

15th CLSA Japan Forum 2019

HORIBA, Ltd.

May 21, 2019

Key topics

1. HORIBA's action to response to Electrification
2. Contribution for the energy industry as a whole
 - Providing effective energy solutions to meet “Well-to-wheel”
3. Semiconductor market trend
4. Anniversary of Foundation
 - 65th anniversary of HORIBA, Ltd.
 - 200 year anniversary of Jobin Yvon in France
5. Management change in 2018
6. Approach to ESG investment

HORIBA, Ltd. 65th Anniversary of Foundation in 2018

Global growth through M&A

In 1996, ABX S.A. was acquired in France
(now HORIBA ABX SAS)



In 2005, MCT (Mechatronics) Business of
Carl Scheck AG was acquired in Germany



In 1997, Jobin Yvon S.A. was acquired in France
(now HORIBA FRANCE SAS)

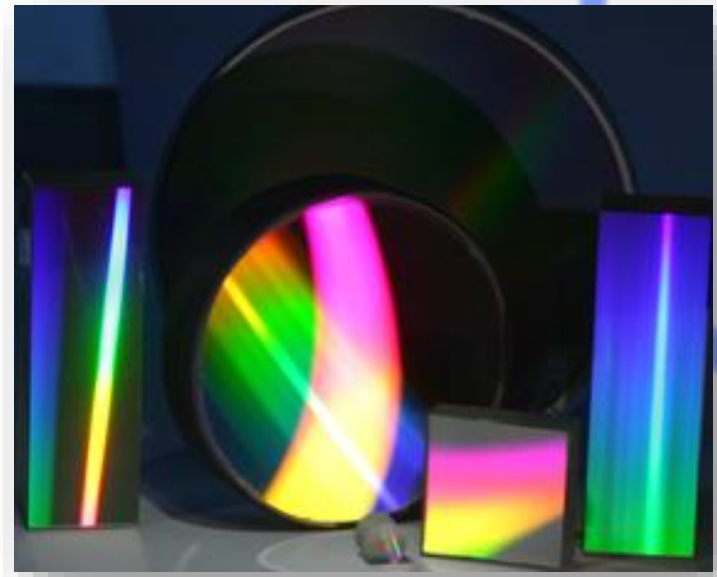
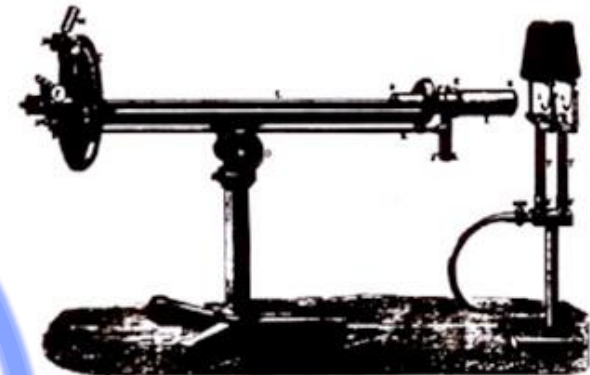
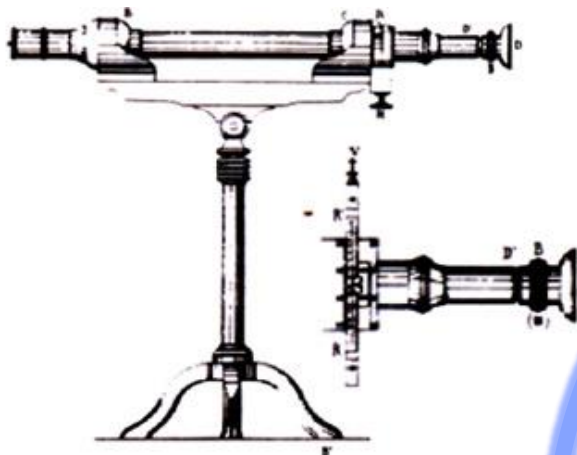


In 2018, FuelCon AG. was acquired in Germany
(now HORIBA FuelCon GmbH)



In 2015, MIRA Ltd. was acquired in the U.K.
(now HORIBA MIRA Limited)

Jobin Yvon 200th Anniversary of Foundation in 2019



200 YEARS
1819-2019

HORIBA JOBIN YVON

Sharing light and passion
200 years of optical innovation



Product at the Time of Its Startup

HORIBA



pH Meters

Jobin Yvon



Fresnel Lens for
a Lighthouse

Contents

- 2018 Results
- 2019 Forecast
- Business Segments Outline
- Share Holder Return
- Other Topics
- Financial Data
- Corporate profile

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Review of 2018

External Events	<ul style="list-style-type: none">◆ Overheated US-China trade friction◆ Intensified Brexit uncertainties◆ Tighter automotive emission regulations and electrification trend◆ Slowdown in capital spending for semiconductors from the second half of 2018
Internal Events	<ul style="list-style-type: none">◆ New Management of HORIBA Group started◆ Enhanced North American bases (for Semiconductors and Scientific)◆ Expanded the Aso factory (for Semiconductors)◆ Invested aggressively in battery test technologies, including M&A◆ Exceeded ¥200bn in annual sales for the first time

Summary of 2018 Results

Achieved record-highs in sales, profit and dividend

P&L

- ◆ Increase in sales and profit in Automotive and Semiconductor segments, year-on-year
- ◆ Semiconductor sales were weak in the second half of the year due to changes in market conditions

B/S

- ◆ Total asset were ¥278.1bn, up ¥12.2bn, due to increase in inventory.
- ◆ Short-term loans payable were ¥12.0bn, up ¥3.6bn, mainly due to acquisition of FuelCon AG
- ◆ Equity ratio: 58.0% (+1.5bp) (Compared to the end of Dec. 2017)

CF

- | | |
|--|----------------------|
| ◆ Operating CF: Cash in ¥19.5bn due to growth in profit | } Free CF
+¥8.5bn |
| ◆ Investing CF: Cash out ¥11.0bn due to capital spending | |
| ◆ Financial CF: Cash out ¥3.2bn due to payment of dividend | |

2018 Results

(Billions of Yen)

	2017	2018					
	Results	Forecast (as of Feb.13)	Forecast (as of Nov.9)	Results	VS 2017	VS Forecast (as of Feb.13)	VS Forecast (as of Nov.9)
★ : Record-high							
Sales	195.3	210.0	207.0	★ 210.5	+15.1	+0.5	+3.5
Operating Profit	26.8	29.0	27.5	★ 28.8	+2.0	-0.1	+1.3
O. P. %	13.7%	13.8%	13.3%	13.7%	-0.0p	-0.1p	+0.4p
Ordinary Profit	26.6	28.4	26.9	★ 28.3	+1.7	-0.0	+1.4
Net Income attributable to Owners of Parent	16.2	19.0	20.0	★ 22.3	+6.0	+3.3	+2.3
USD / JPY	112.16	110.00	110.00	110.44	-1.72	+0.44	+0.44
EUR / JPY	126.70	130.00	130.00	130.35	+3.65	+0.35	+0.35

2018 Results by Segment




(Billions of Yen)

	Sales							Operating Profit							
	2017	2018			2017	2018			2017	2018			2017	2018	
★ : Record-high	Results	Forecast (as of Feb. 13)	Forecast (as of Nov. 13)	Results	vs 2017	vs Forecast (as of Feb.13)	vs Forecast (as of Nov.9)	Results	Forecast (as of Feb. 13)	Forecast (as of Nov. 13)	Results	vs 2017	vs Forecast (as of Feb.13)	vs Forecast (as of Nov.9)	
Auto	73.3	79.0	78.0	★ 79.6	+6.2	+0.6	+1.6	7.6	8.0	6.5	★ 7.7	0.0	-0.2	1.2	
P&E	17.4	19.0	19.0	★ 19.3	+1.9	+0.3	+0.3	1.0	1.4	1.4	2.0	0.9	0.6	0.6	
Medical	25.1	26.0	26.0	26.0	+8.0	+0.0	+0.0	1.9	2.0	2.0	1.8	0.0	-0.1	-0.1	
Semi	53.3	58.0	56.0	★ 57.7	+4.4	-0.2	+1.7	15.6	17.0	17.0	★ 17.0	1.4	0.0	0.0	
Scientific	26.1	28.0	28.0	★ 27.7	+1.6	-0.2	-0.2	0.4	0.6	0.6	0.2	-0.2	-0.3	-0.3	
Total	195.3	210.0	207.0	★ 210.5	+15.1	+0.5	+3.5	26.8	29.0	27.5	★ 28.8	2.0	-0.1	1.3	

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Market Assumptions for 2019

Auto		Strong appetite for investment in the global automotive sector due to tighter emission regulations mainly in Asia and innovation for electrification & autonomous driving
P&E		Increase in demand due to tighter environmental regulations in emerging countries Recovery in investment in the oil industry
Medical		Japan: Favorable sales to doctors in private practice Overseas: Increase in demand for blood testing equipment in emerging countries
Semi		Temporary subdued capital spending by semiconductor manufacturers Anticipate a pick-up in investment, on the back of robust demand for semiconductor devices from a mid- to long-term perspective
Scientific		Robust corporate R&D spending Accelerating research on new materials for secondary batteries

Exchange rate

(Yen)

	2017	2018	2019	
	Results	Results	Forecast	vs 2018
USD	112.16	110.44	110	-0.44
EUR	126.70	130.35	125	-5.35

1 yen O.P. sensitivity for 2019 Forecast (Yen appreciation)

USD -243 million yen

EUR -12 million yen

2019 Forecast

(Billions of yen)

	2017	2018	2019	
	Results	Results	Forecast	vs 2018
★ : Record-high				
Sales	195.3	210.5	★ 218.0	+7.4
Operating Profit	26.8	28.8	★ 29.0	+0.1
O. P. %	13.7%	13.7%	13.3%	-0.4p
Ordinary Profit	26.6	28.3	★ 28.5	+0.1
Net Income attribute to Owners of Parent	16.2	22.3	20.0	-2.3
Net profit per share (Yen)	386	529	474	-55
ROE	11.5%	14.3%	11.9%	-2.4p

2019 Forecast by Segment

(Billions of yen)

	Sales			Operating Profit		
	2018 Results	2019 Forecast	vs 2018	2018 Results	2019 Forecast	vs 2018
★ : Record-high						
Auto	79.6	★ 85.0	+5.3	7.7	★ 9.0	+1.2
P&E	19.3	★ 20.0	+0.6	2.0	2.0	-0.0
Medical	26.0	★ 28.0	+1.9	1.8	2.0	+0.1
Semi	57.7	55.0	-2.7	17.0	15.0	-2.0
Scientific	27.7	★ 30.0	+2.2	0.2	1.0	+0.7
Total	210.5	★ 218.0	+7.4	28.8	★ 29.0	+1.0

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2018 Results and 2019 Forecast

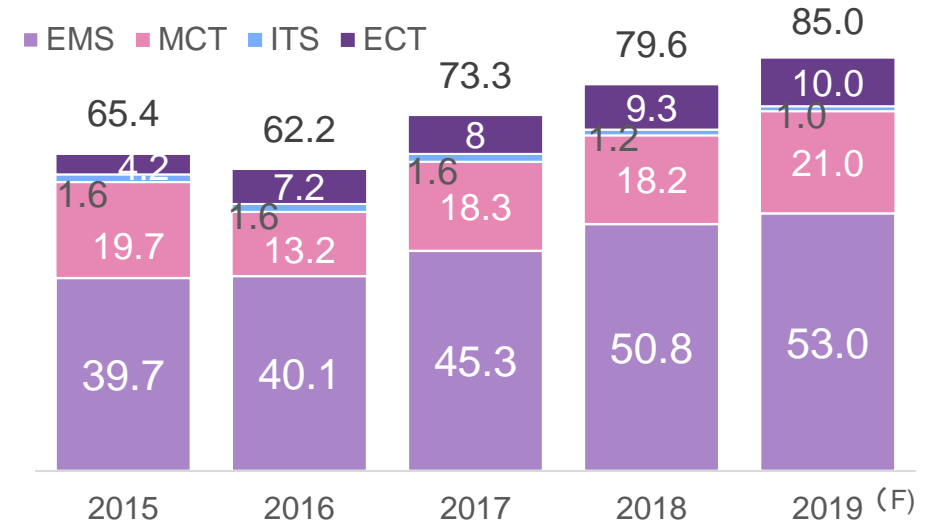
(Billions of yen)

