in FY2019/3

(millions of yen)

	Equity stake	Net sales		Net income	
		Amount	Year-on-year change (%)	Amount	Year-on-year change (%)
Harmonic Drive Systems Inc.	—	49,249	26.3	10,413	33.7
※2 ※5 HD Systems, Inc. (Harmonic Drive L.L.C.) (U.S.A)	100% (51%)	6,856	24.5	494	104.5
Harmonic AD, Inc.	100%	3,371	21.2	362	47.8
※3 Harmonic Drive Systems (Shanghai) Co., Ltd.	100%	4,048	▲12.8	194	▲30.7
※4 ※6 Harmonic Drive AG (Germany)	74.7%	15,952	17.1	2,331	14.0

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

*2 Exchange rates: FY17/12 1USD = 112.19yen, FY18/12 1USD = 110.43yen

*3 Exchange rates: FY17/12 1CNY = 16.63yen, FY18/12 1CNY = 16.72yen

*4 Exchange rates: FY17/12 1EUR = 126.67yen, FY18/12 1EUR = 130.42yen

*5 Net income of US subsidiaries (consolidated) is after excluding non-controlling interests.

*6 Net income of German subsidiaries (consolidated) is before excluding non-controlling interests.

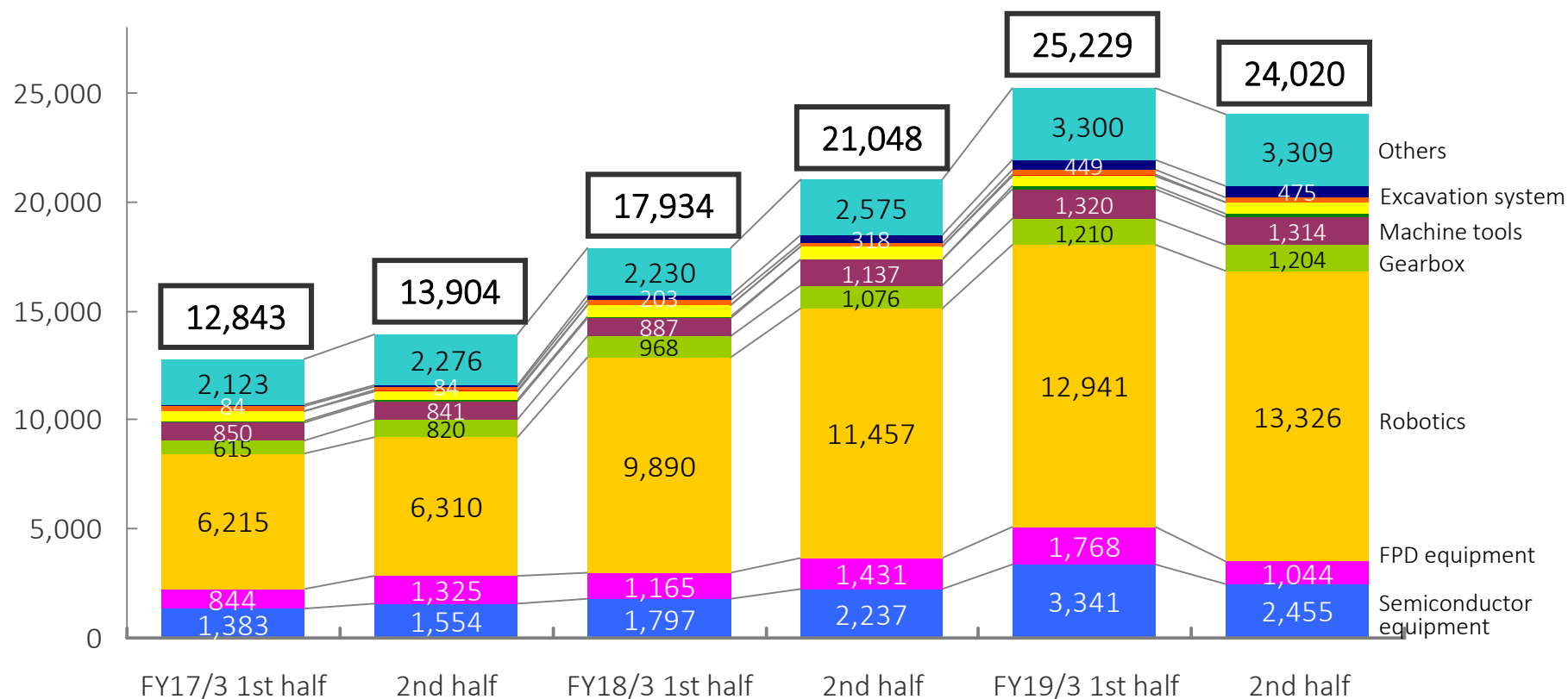
Non-consolidated results for FY2019/3 (year-on-year change)

(millions of yen)

	FY2018/3		FY2019/3		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	38,982	100.0	49,249	100.0	10,266	26.3
Operating income	11,016	28.3	13,798	28.0	2,782	25.3
Ordinary income	11,044	28.3	14,213	28.9	3,169	28.7
Net income	7,788	20.0	10,413	21.1	2,625	33.7
EPS (yen)	83.97	—	108.18	—	24.20	28.8
Capital investment	6,523	—	15,945	—	9,422	144.4
Depreciation costs	1,634	—	2,458	—	824	50.4
R&D costs	1,368	—	1,629	—	261	19.1

Net sales by application (non-consolidated)

(millions of yen)

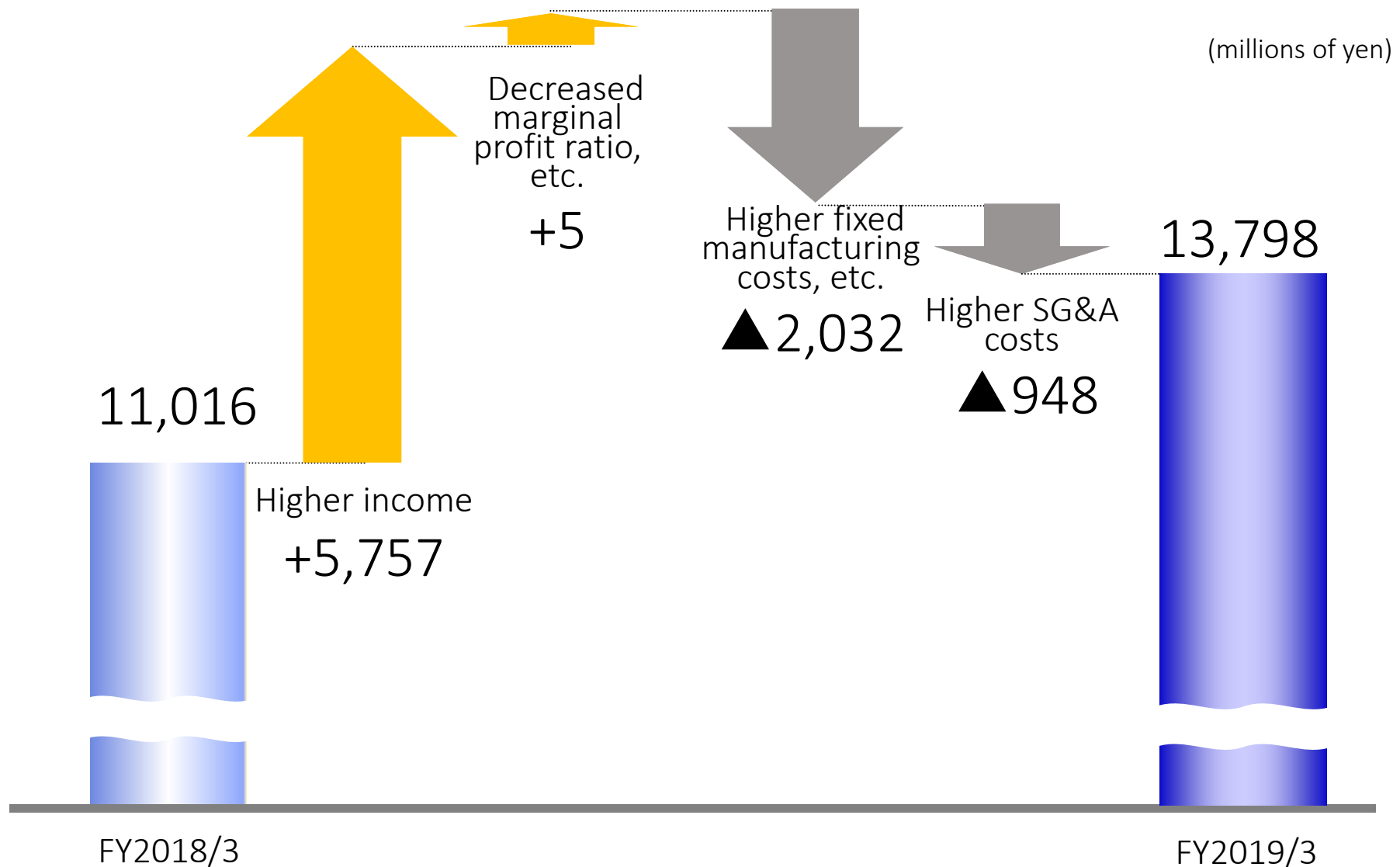


Semiconductor equipment
Gearbox for motor manufactures
Optical devices
Excavation system for the oil, etc.