2018 Results

- + EMS Higher demand in China and India due to new regulations
- + - MCT※1 One-off expenses, including acquisition costs
- + - ECT※2 Business expansion in next-gen. automotive technology development

1: Mechatronics 2: Engineering Consultancy & Testing

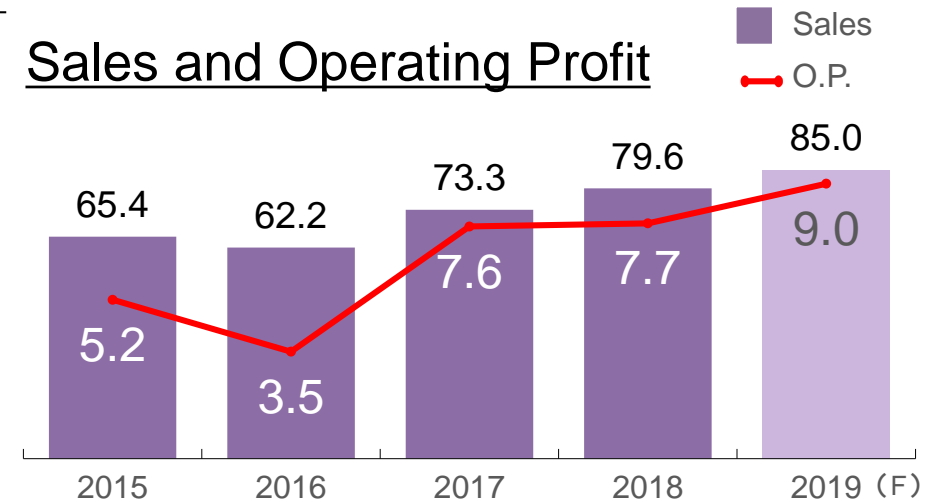
Automotive Sales Breakdown



2019 Forecast

- + - EMS Robust sales in Asia and Europe
Increase in investment for achieving greater competitiveness
- + MCT Increase in sales in Japan and Europe
- + ECT Aggressive investment to accelerate growth

Sales and Operating Profit



Effect of enhanced emission regulations

Status of the next-gen. emission regulations
 HORIBA BIWAKO E-HARBOR achieved record-high output



➤ Sales of EMS business



Production at HORIBA BIWAKO E-HARBOR



➤ Emission regulations

Regulation	EU	Japan
WLTP ¹	Sep. 2017	Oct. 2018
RDE ²		2022 (plan)

China and India: Adoption of new regulations in 2020 (plan)
 (Same level as Euro6)

- 1: Worldwide harmonized Light vehicles Test Procedure
- 2: Real Driving Emissions



Investment plan for a battery evaluation testing facility

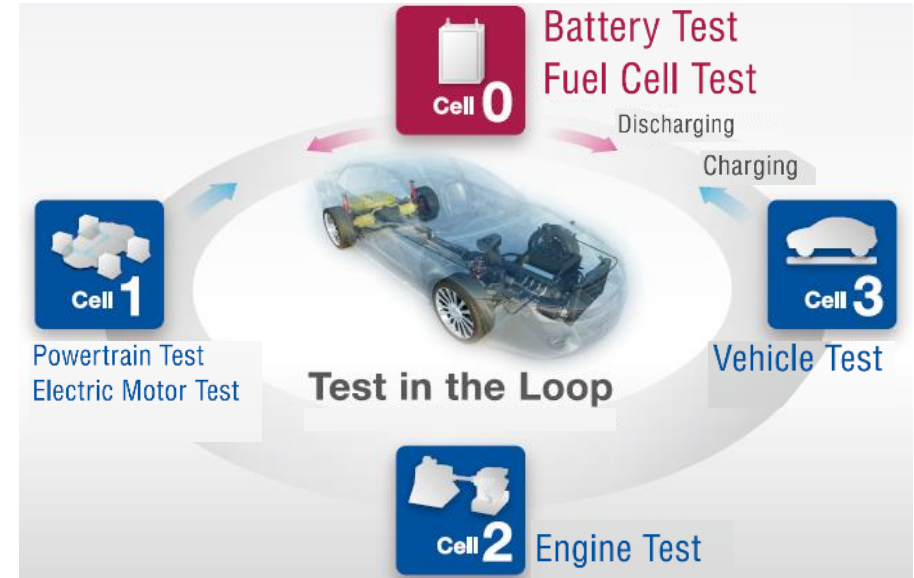
Introducing an advanced evaluation concept to connect the real and the virtual



Japan

Battery evaluation testing facility for electric vehicles (HORIBA BIWAKO E-HARBOR)

- Assessment of the combination of a battery, powertrain, and a vehicle
- Testing a wide range of temperature environment
→ To be used in evaluating xEV and fuel batteries
- Operation to start in July 2019 (plan)
- Investment amount: about ¥1.3bn



UK

Advanced Battery Development Suite (ABDS) (HORIBA MIRA)



HORIBA MIRA's engineering capability to be deployed globally



Expanding Business Domains (FuelCon Acquisition)

Acquisition of FuelCon AG



- A leading German developer of fuel cell and battery test systems for electric vehicles
- Owns diverse fuel cell test systems
- Supplied systems mainly to German automakers

Established	2001	<p>Sales Breakdown</p> <p>Fuel cell test systems 46%</p> <p>Lithium ion battery test systems 54%</p>
Sales	11,504k EUR (2017)	
Operating profit	199k EUR (2017)	
Workforce	62 (ex. Management)	
Location	Magdeburg, Germany (About 160km west of Berlin)	
Major customers	Volkswagen, BMW, Audi, Hyundai, Bosch	

HORIBA Group's expansion of business domains

	Electrified vehicles (HEV, PHEV, FCEV, etc.)			
	Vehicle	Drive system	Engine	Battery/FC
Measuring instruments (EMS/MCT)	HORIBA	HORIBA	HORIBA	HORIBA FuelCon
Test automation	HORIBA	HORIBA	HORIBA	HORIBA HORIBA FuelCon
Engineering (ECT)	MIRA	MIRA		MIRA

Use of FuelCon's experience and know-how to expand electric vehicle business



Acquisition of FuelCon AG (Germany) to strengthen battery test business [September 2018]

【Main business】

Development and production of fuel cell and battery test systems for electric vehicles

【Major customers】

Volkswagen, BMW, Audi, Hyundai, Bosch, etc.

【Sales breakdown】

Battery test systems: 23%
Fuel cell test systems: 77%

*Results of the 4th Quarter, 2018

Accelerate business growth
in electric vehicle
development



Battery module/pack test system



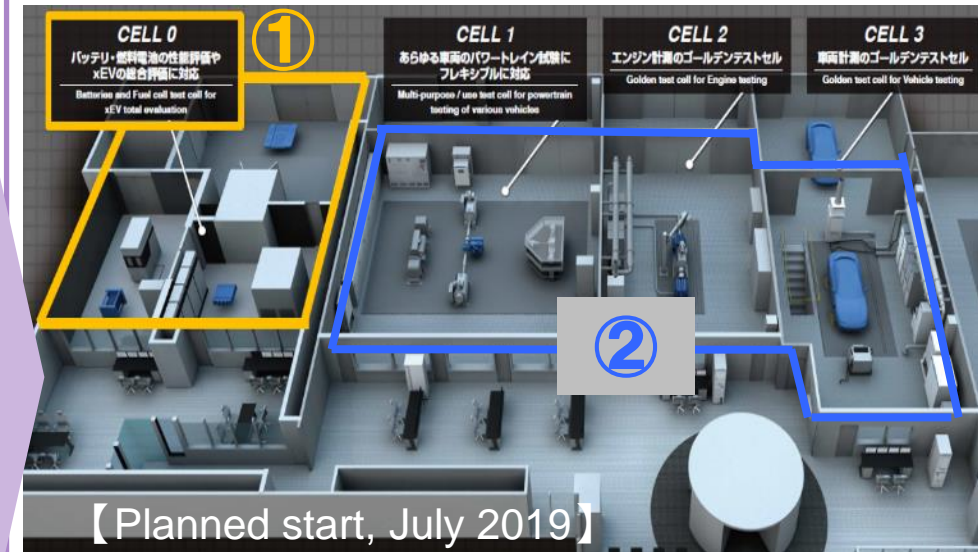
Battery emulation system



Battery production line test system

Open an advanced lab for vehicle electrification

HORIBA BIWAKO E-HARBOR Cell Zero



- 1) Cell 0: Adopting technologies of FuelCon and MIRA
- 2) Cell 1-3: Powertrain and vehicle test systems (in operation)

Enabling total powertrain simulation
→ Completing HORIBA's unique evaluation
and test facility

【Planned start, July 2019】

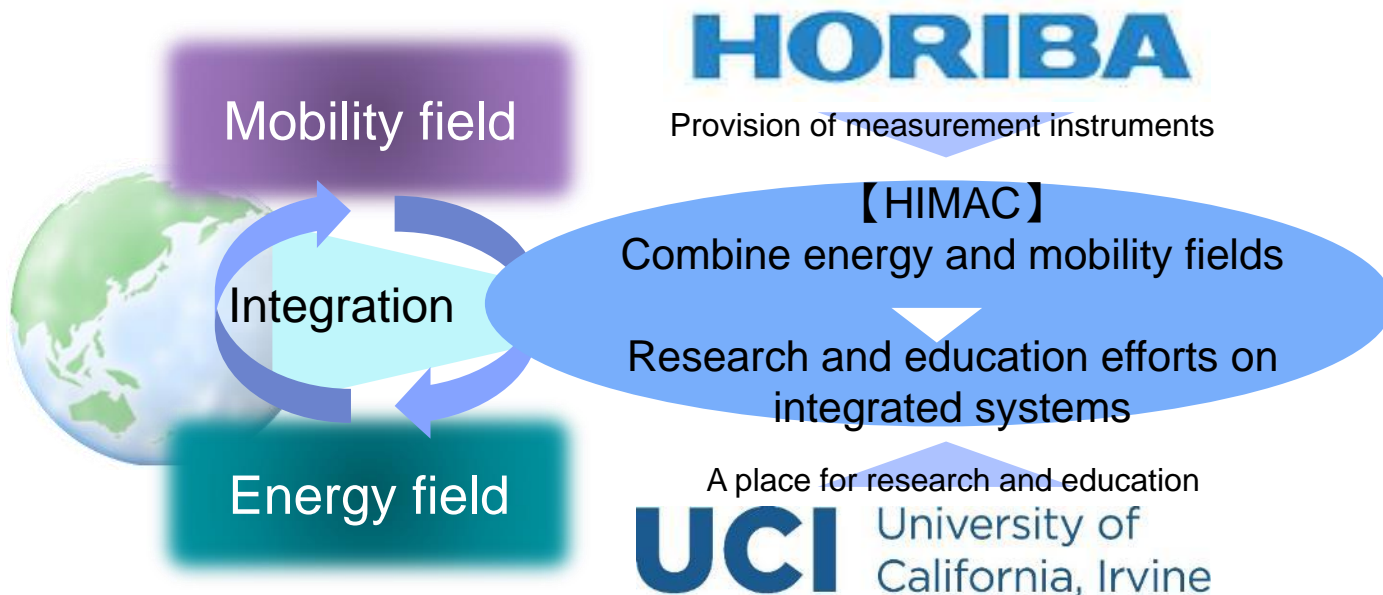
Expanding Business Domains (Support to the UCI)

Support to the UCI for a new institute



- Committed support to the University of California, Irvine (UCI) to establish the Horiba Institute for Mobility and Connectivity (HIMAC)
- Enhance industry and academia partnering in the energy sector of the UCI, a credible institute recognized by the Environmental Protection Agency (EPA) and other U.S. regulatory authorities

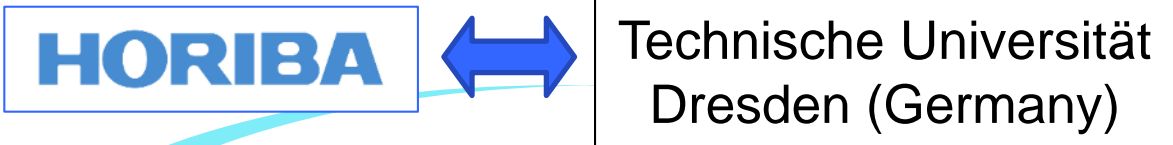
HORIBA Group's expansion of business domains



Industry-academia tie-up to respond to change in the automotive industry

Contributing to boosting efficiency in the accelerated simulation-based automotive development

- Improve development of test equipment allowing to verify effects before making prototypes



Collaboration in test equipment development

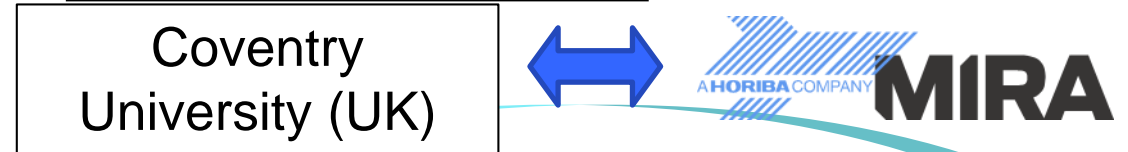


Invest in and provide (rent) test equipment

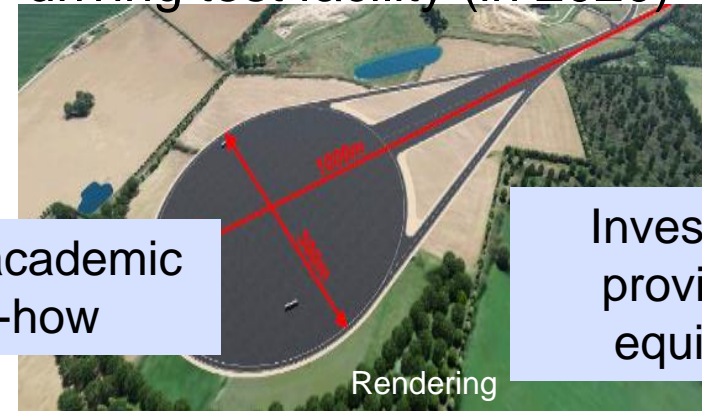
Provide academic know-how

Promoting development of connected /autonomous driving technology

- Ensure safety against cyber attacks
- Test/evaluate high-speed autonomous driving of more than one vehicle



Launch of a new autonomous driving test facility (in 2020)



Provide academic know-how

Invest in and provide test equipment

2018 Results and 2019 Forecast

(Billions of yen)

2018 Results

- + 【Stack gas analyzers / Process measurement equipment】
Sales increase in North America by sales efforts
- + 【Air quality monitoring】
Demand growth in emerging countries due to enhanced regulations
- + 【Water quality monitoring】
Sales increase due to business growth in Asia

Supplied water quality analyzers (tap water) to Kuala Lumpur



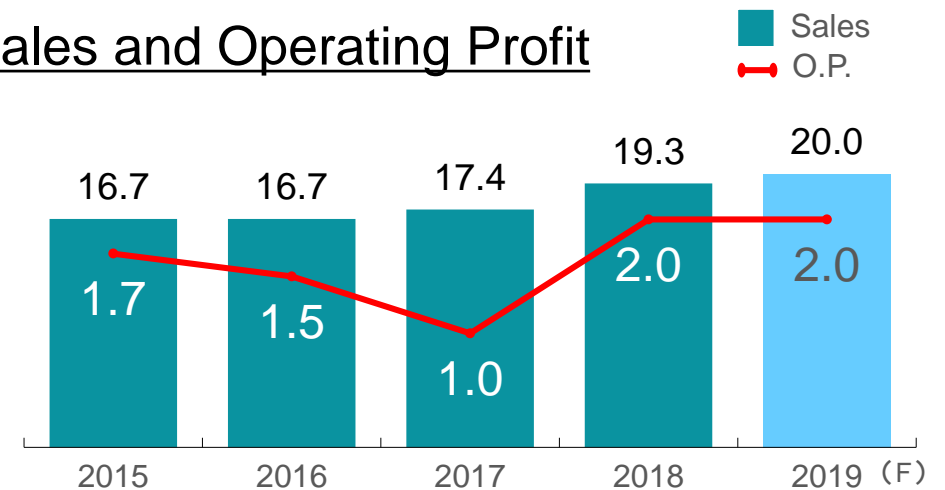
Received repeat orders in 2019



2019 Forecast

- + 【Stack gas analyzers / Air quality monitoring】
Anticipate recovery in Japan and tighter regulations in Asia
- + 【Process measurement equipment】
Anticipate continued recovery in investment by customers
- + 【Water quality monitoring】
Expand more business growth in emerging countries


Sales and Operating Profit



Promote localization for business expansion



Localization according to trends in developed/emerging markets yields good results

 HORIBA Group's main bases in the P&E segment

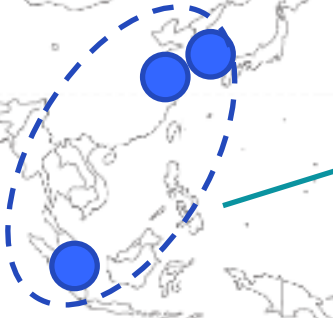
Stack gas analyzer



【Germany】
 Enhance manufacturing/sales
 Record shipment of pollution measurement units in Europe

【India】

Enhance engineering
 Demand increase for stack gas analyzers; local production and sales



【China, Asia】
 Promote dev't/ engineering; enhance sales
 Tighter environmental regulations raised need for measurement equipment

 【Water quality measurement】
 Automatic total nitrogen, phosphorous measurement equipment

【USA】
 Enhance sales/product dev't
 Greater enhanced process measurement equipment business

 Systemization of measurement equipment in oil refining process and bundle sales



Aim at solidifying HORIBA's position in global business

2018 Results and 2019 Forecast

(Billions of yen)

2018 Results

- + Strong sales of hematology analyzers in China and India
- Increase in R&D expenses for achieving greater competitiveness
- + Acquisition of a micro-blood analysis system business to expand the product line-up

Latest test system



Solution

(Launched in 2017)

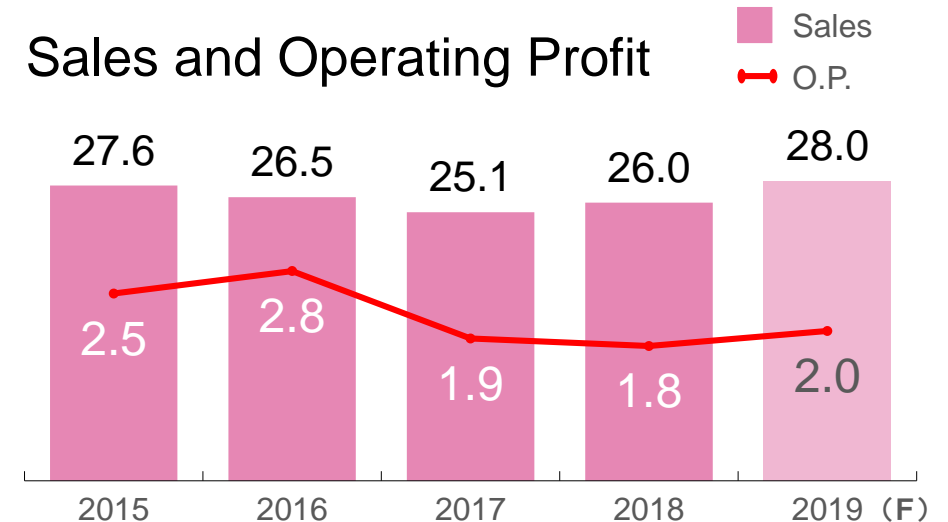


Operation of the large-scale testing centers in the UK and Brazil (Photo from Brazil)

2019 Forecast

- Aim at growth in sales by promoting new products to achieve greater results despite intensified competition in hematology and CRP analyzers in Japan
- + Increase in R&D expenses for business expansion (i.e., micro-blood analysis system business)

Sales and Operating Profit



Initiatives for business expansion

New products to be launched globally



Mid and large-sized new product

“HELO Solution”



Completed installation in France, Brazil, Thailand and the U.K.



Installation case in Brazil

5 diff. white cell diagnosis + CRP

“Yumizen H630”

Favorable sales to doctors in private practice in Japan



Business alliance with Siemens Healthcare Diagnostics

In the process of arranging products for obtaining accreditation

Opened the application center (biochemical) to accelerate the U.S. business



- To start full operation in August 2018 in Irvine, California
- For application development in the biochemical field
- Biochemical business consolidated sales: ¥4.1bn(2017)



Biochemical analytical equipment to be launched in the U.S. (OEM supply from JEOL Ltd.)

Broaden technologies and product functions



Acquisition of a micro-blood analysis system business from Rohm Co., Ltd.

【Main business】

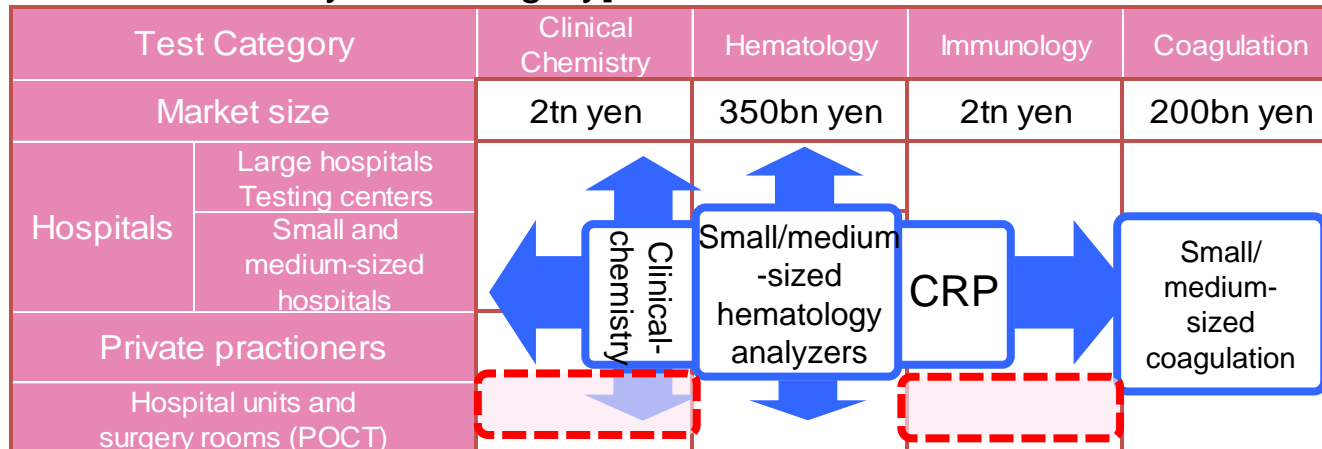
Development of μ TAS¹ technology, which uses micro processing technology of electronic components

【Technology characteristics】

Enable offering of compact products that measure CRP² and HbA1c³ at low cost

- 1: Micro Total Analysis System
- 2: C-Reactive Protein, a representative inflammatory marker
- 3: Hemoglobin A1c that indicates blood-sugar levels of the past 1-2 months

[Business evolution by test category]



Expand a line-up in the POCT category (focus on clinical-chemical and immunology)
 Broader portfolio → Higher shares in tests in hospitals market

Broader functions of products help solve social challenges

HORIBA's hematology analyzers have additional function of Malaria infection screening

- Reduction in test processes in malaria infection testing
- Cheaper than purchase of new equipment



SDGs advocate eliminating malaria.