Flat panel display equipment
Machine tools
Transporter
Others

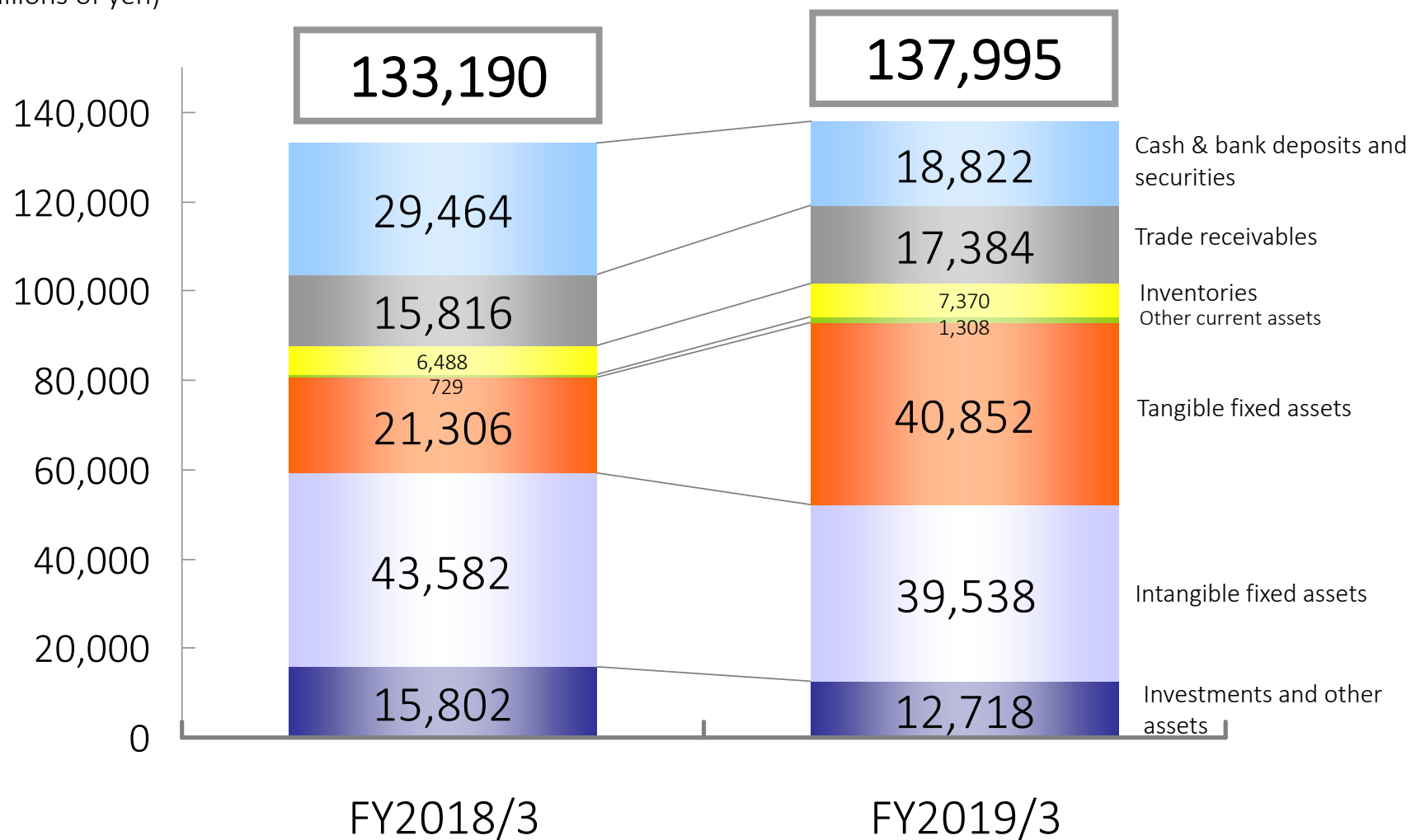
Robotics
Printing machines
Measuring machines

Factors in year-on-year change in non-consolidated operating income (FY2019/3)

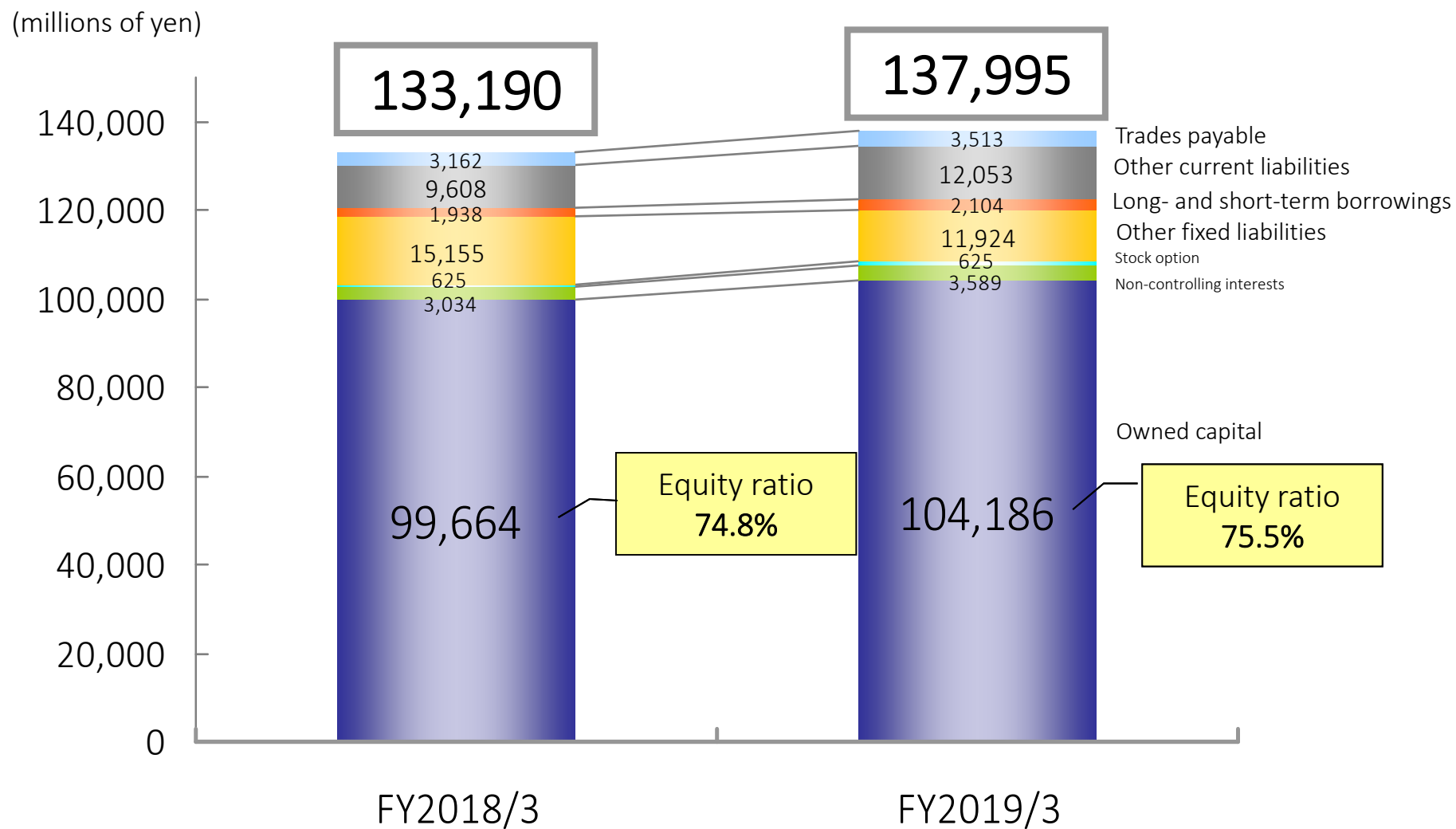


Status of consolidated assets

(millions of yen)