Fight Malaria + Grow business

2018 Results and 2019 Forecast

(Billions of yen)

2018 Results

- + Record-high sales and operating profit
- + Boosted supply and enhanced development capability by the Aso factory expansion and opening of HORIBA Reno Technology Center (USA)
- Slowdown in the second half due to semiconductor makers' temporary investment adjustment

HORIBA STEC's 45th anniversary

Launched Japan's first mass flow controllers in 1980



Grew to achieve a global high 60%* share

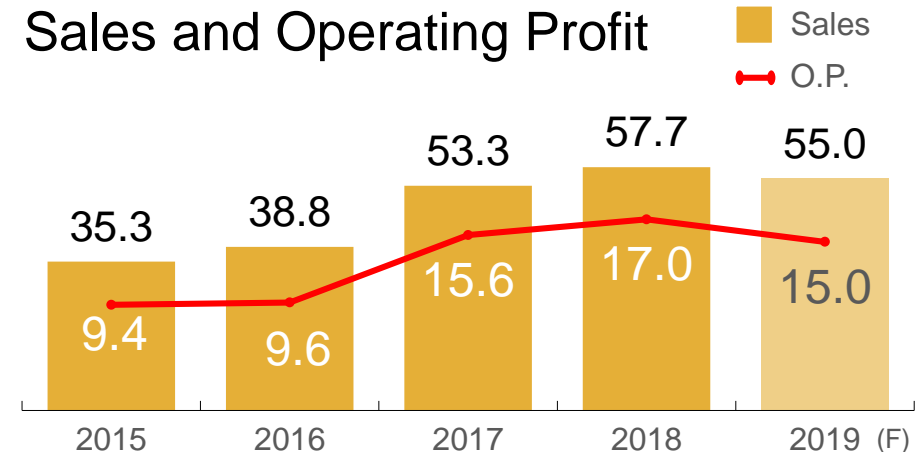


* HORIBA's estimate for 2019

2019 Forecast

- + - Expect semiconductor makers' investment to be in an adjustment phase in the first half but to pick up in the second half due to mid- to long-term solid demand

Sales and Operating Profit



Strengthen supply capacity and global R&D

Full-fledged production after the Aso expansion



Combined output at Aso and Kyoto 350,000 MFCs per year

Production status: Record-high output (March 2018)
 Aso Factory: Mass production of MFCs
 Kyoto Factory: Development and production of advanced MFCs



HORIBA STEC Aso Factory



Construction completion ceremony (May 2018)

Opening of HORIBA Reno Technology Center



Enhance a N. America development base in the focus area

Japan

Establish a global R&D capability

USA

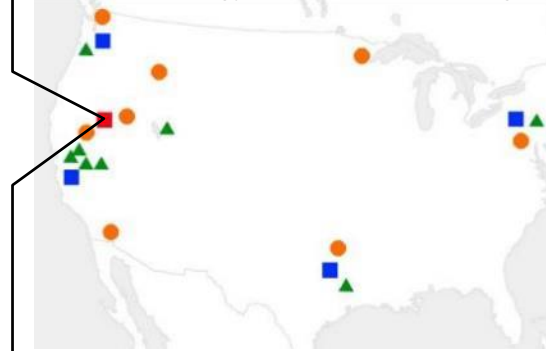
Start: Aug. 2018 Investment: App. ¥1.2bn
 Place: Reno, Nevada, the U.S.
 Activity: Development in fluid measurement and control technologies



Relocate into the semiconductor industry cluster region

1. Deepen relationship with customers
2. Promptly capture needs
3. Incorporate into products

Reno Technology Center's surroundings



■ Reno Tech Center ■ HORIBA's semicon bases
● Semi/battery makers ▲ SPE makers

HORIBA's global MFC market share: About 60% (HORIBA's estimate; as of 2018)

Expand business to cover the entire semiconductor manufacturing process

Diverse product line-up contributing to the overall semicon manufacturing process

Material assessment

Materials Analysis



Raman spectrometer (next-gen. semicon material assessment)

Device Analysis



Cathodoluminescence measurement system (assessment of compound semiconductors)

Manufacturing process

Dry Process



Mass flow controller (Precision enhancement in the etching process)

Lithography



Reticle/mask particle detection systems (quality enhancement of exposure process)

Wet Process



Chemical concentration monitor (high-precision measurement of chemicals)

Quality control and waste water treatment

Utility/Wastewater



pH meter



Industrial water quality analyzer

(Appropriate pure water/wastewater control within a factory)

Beyond Water with You
Water-related business

*Typical product example

2018 Results and 2019 Forecast

(Billions of yen)

2018 Results

- + Sales increase in Japan and Europe on the back of robust corporate R&D spending
- + Recognized expenses to enhance bases in the Americas

2019 Forecast

- + Anticipate sales increase in the Americas due to production capacity growth
- + Expect solid demand to continue in Japan and Europe
- + Enhance actions for business expansion in secondary batteries

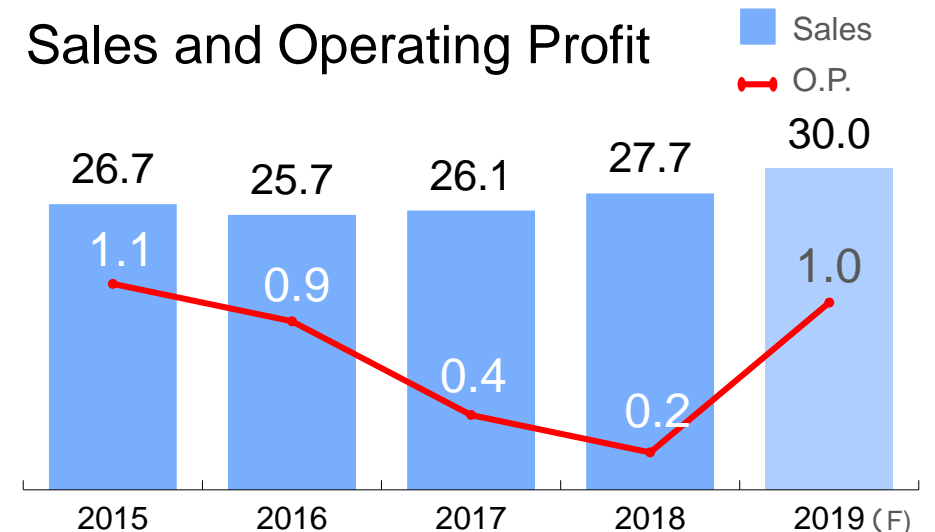
New product launched in 2018 X-ray analytical microscope XGT9000

- ✓ More accurate defect and foreign material analysis of products
- ✓ Non-destructive, non-contact



Can be used in analysis of lithium ion batteries, semiconductor ICs, foods, and drugs

Sales and Operating Profit



Expand core business and contribute to technology innovation



Acquisition of MANTA Instruments Inc. to obtain new technology

- Acquired this U.S. start-up company that develops, manufactures and sells nanoparticle measurement instrument, in January 2019.
- High reputation; has patents in related technology

MANTA Instruments, Inc.

- Located in San Diego
- Established September 2014
- Six employees



ViewSizer3000

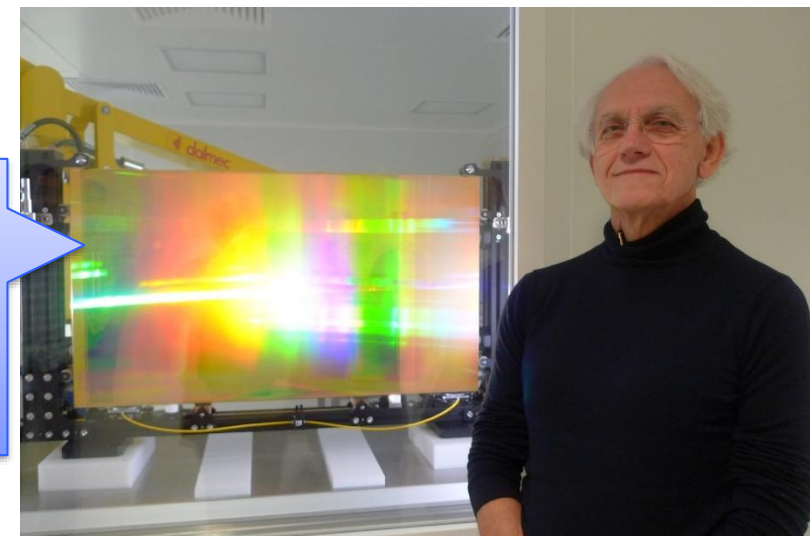
Used in life science, and for semiconductor, drugs, foods, cosmetics, catalysts and secondary batteries

Aim at expanding the particle measurement instrument business

Contributing to technology innovation

- Prof. Gérard Mourou, who was awarded the 2018 Nobel prize in physics, has been a long-time user of HORIBA's grating.

HORIBA's meter-size grating



HORIBA's grating was selected to be exhibited at the Nobel Prize Museum

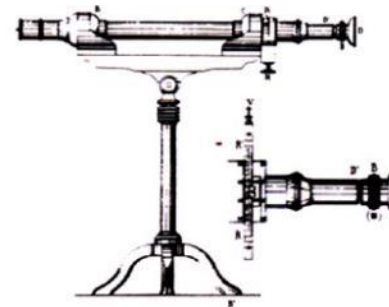
Core analytic technology supports cutting-edge progress

20 years of technological integration of HORIBA and Jobin Yvon and new market development

HORIBA celebrates 65th anniversary



HORIBA's strengths in measurement instruments for industry



Jobin Yvon's strengths in products for scientists and advanced research

Scientific segment

Prominent as developer of unique markets; functioning as an incubator of HORIBA business

Automotive

Process & Environmental

Medical

Semiconductor

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Shareholder Return

Basic policy

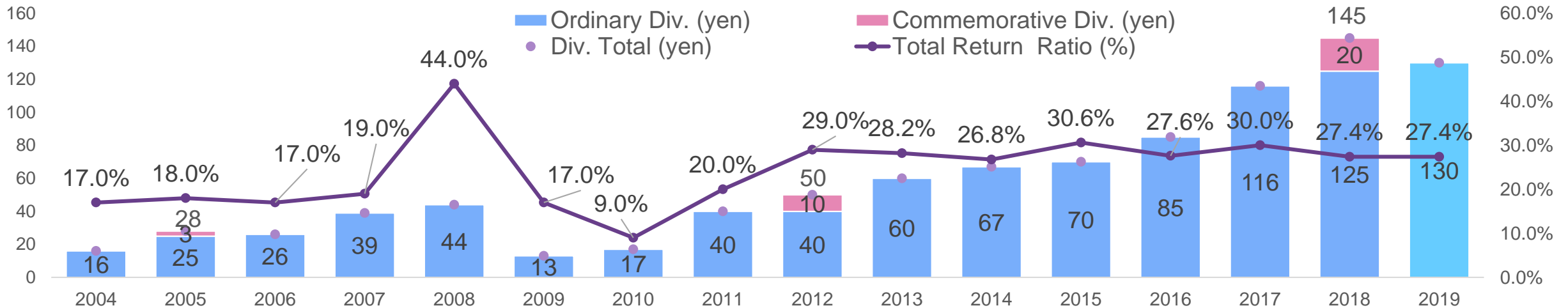
- Dividend payment + Share buyback = 30% of Consolidated net profit to be targeted
- Remaining earnings are retained internally for strategic investment (i.e. facilities, M&A)

Dividends per share and Share buybacks

- 2017 Results 116yen [Interim 40yen/Year-end 76yen]
- 2018 Results 145yen [Interim 50yen/Year-end 95yen]
- 2019 Forecast 130yen [Interim 50yen/Year-end 80yen]

Ordinary dividend: 125yen
 Commemorative dividend for the 65th anniversary of the company foundation: 20yen

Per-share dividend (from 2004 to 2019 Forecast)



Renewed record-highs in dividend in 9 years

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HORIBA's perspectives on ESG investment

Contribution to the environment and society via its business;
Building of an open & fair governance structure

【Examples】

ESG ENVIRONMENT



Portable emission measurement system OBS-ONE

Emission gas measurement system
 Contribute to emission regulations, realizing healthy society, preventing climate change



Industrial water quality analyzer H-1 Series

Environment-related products
 Contribute to environmental preservation and improvement by identifying causes of pollutions via analysis of air pollutants and industrial waste

ESG SOCIAL



Innovation for electrification & autonomous driving
 Help realize safe, pleasant society



MIRA Technology Institute
 Contribute to industries' development by developing next-gen. talents



Aso factory's expansion
 Contribute to local communities and continuous job creation

ESG GOVERNANCE

Outside Directors with diverse experiences and skills
 Raise the quality of strategies by making decisions upon active discussions at the Board of Directors and corporate value



Sawako Takeuchi
 Academic background as a holder of a doctor's degree in engineering and international experience



Masahiro Sugita
 Deep insight and knowledge on finance and economy, and accumulated experience as a director and auditor of other companies



Jiko Higashifushimi
 Insight as Head Priest of the Shorein Religious Corporation and work experience at a financial institution

“HORIBA Premium Value” to improve asset efficiency

Case of an improved asset efficiency in the MCT business

- ◆ Improvement at Olomouc Factory (Czech) with a focus on production of standard Chassis dynamometers
- ✓ Full review of production processes and supply chain and adoption of the Kanban pull system

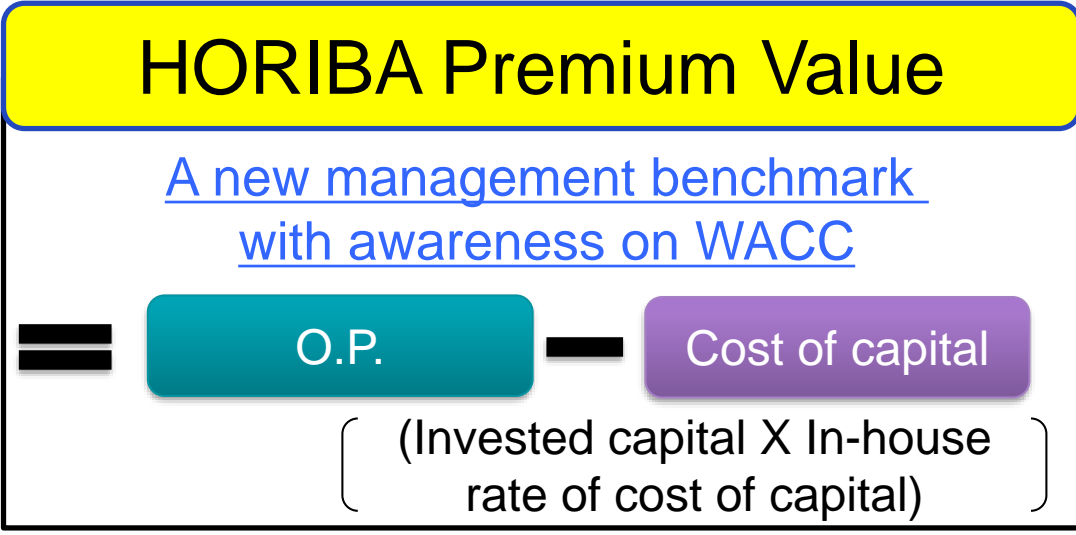
➔ 25% cut in production lead-time



Olomouc Factory (left) and its production area (right)

Workshops on adoption of a new benchmark

- ◆ Action plan for those responsible in global finance
- ◆ Workshops for managers
- Action plan (examples)
 - Promoting the benchmark to all group employees
 - Optimization of group inventory by sharing inventory information
 - Building of a sales company-factory cooperative structure for collection of receivables



Workplace-rooted Workstyle Renovation

Stained Glass Project

Step 1
in 2014

- Initial focus on engagement of women at workplace

Step 2
from 2015

- Start “work style renovation” workshop
- Theme: Change in individual behavior

Step 3
from 2016

- Organize a dedicated team to connect the management, HR team and workplaces
- Activities to make the best use of characteristics of each workplace/organization

Introducing “Good Place” work system

Allowing flexible workstyle and aiming at capable employees to continue working

“Good Place” work system

- ✓ Allows work other than home
- ✓ No limit to work-at-home days

A guideline is made and used by each team

Experience of the Telework Days* is reflected in the “Good Place” work system.

*The Japanese government’s initiative calling to participate a nation-wide remote working campaign on certain days



Opened a website to present diversity-related initiatives

<http://www.horiba.com/diversity/>

Awarded Nadeshiko Brands and Health & Productivity Stock Selection Program by METI and Tokyo Stock Exchange

Activities aimed at realizing a better working environment highly evaluated from the stock market



Evaluated the engagement based on our Diversity promotion activities
"HORIBA Stained Glass Project"

METI announcement : https://www.meti.go.jp/english/press/2019/0322_003.html



Evaluated our activities based on the
"Health promotion activities of mind and body", the policy declared by the management

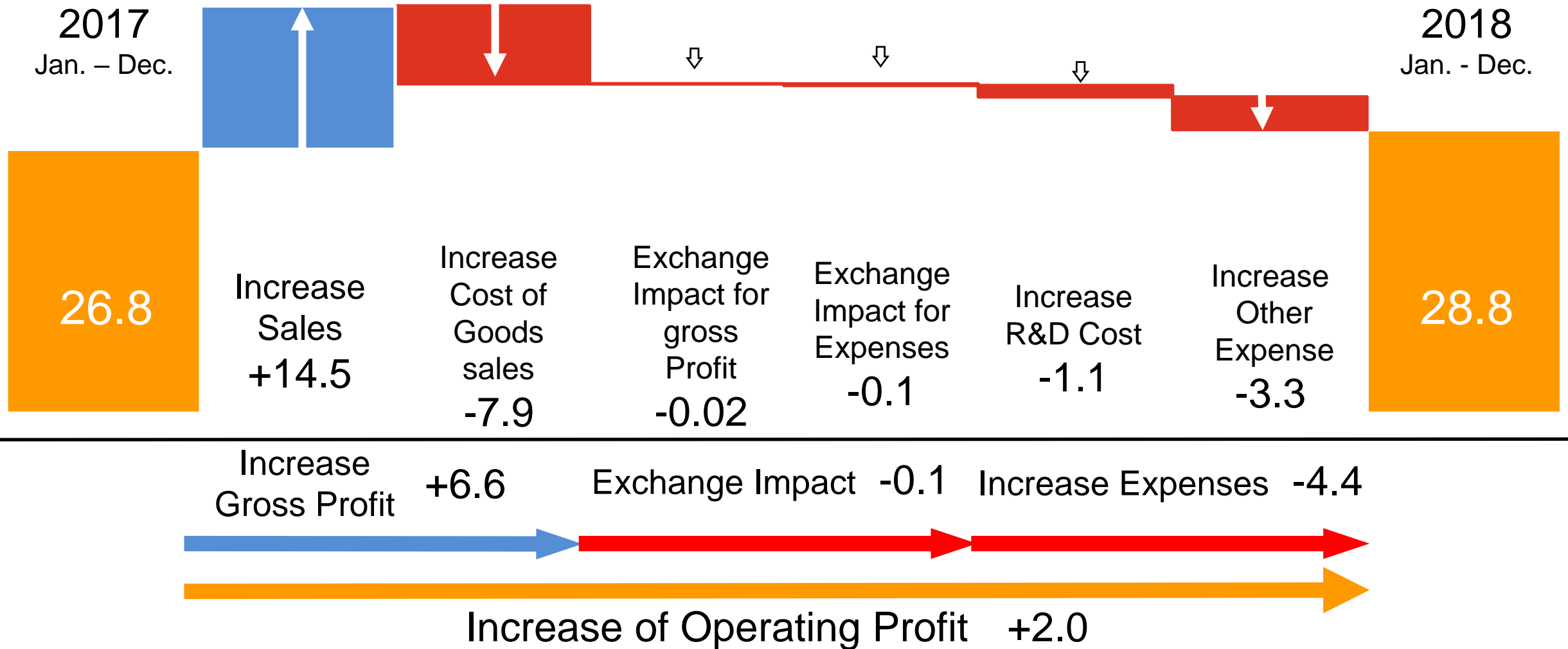
METI announcement : https://www.meti.go.jp/english/press/2019/0221_003.html

Contents

- 2018 Results
- 2019 Forecast
- Business Segments Outline
- Share Holder Return
- Other Topics
- **Financial Data**
- Corporate profile

Operating Profit Analysis (vs 2018)

(Billions of yen)



Impact of Fluctuation in Foreign exchange

(Millions of yen)

Exchange rate impact (2018 result)

Sales +¥579mn O.P. -¥182mn

	Sales			Operating Profit		
	Total	USD	EUR	Total	USD	EUR
Auto	+581	-177	+586	-11	-41	+56
P&E	+5	-55	+63	+29	+2	+27
Medical	+117	-62	+298	+8	+2	-4
Semi	-228	-367	+27	-228	-338	+19
Scientific	+104	-156	+249	+19	-8	+16
Total	+579	-817	+1,223	-182	-383	+114

※Total is not matching with sum-up of each content due to other small currency effect.

Exchange rate impact for 2019 Forecast

1 yen impact of Sales and O.P.
(Yen appreciation)

Sales	
USD	-¥489mn
EUR	-¥373mn
Operating Profit	
USD	-¥243mn
EUR	-¥12mn

	2017	2018	2019
(JPY)	Result	Result	Forecast
USD	112.16	110.44	110.00
EUR	126.70	130.35	125.00

Capital Investment, Depreciation, R&D

(Billions of yen)

	2017	2018				2019	
	Result	Previous Forecast (as of Nov 9)	Result	vs 2017	vs Previous Forecast	Forecast	vs 2018
Capital Investment	11.6	14.0	10.2	-1.3	-3.7	16.0	+5.7
Depreciation	7.5	7.5	7.2	-0.2	-0.2	7.5	+0.2
R&D	13.9	15.5	15.1	+1.2	-0.3	16.0	+0.8
(To Net Sales)	7.1%	7.5%	7.2%	0.1%	-0.3%	7.3%	0.1%

2018 Topics	-PP&E	Enhancement of North American bases / Investment to MIRA / Enhancement of global bases
	-Depreciation	Decrease goodwill of MIRA, + Increase by new investment
	-R&D	Increase in Automotive segment
2019 Topics	-PP&E	Increase in investment in automotive-related facilities and enhancement of global bases
	-Depreciation	Increase by new investment
	-R&D	Increase in Automotive and Semiconductor segments

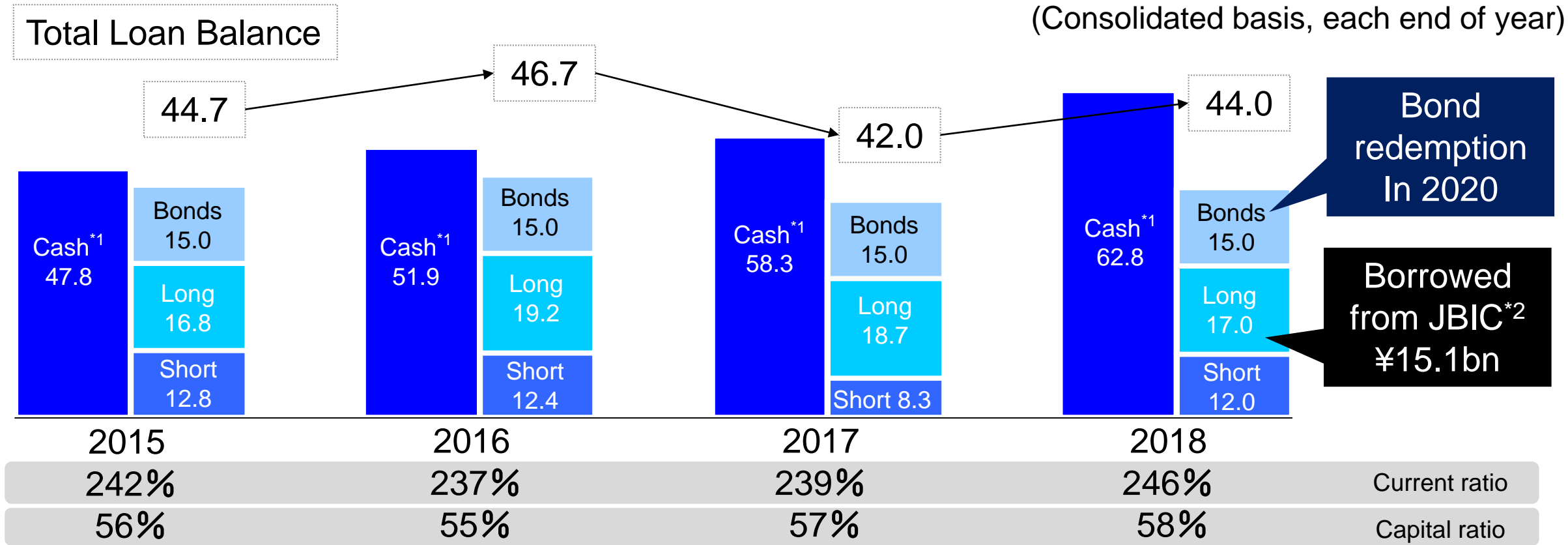
Consolidated Cash Flows

(Billions of yen)

	2018	2017	Variation
Cash flows from operating activities	+19.5	+28.2	-8.7
Cash flows from investing activities	-11.0	-13.1	+2.1
Cash flows from financing activities	-3.2	-9.0	+5.8
Cash and cash equivalents at end of year	+62.8	+58.3	+4.5
Free cash flows	+8.5	+15.1	-6.6

Cash Balance

(Billions of yen)