Status of consolidated liabilities and net assets



Status of consolidated cash flows

(millions of yen)	FY2018/3	FY2019/3
Cash flow from operating activities	9,233	15,121
Cash flow from investing activities	▲8,171	▲22,399
Cash flow from financing activities	17,493	▲3,271
Effect of exchange rate changes on cash and cash equivalents	95	▲171
Net increase (decrease) in cash and cash equivalents	18,651	▲10,720
Cash and cash equivalents at end of year	28,320	17,600

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Performance Forecasts for FY 2020/3

Consolidated performance forecasts for FY 2020/3

(millions of yen)

	FY2019/3		FY2020/3 forecasts		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	67,809	100.0	42,000	100.0	▲25,809	▲38.1
Operating income	16,903	24.9	1,000	2.4	▲15,903	▲94.1
Ordinary income	17,464	25.8	1,000	2.4	▲16,464	▲94.3
Net income	11,601	17.1	50	0.1	▲11,551	▲99.6
EPS (yen)	120.52	—	0.52	—	▲120.00	▲99.6
Capital investment	23,876	—	9,500	—	▲14,376	▲60.2
Depreciation costs	6,247	—	7,900	—	1,652	26.5
R&D costs	2,476	—	2,450	—	▲26	▲1.1

Assumed exchange rate for FY20/3 forecasts 1USD = ¥110.00 1EUR = ¥125.00 1CNY=¥16.00

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.

FY 2020/3 forecasts for main group firms

(millions of yen)

	Equity stake	Net sales		Net income	
		Amount	Year-on-year change (%)	Amount	Year-on-year change (%)
	Harmonic Drive Systems Inc.	—			
※2 ※5	HD Systems, Inc. (Harmonic Drive L.L.C.) (U.S.A)	100% (51%)	22,000 ▲55.3	100 ▲99.0	400 ▲19.1
	Harmonic AD, Inc.	100%	2,000 ▲40.7	20 ▲94.5	
※3	Harmonic Drive Systems (Shanghai) Co., Ltd.	100%	4,400 8.7	190 ▲2.5	
※4 ※6	Harmonic Drive AG (Germany)	74.7%	15,500 ▲2.8	2,100 ▲9.9	

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

*2 Exchange rates: FY18/12 1USD = 110.43yen, FY19/12 (forecast) 1USD = 110.00yen

*3 Exchange rates: FY18/12 1CNY = 16.72yen, FY19/12 (forecast) 1CNY = 16.00yen

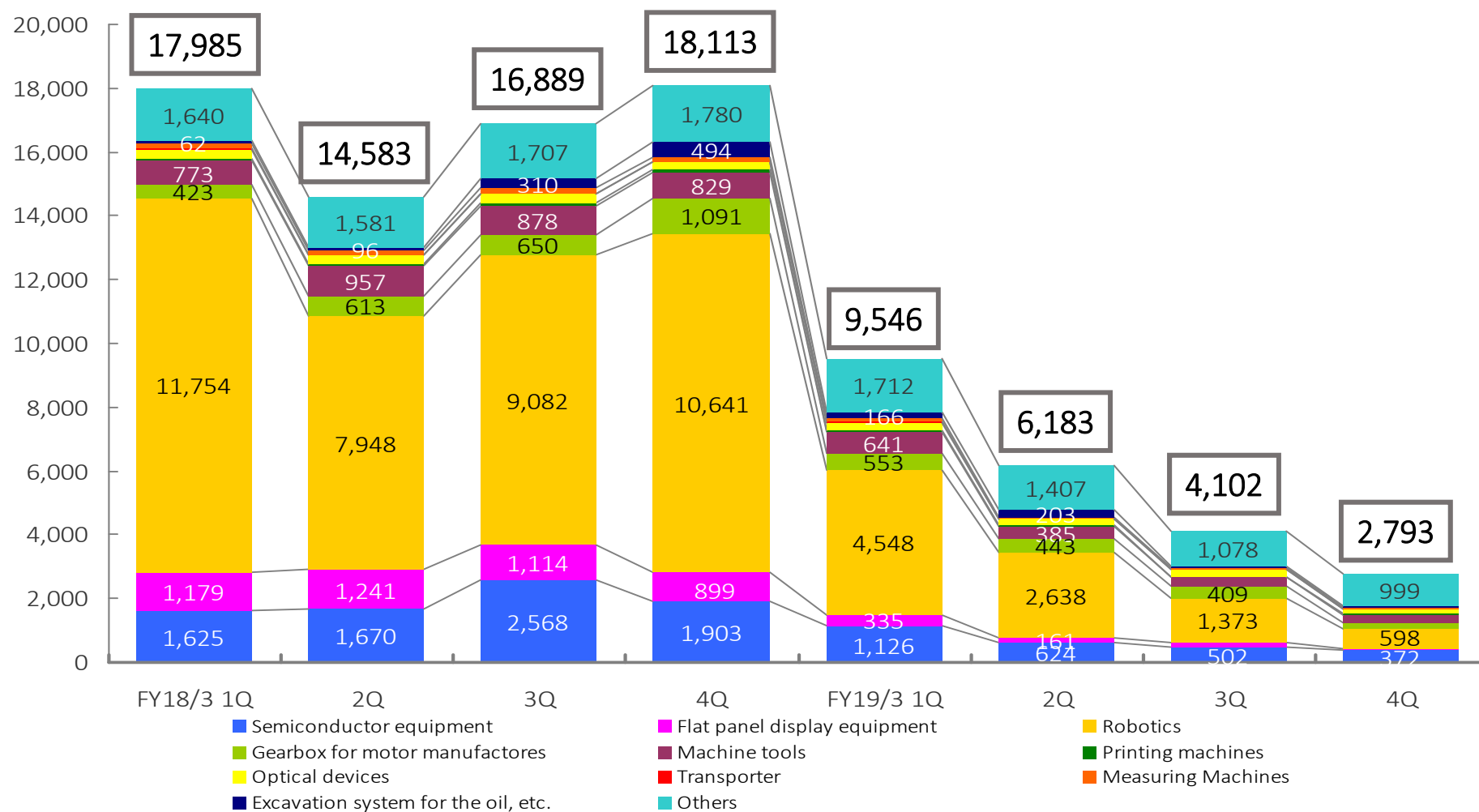
*4 Exchange rates: FY18/12 1EUR = 130.42yen, FY19/12 (forecast) 1EUR = 125.00yen

*5 Net income of US subsidiaries (consolidated) is after excluding non-controlling interests.

*6. Net income of German subsidiaries (consolidated) is before excluding non-controlling interests.