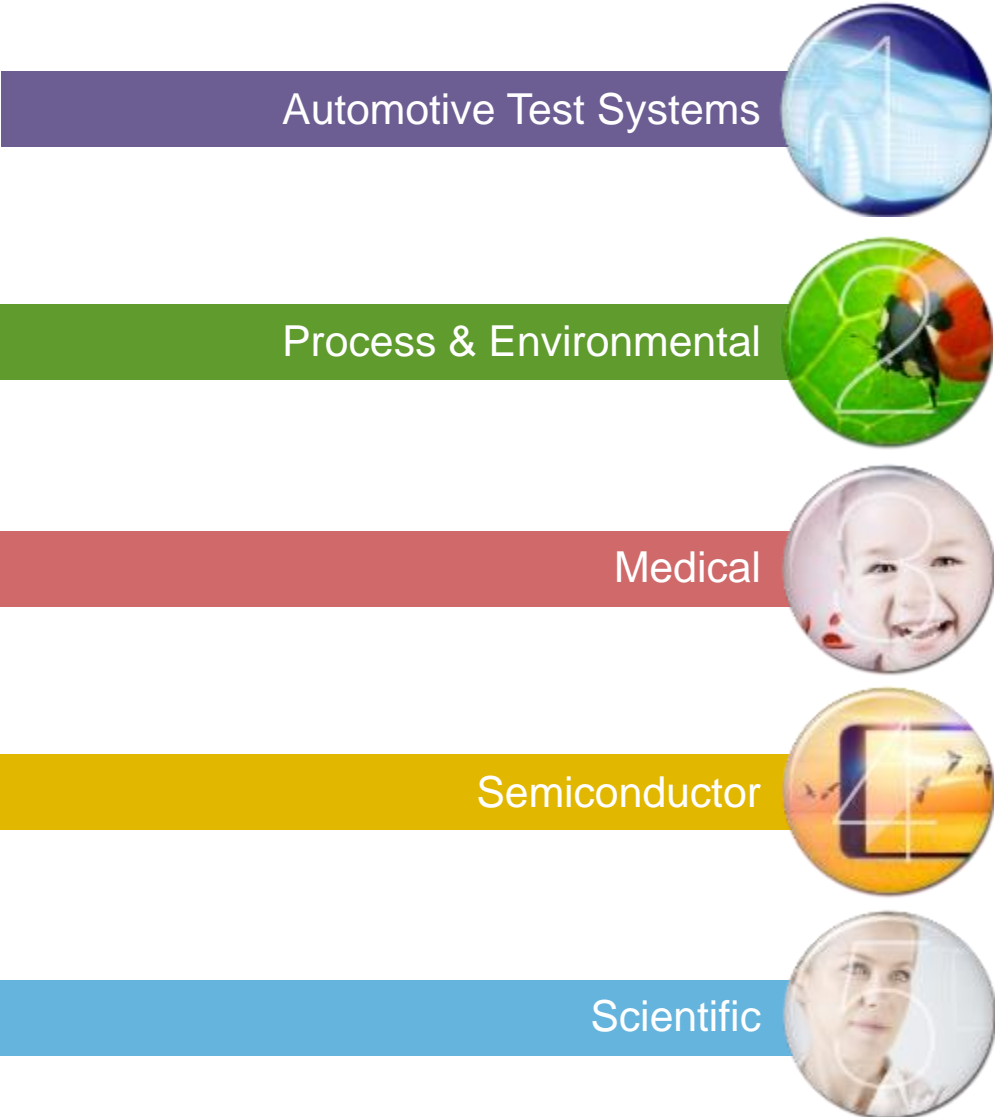
- Loan repayment due to group financing
- Recent issuer rating : R&I “A” (Sep. 2018), JCR “A” (Aug. 2018)

1 Cash...Cash and Cash Equivalents at End of Period. *2 JBIC: Japan Bank for International Cooperation

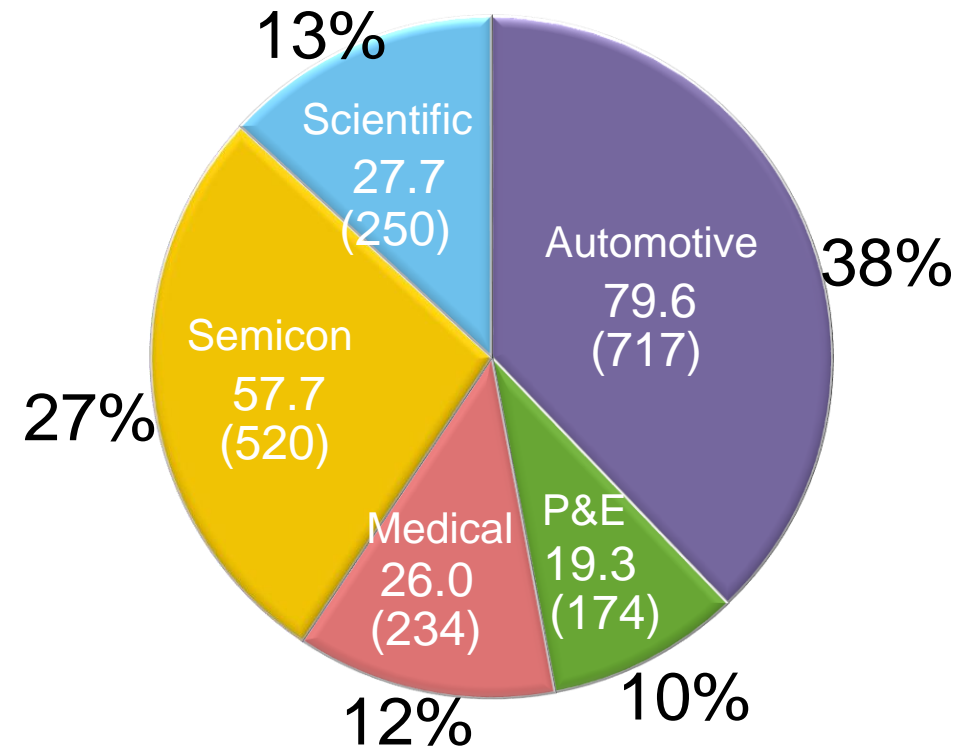
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Business Segments



Sales Breakdown by Segment
Sales: ¥210.5bn (1,897MUSD)

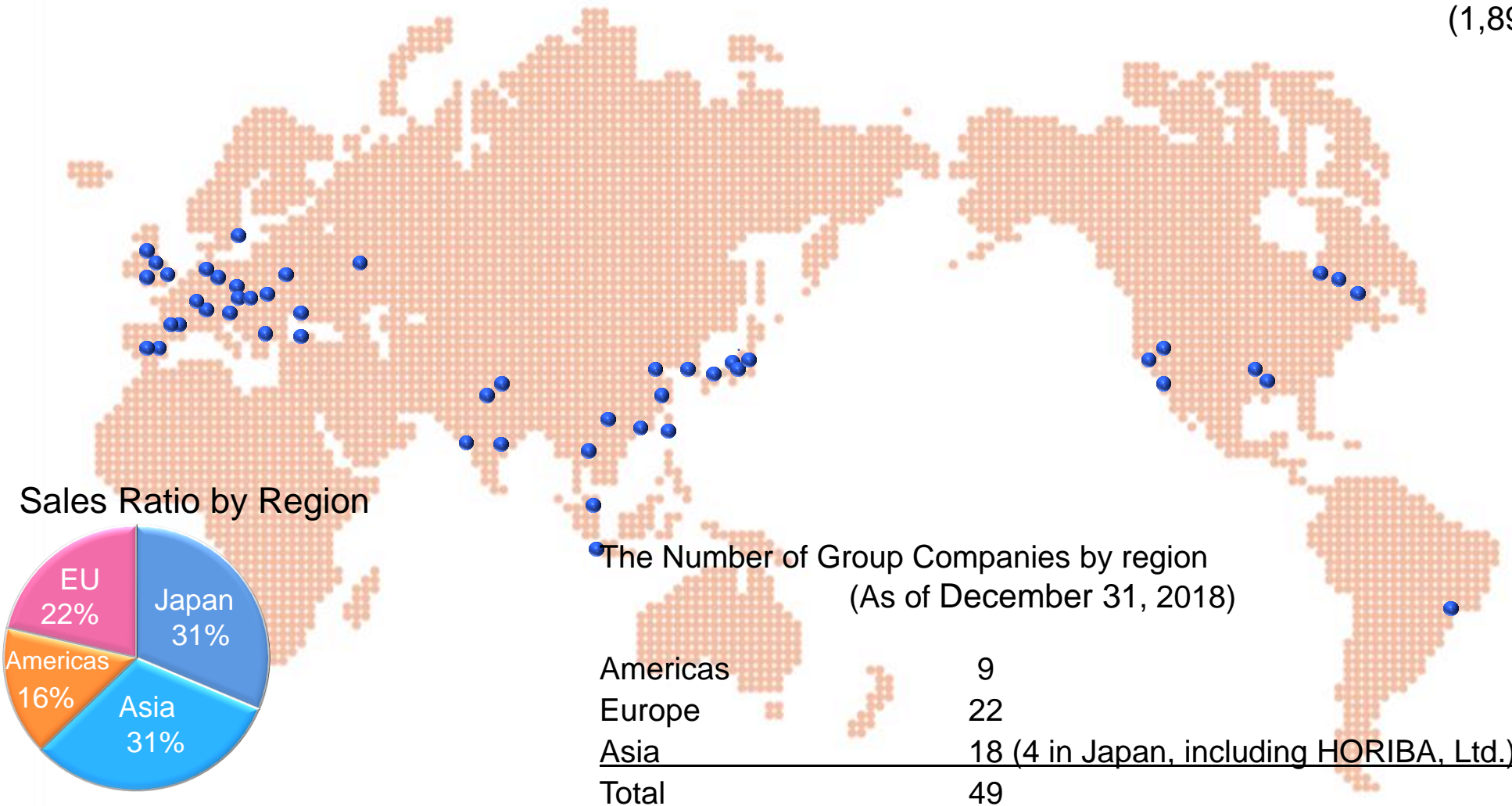


() = Segment Sales in MUSD
 % = Segment Sales Ratio

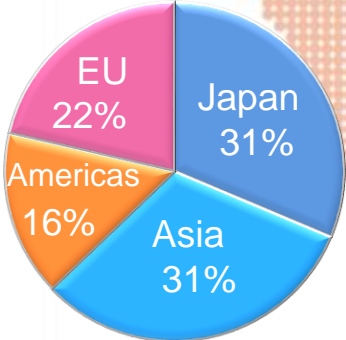
(Sales of FY2018)

HORIBA Worldwide

Sales of FY2018 : ¥210.5bn
(1,897 MUSD)



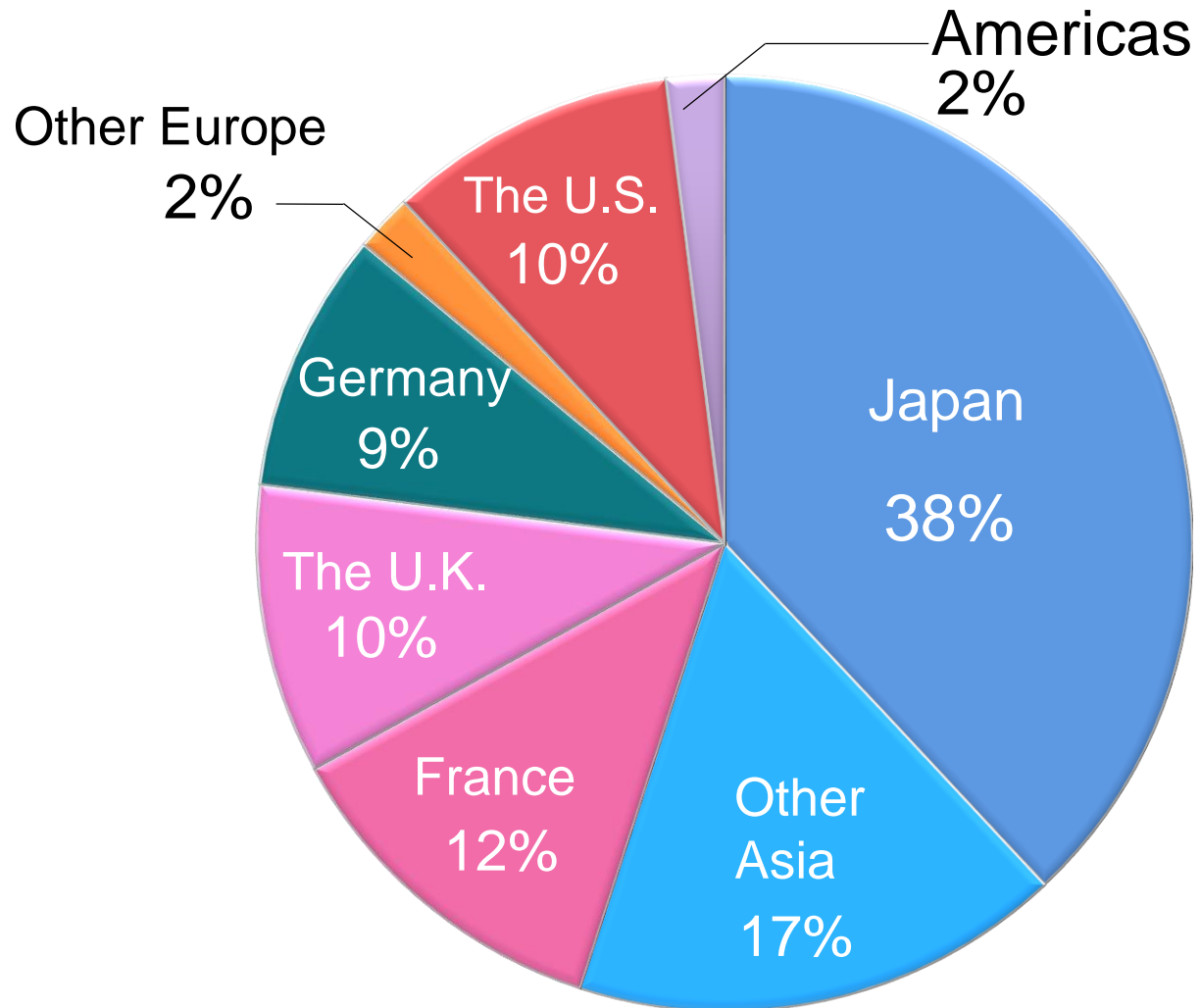
Sales Ratio by Region



The Number of Group Companies by region
(As of December 31, 2018)