Non-consolidated bookings by application (quarterly)

(millions of yen)



Non-consolidated performance forecasts for FY 2020/3

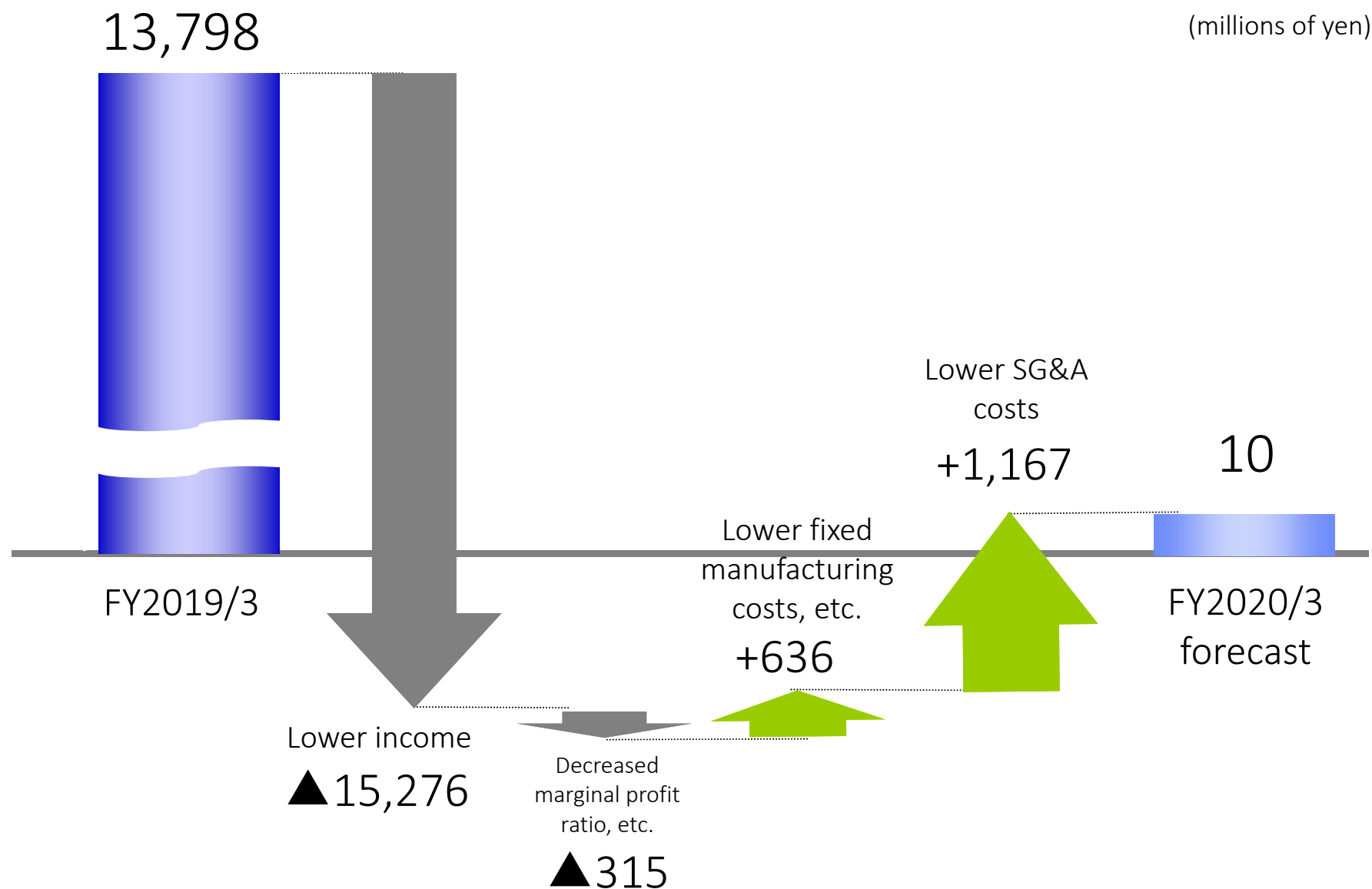
(millions of yen)

	FY2019/3		FY2020/3 forecasts		Year-on-year change	
	Amount	Percent (%)	Amount	Percent (%)	Change	Rate (%)
Net sales	49,249	100.0	22,000	100.0	▲27,249	▲55.3
Operating income	13,798	28.0	10	0.0	▲13,788	▲99.9
Ordinary income	14,213	28.9	150	0.7	▲14,063	▲98.9
Net income	10,413	21.1	100	0.5	▲10,313	▲99.0
EPS (yen)	108.18	—	1.04	—	▲107.18	▲99.0
Capital investment	15,945	—	4,700	—	▲11,245	▲70.5
Depreciation costs	2,458	—	3,860	—	1,401	57.0
R&D costs	1,629	—	1,800	—	170	10.5

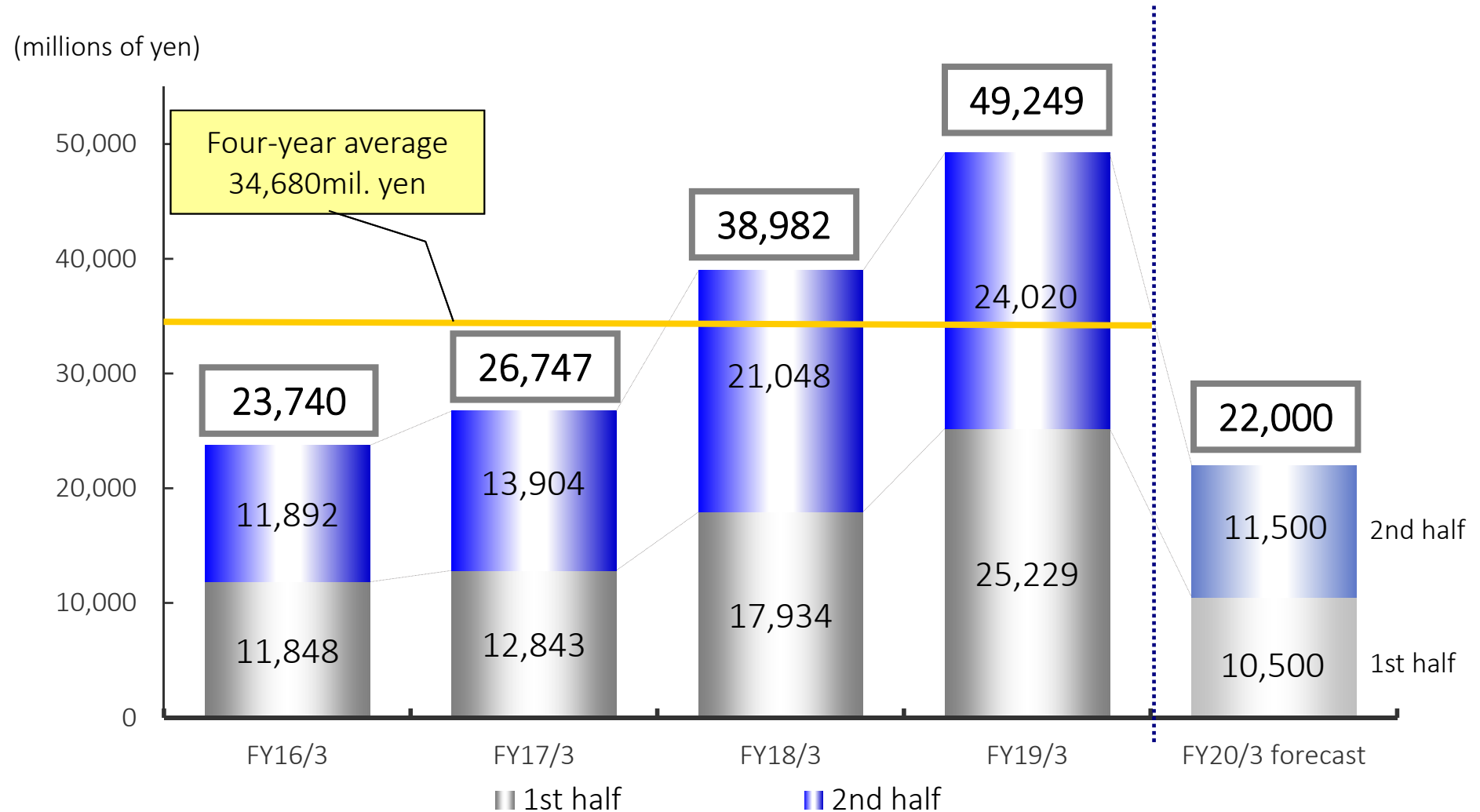
Assumed exchange rate for FY20/3 forecasts 1USD = ¥110.00 1EUR = ¥125.00 1CNY = ¥16.00

Depreciation costs include depreciation cost of tangible assets and amortization cost of intangible assets.

Factors in year-on-year change in non-consolidated operating income (FY 2020/3 forecast)



Sales trend line (non-consolidated)



An abstract graphic consisting of several overlapping, flowing blue lines that swirl around the central text, creating a sense of motion and depth.

Future Outlook

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Orders by Region

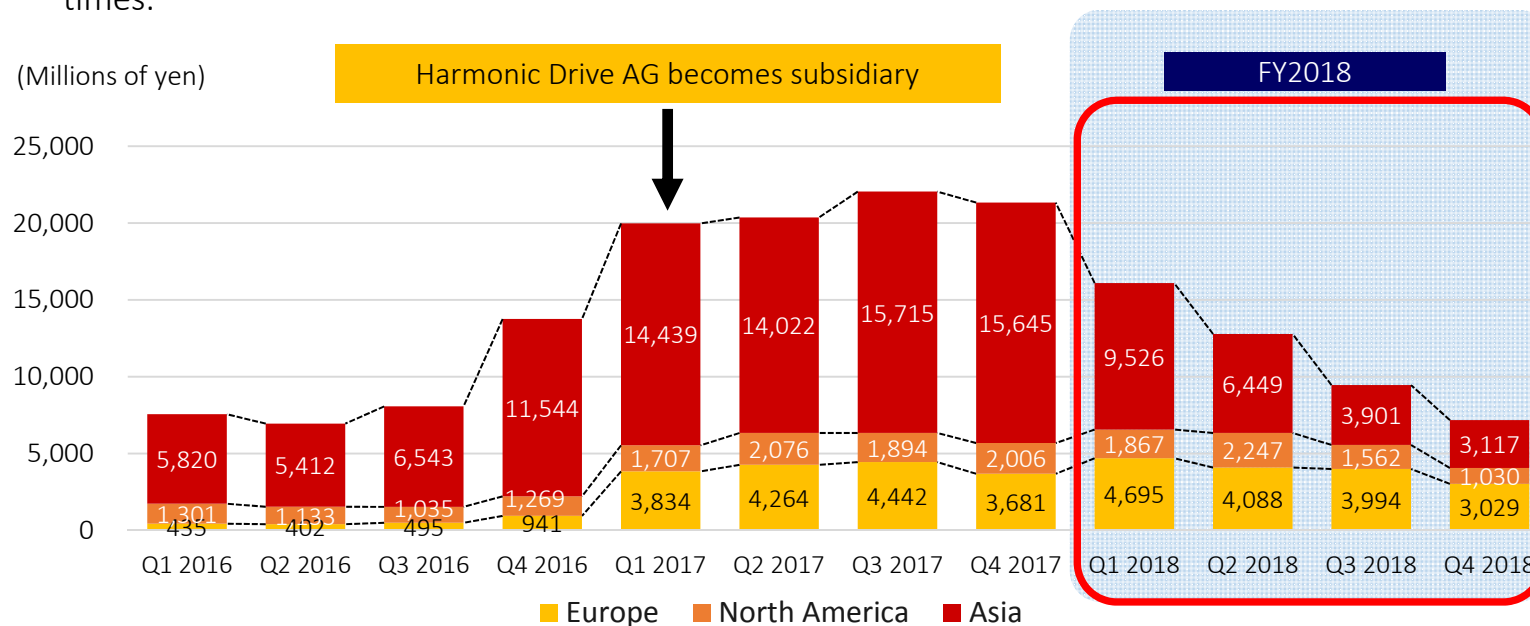
Consolidated orders, by region

External environment

- Slowdown of market growth in China, affected by US-China trade friction and fiscal reforms
→ Recently, some signs of recovery in the Chinese market.
- “Overheating of investments” in industrial robots in 2017-18 now undergoing correction.
→ Overall orders are now in a downtrend (according to Japan Robot Association).
- “Advance orders” we received in previous years have led to inventory adjustments.
→ Distributors and customers alike are adjusting inventories (but cancellations and requests for delayed deliveries have recently toned down).

Internal environment

- Customers are still satisfied with our products and services; customer relations are solid.
- By increasing our production capacity, we have worked through order backlogs and normalized lead times.