Americas	9
Europe	22
Asia	18 (4 in Japan, including HORIBA, Ltd.)
Total	49

Employees by Region



Total Number of Employees

7,943

Total Asia : 4,315

55%

Total Europe: 2,637

33%

Total Americas: 991

12%

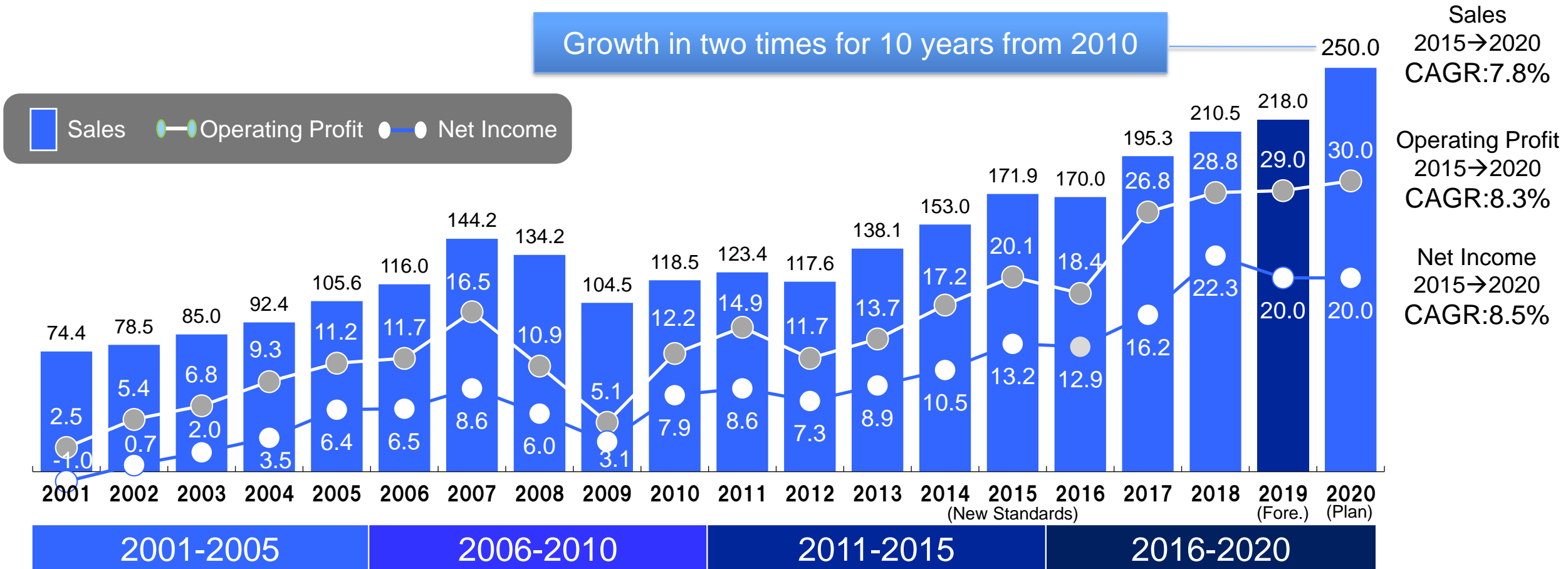
(As of December 31, 2018)

[Ref.] Business results trend for 20years/Targets/Progress of MLMAP

(Billions of yen)

Continuous growth in Sales/Operating Profit/Net Income

Growth in two times for 10 years from 2010



HORIBA BIWAKO E-HARBOR

Biwako factory “HORIBA BIWAKO E-HARBOR”

- Consolidating development, design, and production operations of gas measurement equipment at a single location
- Doubling of production capability and shortening delivery time to one-third by using a new production methodology
- Comprehensive engineering services from sales to development, production, and maintenance in the Automotive testing laboratory



- Profitability improvement of exhaust gas analyzers
- Presenting cutting edge automotive development technology

Total investment: 10.0 billion yen, Location: Otsu City, Shiga Prefecture, Full operation : May 2016



Business impact from next emission regulations

Global convergence of emission regulations

- ✓ Accelerating introduction of unified emission regulations (US and EU in 2017, Japan in 2018)
- ✓ Need to upgrade equipment due to change in testing method

◆ Bench test in labs

- Need to upgrade exhaust gas analyzers (hardware and software)
- Demand for more number of units



◆ On-road test (RDE: ReaDing Emission)

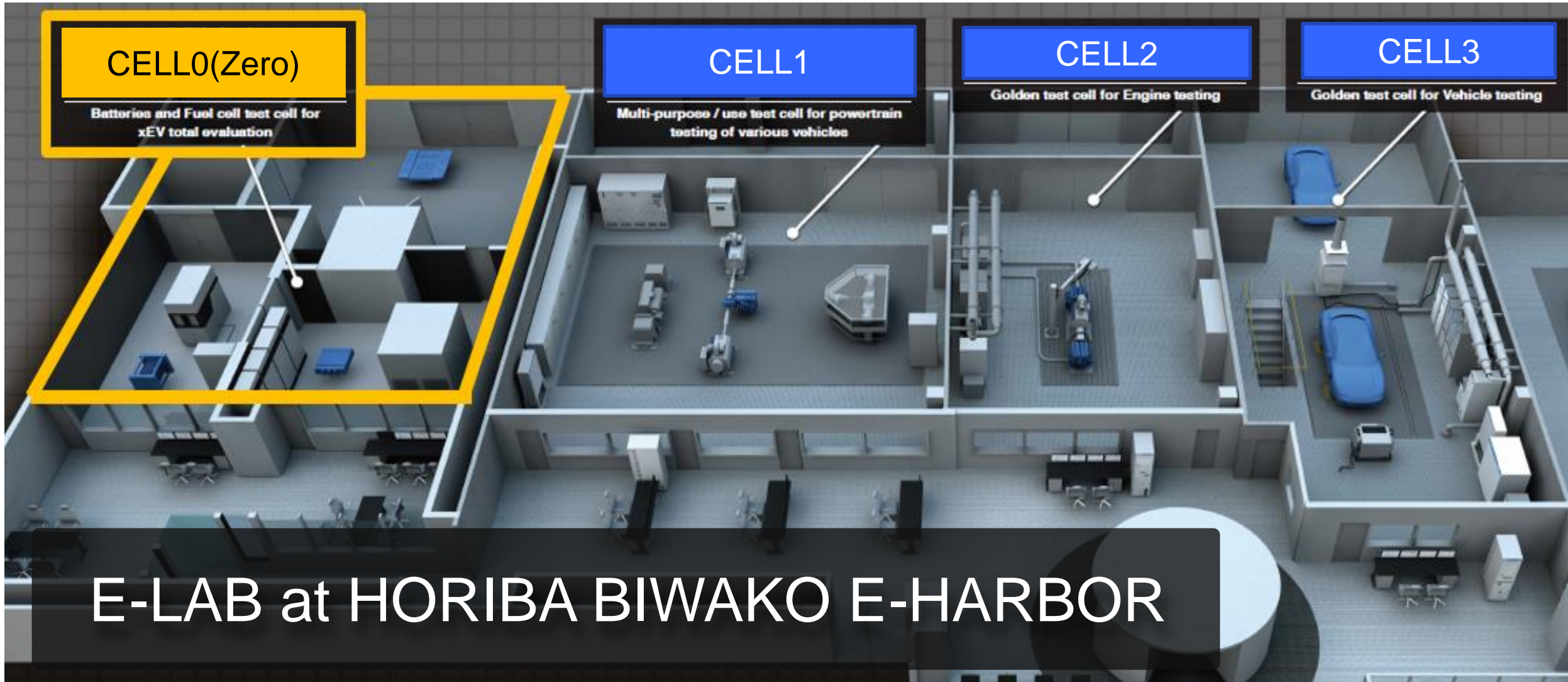
- Regulation for Light Duty Vehicles to start in Sep. 2017 in EU
- Need to coordinate data with lab test results
 - Correlate analyzers = Coordinate "MEXA" with "OBS" series
 - Expand HORIBA MIRA's testing business



PEMS

(Portable Emission Measurement Systems)

Response to Automotive Electrification





HORIBA MIRA

Information on page 59 to 68 are as of acquired the company.

Overview of MIRA Ltd.

<u>Business</u>	<ol style="list-style-type: none">1. Engineering Consultancy2. Testing Services & Consultancy3. MIRA Technology Park (Lease R&D facilities)
<u>Results</u>	Sales : 46.1MGBP (2014 Results) O.P. : 1.1MGBP (2014 Results)
<u>Employees</u>	518 (As of December 31, 2014)
<u>Established</u>	1946
<u>Head office</u>	Nuneaton, Warwickshire, UK
<u>Main sites</u>	UK, China, India, Brazil

Core business streams

Engineering Consultancy

- ◆ Sales:20MGBP Number of employee:240
 - ✓ Design and development for vehicle driving performance
(Brake performance, electromagnetic compatibility performance)
 - ✓ Development services utilizing automatic driving and remote control technology

Testing Services & Consultancy

- ◆ Sales:22MGBP Number of employee:180
 - ✓ Testing and homologation services for collision safety, electromagnetic compatibility, functional safety and other vehicle related performance
 - ✓ MIRA has the capability for a range of type approval testing, delegated by public authority

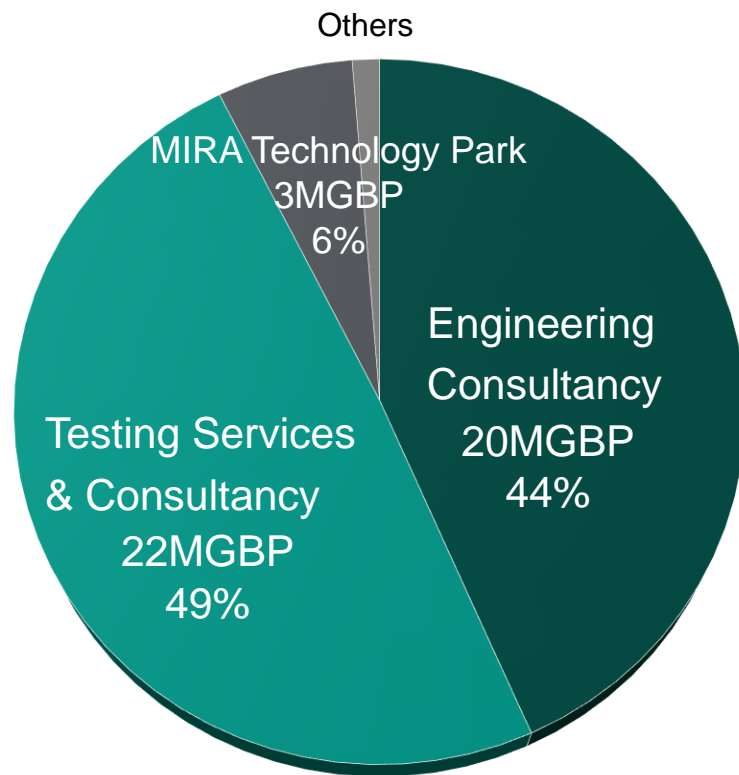
MIRA Technology Park (Lease R&D facilities)