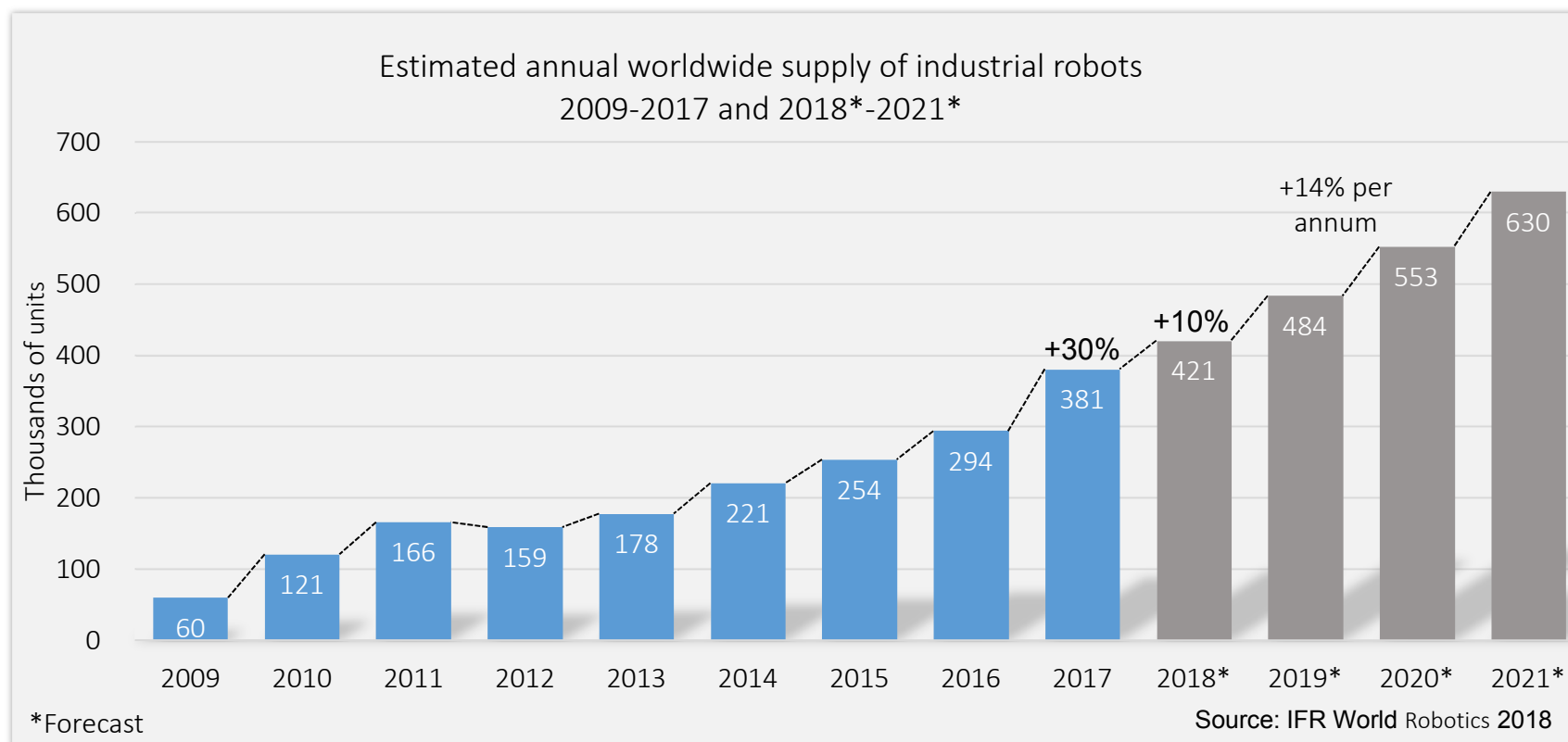


Trends in Main Fields of Application

1. Industrial robots

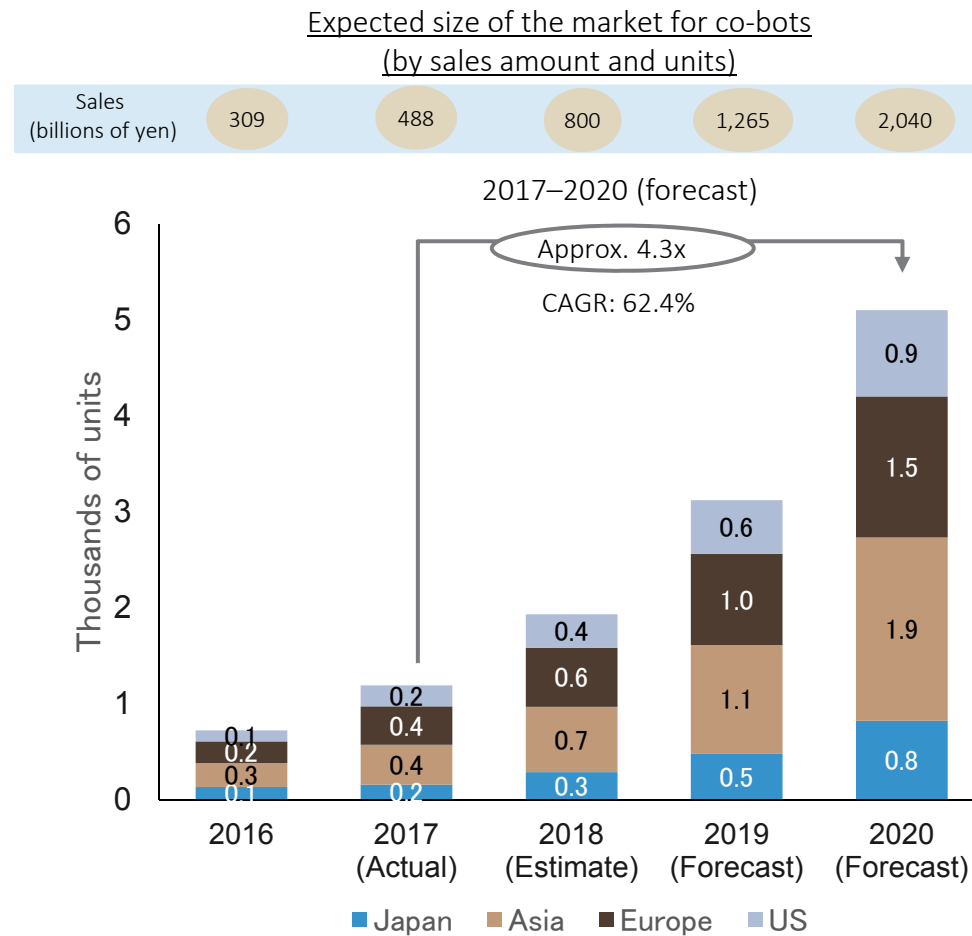
- Chinese manufacturers are holding back capex plans, cautious of the market slowdown.
- But some nascent signs of a recovery in the Chinese market are appearing.
- Meanwhile, investment appetite for labor-saving and automation remain strong.

Worldwide outlook for number of industrial robots sold



2. Collaborative robots (co-bots)

- Expanding adoption in the manufacturing and service sectors
- Robust demand, centered on Europe



Source: Techman Robot Inc.

Source: "Reality and Future Outlook of Worldwide Robot Related Market 2018; Vol.1 FA Robot Market Edition," Fuji Keizai Group

3. Semiconductor manufacturing equipment, LED and OLED manufacturing equipment

Semiconductor manufacturing equipment

- Growth in the smartphone market is decelerating.
- Capex has been curbed at a major US information technology firm, resulting in a decrease in memory demand.
- But demand is solid for AI, VR, and CASE (automobile-related).
- We also expect demand to be fueled by 5G-related investment.
(3G [voice]→4G [data]→5G [video])



LED and OLED manufacturing equipment

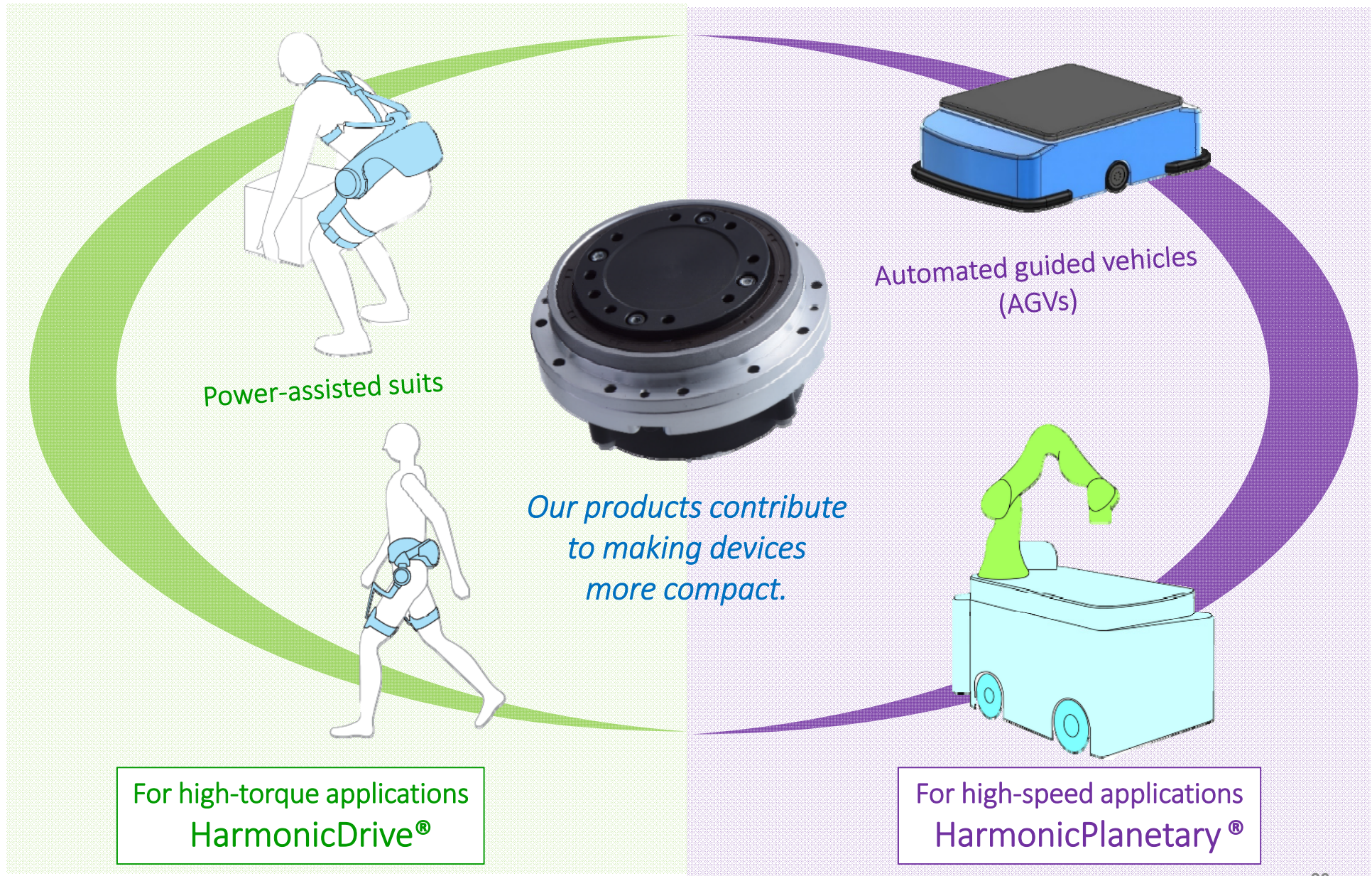
- Falling demand for small/medium-sized FPDs, as smartphone growth decelerates.
- But budding demand for OLEDs used in large TVs and onboard automotive electronics.



The background features several decorative, flowing blue lines that swirl around the central text, creating a sense of motion and elegance.

New Products and Applications

Power-assisted suits & AGVs



Power-assisted suits & AGVs

★ New product: FLA Series

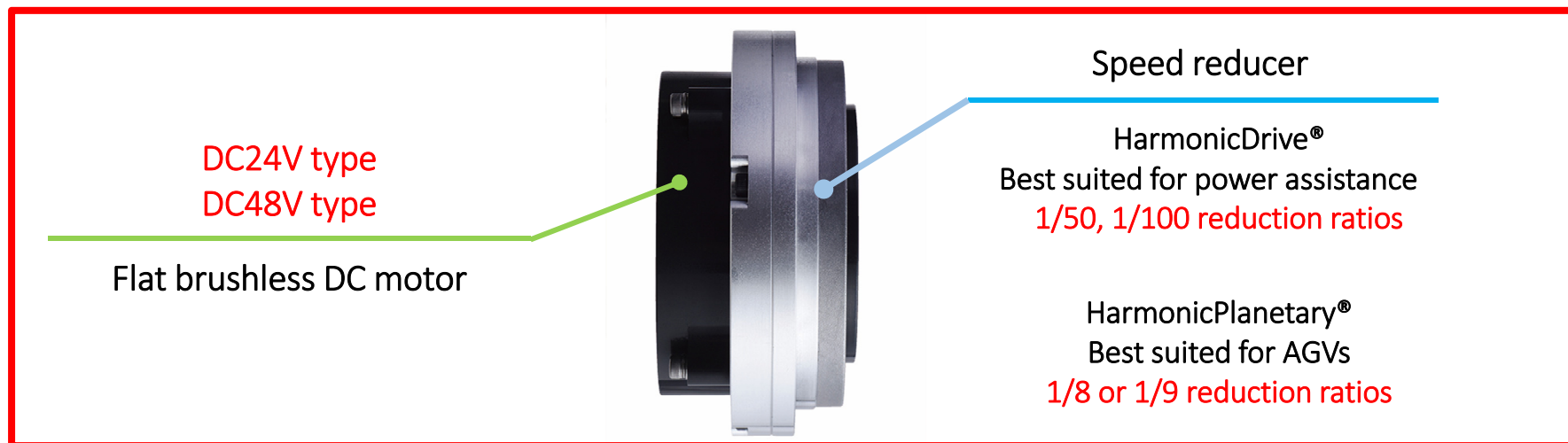
Our new actuator series is lighter and thinner than previous versions, allowing us to meet diverse user requirements.

- Specialized design realizes lighter weight and extreme flatness:

Lightest 390g Length 39.8mm <FLA-11A type>

- Extensive product lineup:

4 models × 3 reduction ratios × 2 voltages Various combinations



Power-assisted suits & AGVs

We aim to reach a broad customer base by offering products in collaboration with Yaskawa Electric Corporation.

Actuators



Harmonic Drive Systems

Drivers



Yaskawa Controls

➤ End users

FY2018 performance: Inquiries from 70 companies in Japan and overseas

Global sales expansion of MINI-MICRO series

Advanced medicine,
amusement



Table top robots



www.mecademic.com

Source: Mecademic Inc.

Small collaborative robots,
semiconductor manufacturing
equipment



Source: Techman Robot Inc.



Industry's smallest
Ø5mm



CSF micro series
Starting from Ø10mm



CSF mini series
Starting from □20mm



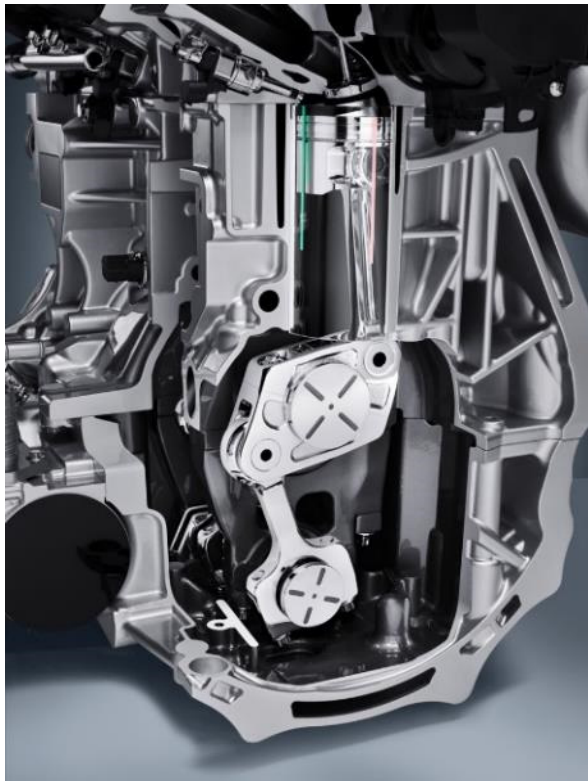
CSF-2UP series
Starting from □50mm

- Global sales expansion of our highly-competitive and unmatched products made possible through our Group's unique strengths.
- We look to establish our products as the "de facto standard" in the above-mentioned markets that are poised to grow further.

Helping to bring a revolutionary type of new engine into practical use

■ Nissan Motor Co., Ltd.

- Used in actuator for variable compression ratio (VCR) engine
- One HarmonicDrive® used in each engine



Source: Nissan Motor Co., Ltd.

Significantly improved fuel performance

- Compression ratio continuously changes according to driving conditions
- Significantly improved thermal efficiency
- Has been something of a dream among internal engine technologies, under development for more than 20 years



- ◆ Expected to drive next-generation technologies
State-of-the-art technology contributing to the fusion of internal combustion engines and electric vehicles

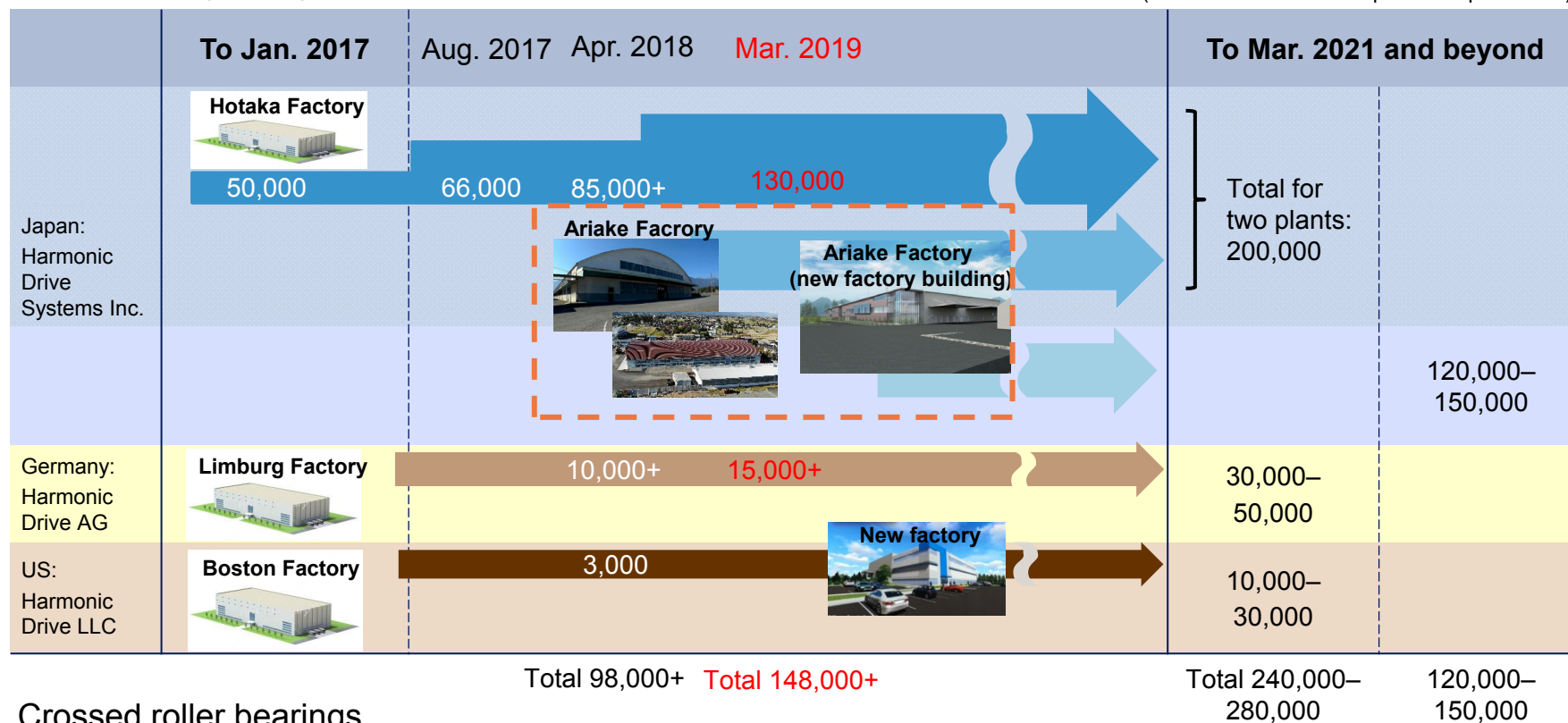
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Initiatives to Improve QCDS Aimed at Achieving Our Mid-Term Management Targets