- ◆ Sales:3MGBP Number of employee:20
 - ✓ Rent R&D facilities to 30 Auto/Auto related company
 - ✓ Granted Enterprise Zone* status by the UK government

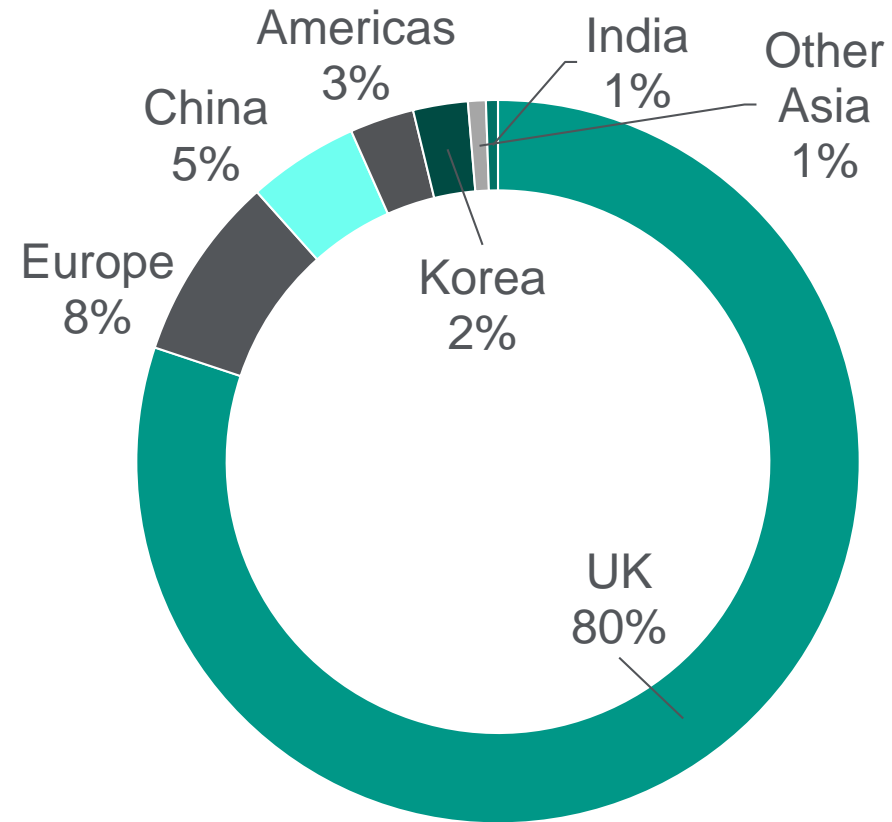
* Enterprise Zones
A Companies in Enterprise Zones
have access to a number of benefits,
including tax concessions and grants

2014 Results

Sales by Business field



Sales by Region



Total Sales:46.1MGBP

Engineering Consultancy

It could cover all domains of Vehicle R&D



MIRA Technology Park



Various experiments using a large test course

MIRA Technology Park
30 customers

Test Site
"35" Test Site
Wind Tunnels(3)/EMC(9)/Crash
lab/NVH Chassis/Battery test

1 km

Proving ground

- Performance(4.5km)
- Off road
- Wet surface
- City Circuit
- Noise-Generating
- Ride & Durability

Transmission test
Braking systems
Tire development
Durability

MIRA Technology Park

Key Aspects:

- Renting space to customers who want to be on site, ranging from day rates for workshop units to long term leases for bespoke dedicated R&D facilities
- Total number of tenants:30
- Locations: UK

Key Customers & Markets:

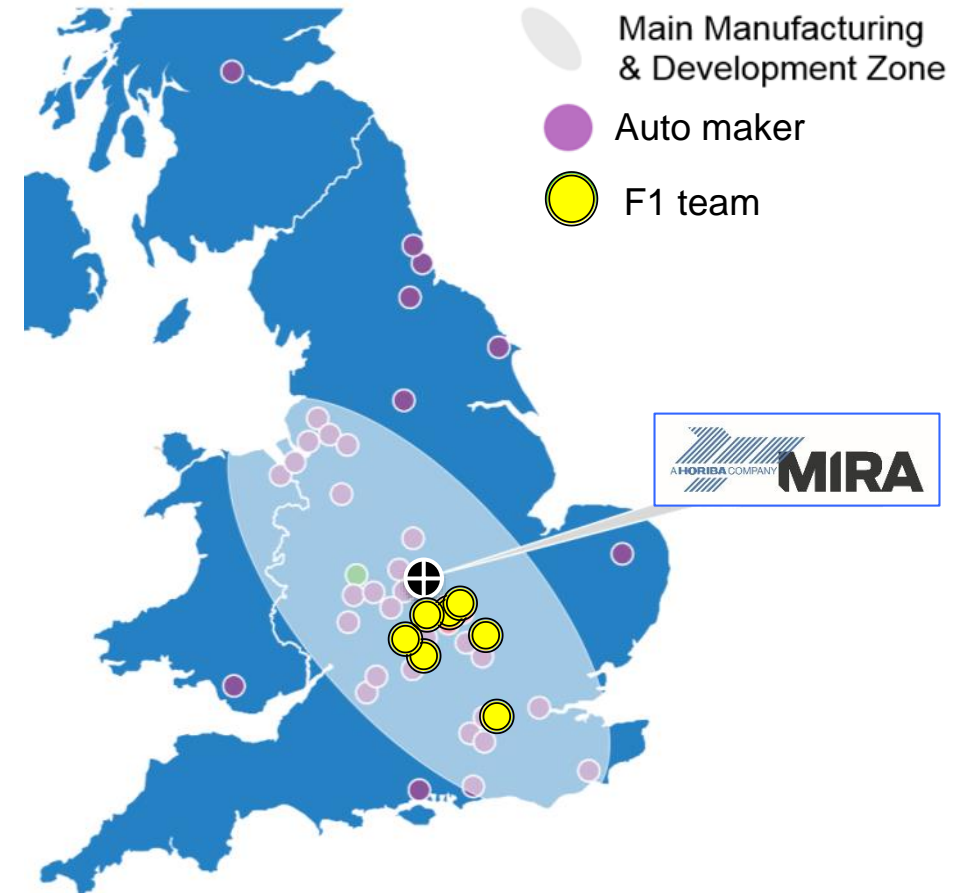
- Major OEM's and Tier One suppliers from around the world
- Tenants are attracted from global companies that want to access European technology and the European transportation market



Location of MIRA

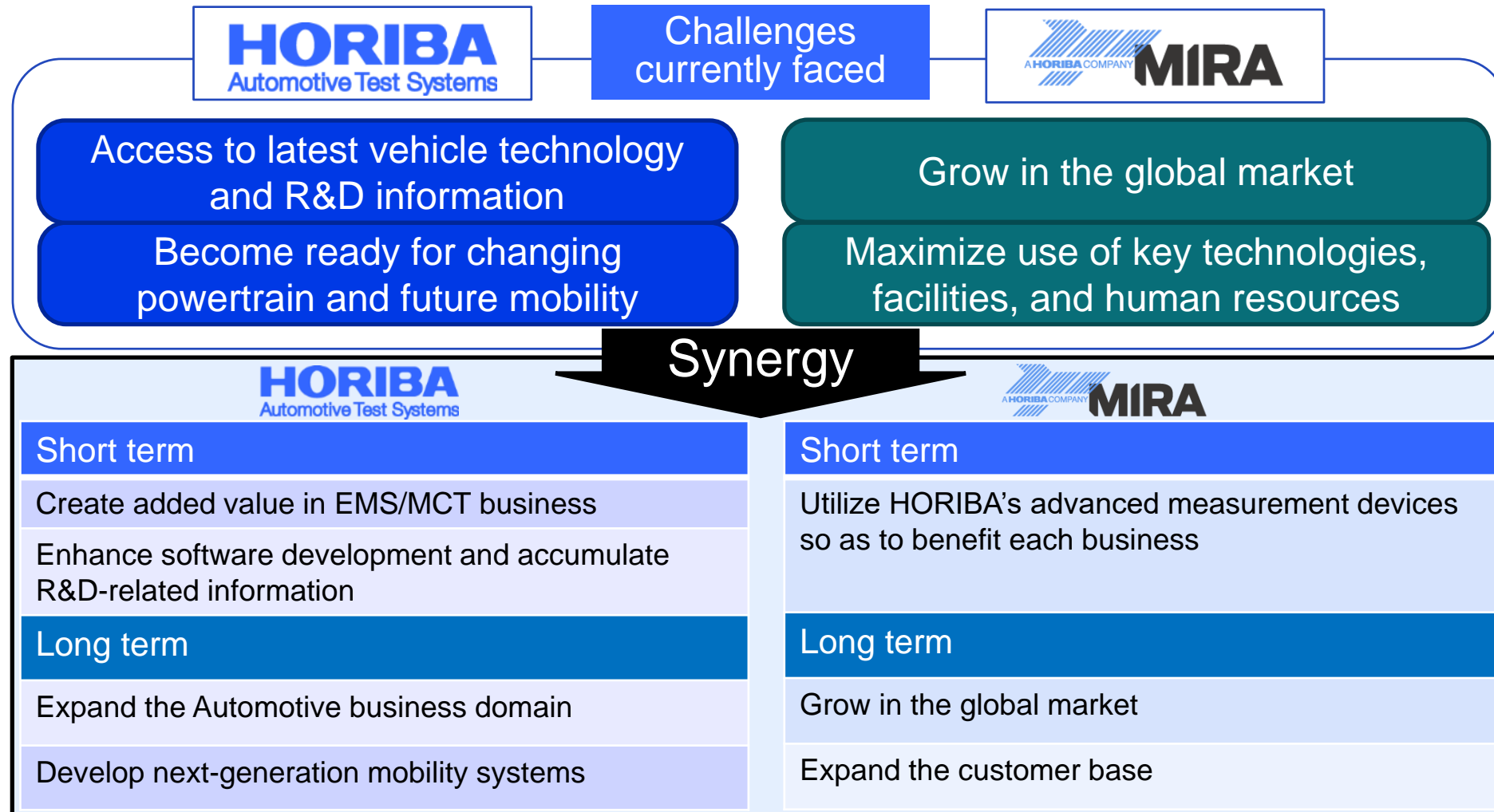
- MIRA was strategically located in the Midlands, the center of the UK automotive industry
 - This area is famous for advanced vehicle engineering incl. F1 teams, and many skilled resource (Mercedes, McLaren, Lotus, Williams etc.)
- Independent from any automotive manufacturers
- Strong support from UK and local government

Major customers :
Aston Martin, Ford, Jaguar Land Rover, HKMC (Hyundai Kia Motor Company) and Japan Auto maker



Future vision of HORIBA, Ltd. and HORIBA MIRA Ltd.

Shared Vision: **Contribute to Global Sustainable Mobility**



Expand business portfolio

Provide comprehensive solution of Automotive R&D

	Ems Cert.	Engine R&D	PWT* R&D	Vehicle R&D
Tools (EMS/MCT)				
Process (Software)				
Engineering Consulting				



	Ems Cert.	Engine R&D	PWT R&D	Vehicle R&D
Tools (EMS/MCT)				
Process (Software)			 	
Engineering Consulting*				

	Ems Cert.	Engine R&D	PWT R&D	Vehicle R&D
Tools (EMS/MCT)				
Process (Software)				
Engineering Consulting				

*PWT: Powertrain

HORIBA's analytical and measurement technologies contribute to the entire energy industry



Energy production

Transportation and storage

Consumption and environment



Stack gas analyzers



Power production



Engine



Fuel Cell test systems



Emission measurement systems



Hydrogen storage, fuel cell vehicles, etc.



Lithium-ion battery



Raman spectrometers, etc.



Electric vehicles, etc.



Smart houses



Gasoline, hybrid vehicles



Offices and factories



Four-wheel drive test systems, etc.



Air quality monitoring systems, etc.

Thank you

Thank you

Omoshiro-okashiku
Joy and Fun



감사합니다 Cảm ơn

ありがとうございました

Dziękuję धन्यवाद Grazie

Merci 谢谢 நன்ற

ขอบคุณครับ Obrigado

Σας ευχαριστούμε

Tack ska ni ha

شُكْرًا

Большое спасибо

Danke

Gracias