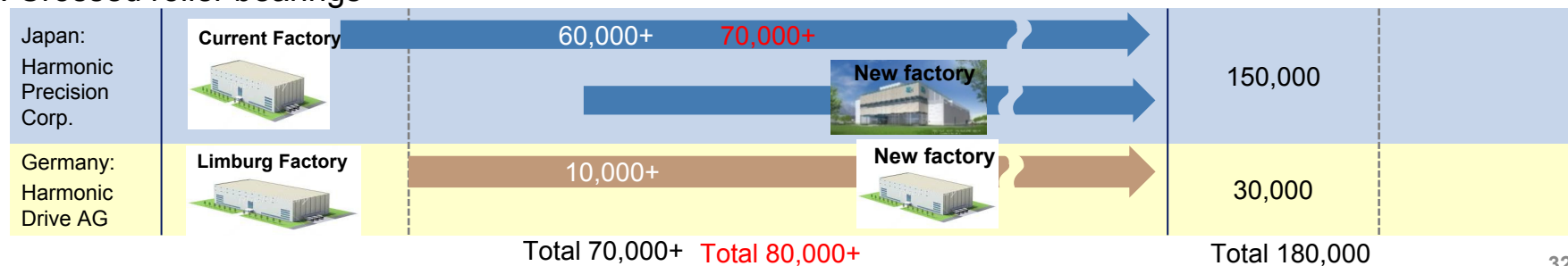
1. Roadmap to raising production capacity

1. Strain wave gearing devices

(Numbers indicate units produced per month)



2. Crossed roller bearings



2. Construction of new plant building at the Ariake Factory

(Azumino, Nagano Prefecture)

- Production base for strain wave gearing devices (HarmonicDrive®)
- Factory designed in anticipation of production increases over the medium term (total floor space of 21,818sqm)
- We plan to step up capital investment in equipment and increase personnel in stages, keeping a close watch on demand trends



3. Construction of new plant building at the Matsumoto Factory (Matsumoto, Nagano Prefecture)

- Production base for crossed roller bearings
- Factory designed in anticipation of production increases over the medium term (total floor space of 23,659sqm)
- Operations to commence in March 2019 after moving part of the assembly and processing lines



4. Construction of new factory building at the US Factory

(Beverly, Massachusetts)

- Production base for strain wave gearing devices (HarmonicDrive®)
- Designed to increased North American local production ratio and meet future demand increases (total floor space of 8,830sqm)



5. Efforts to increase productivity

■ The production system our Group envisions

- We aim to manufacture products that meet the individual needs of customers to the finest detail, backed by our advanced technology and skills.

● Small-lot, multi-variety production

[Applications: small-lot robots, semiconductors, and other general equipment]

1. Our engineers possess advanced skills (processing, assembly, and inspection) that will help flexibly meet customer needs.
2. We have an extensive track record of small-lot, multi-variety production, leveraging our optimal production technology and management system.

● Medium-lot, small-variety production

[Applications: automotive products and mass-production robots]

1. Our production lines are geared toward automation.
2. We also use our long-standing knowledge and expertise to optimize our automation equipment.

Two-pronged approach
to improve QCDS

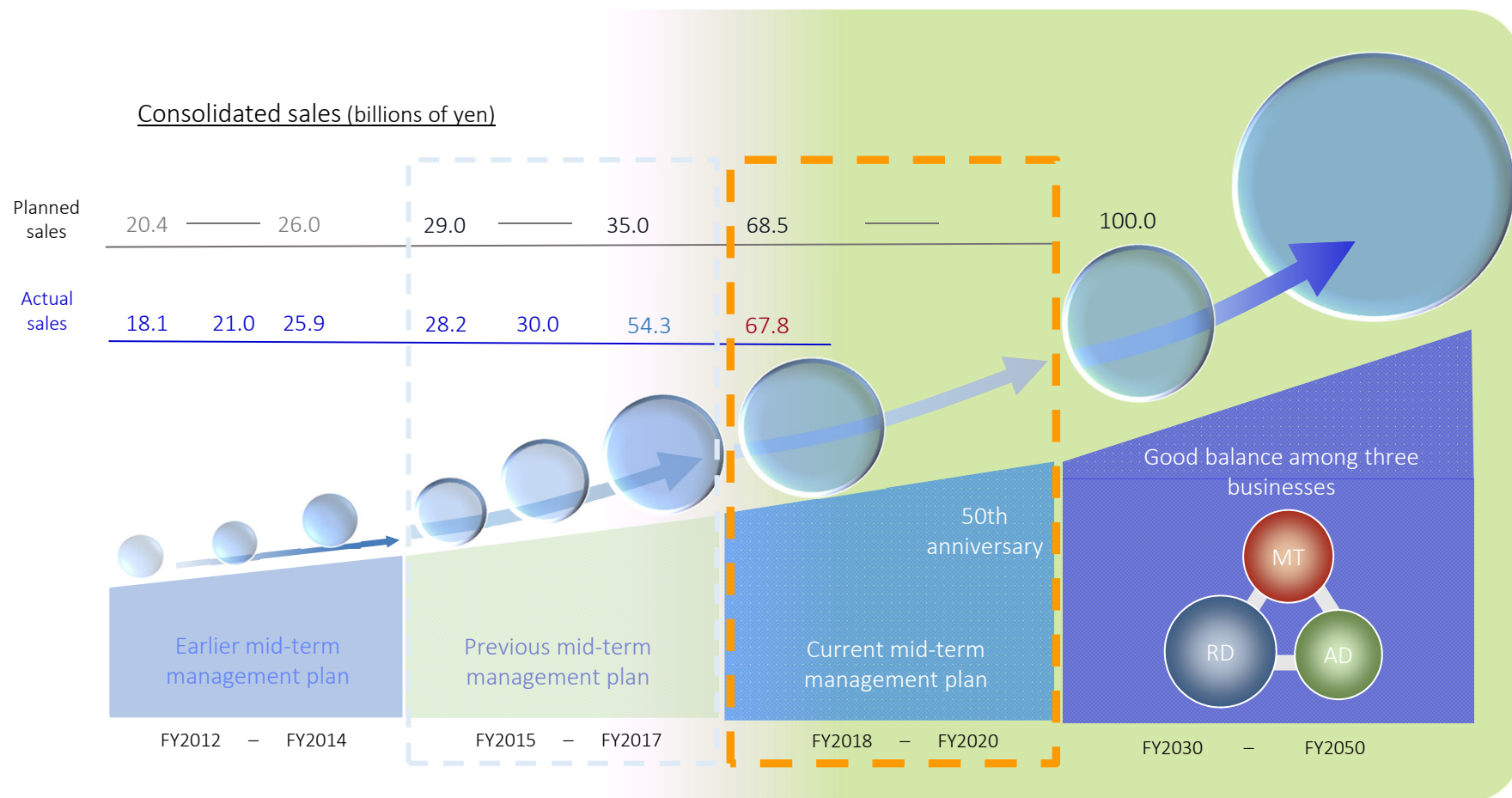
- Q: Further improve quality
- C: Strengthen cost competitiveness
- D: Shorten lead times
- S: Enhance ability to customize



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Current Mid-Term Management Plan and Aiming for Further Growth Toward 2030 and 2050

Mid-term management plan and long-term vision



The performance targets and other numerical data presented herein are forecasts based on information available to the HDS Group at the time this material was prepared, and are subject to the influence of uncertainties including those in the economic and competitive environment. Actual performance may therefore differ materially from the forecasts given in this material.

Harmonic Drive Systems Inc.

For more information:

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