

# HORIBA Report

## 2022-2023

Year ended December 31, 2022

Omoshiro-okashiku  
Joy and Fun

おもしろおかしく



Corporate Motto

# Omoshiro-okashiku Joy and Fun

The corporate motto of HORIBA is Joy and Fun. We believe taking interest and pride in the work that occupies so much of our lives, and in the workplaces where many of us spend a large part of each day, will increase our satisfaction in life and allow us to enjoy our lives even more.



70th Anniversary Concept

## Day One, our starting line

HORIBA, which began as a small factory in Kyoto, has earnestly explored analysis and measurement technologies that contribute to scientific development, and developed unique products and solutions. Over the past 70 years, we have gathered colleagues from different countries and regions as our founding spirit and corporate motto of "Joy and Fun" resonate with them. This has made us a global company where diverse human assets can let their colors shine. Since its inception, the HONMAMON analysis and measurement technologies we have built up through our pursuit of unrivaled excellence, have earned a high level of trust as the HORIBA brand and supported research in cutting-edge fields around the world.



70th Anniversary  
HORIBA

The anniversary logo is designed to evoke an image of HORIBA's five business segments mixed together as we push towards the next stage. Its outline is inspired by the symbol ∞, to express our company's infinite possibilities, the number "70" angled upward to the right by 70 degrees represents our steady growth.





# Strive to reach the next stage through “HONMAMON\*” technologies and people in the changing world

**Atsushi Horiba**  
Chairman & Group CEO

## A year in which HORIBA demonstrated its strengths leading to significant results

2022 turned out to be a year of increasing instability in international politics and social conditions. This was triggered by Russia’s invasion of Ukraine, accelerating global inflation that included soaring energy prices, and the depreciation of the yen. HORIBA’s business was also affected by procurement prices and delays in parts and materials such as electronic components.

However, even under these challenging conditions, HORIBA posted record highs in sales, operating income, ordinary income, and net income attributable to owners of parent (net income) for the fiscal year ended in December 2022. Thus, we secured an operating profit margin of 17.0% (up 2.7 percentage points year-on-year).

We saw a significant increase in semiconductor segment sales due to a booming semiconductor market, as well as increased revenue and profits in the Process & Environmental and Scientific segments. As a result, we achieved the targets for operating income and net income set forth in our Mid-Long Term Management Plan, MLMAP2023 a year ahead of schedule. We were only able to achieve this level of performance among worldwide difficulties because our group companies in Japan and overseas collaborated globally to increase supply capacity and accordingly to minimize the impact on customers.

I believe this is one of our major achievements in 2022.

The success of global collaboration within HORIBA in 2022 resulted to achieve significant growth. Now, HORIBA has the challenge of rapidly progressing to the next stage in sight. We will not fail to seize this opportunity to work toward further enhancing our corporate value.

# “HONMAMON” Technologies and Human assets

CEO MESSAGE

\*HONMAMON: HONMAMON is a Japanese word, used especially often in KYOTO, where HORIBA is located. The word describes authenticity and excellence.

## HORIBA's strengths include comprehensive capabilities and agility

Since our founding HORIBA has been proud to be a R&D-oriented company committed to nurturing HONMAMON technologies. As for our global growth, we have also focused on linking functions such as production, sales, and management in a well-balanced manner and on a global scale. I also believe that HORIBA's strength lies in its comprehensive capabilities which allow us to organically integrate various functions and flexibly handle diverse customers and markets.

To improve the comprehensive capabilities of a company, it is vital to maintain close collaborative relationships with suppliers. We have built strong relationships of trust by treating HORIBA's suppliers not simply as vendors, but collaborating with them as partner companies. We take the time to continually communicate with partner companies and always consider mutually beneficial methods and measures. Thanks to this, shipments to HORIBA from partner companies have rarely been delayed, even when the impacts of business cycles have made procurement difficult. We always collaborate closely with partner companies on technology as well. This includes adopting an approach where we create basic technologies in-house, then outsource design and production to trusted

# “HONMAMON” Technologies and Human assets

partner companies. We increase our comprehensive capabilities by valuing mutual trust and constant communication based on HONMAMON technologies. I want us to continue to be a company that can flexibly meet the customer expectations.

HORIBA has made its presence known through high-end analysis and measurement equipment used primarily in research and development. At the same time, we have expanded our business portfolio and gained opportunities for significant growth by applying our technologies in different fields.

We are also starting to see new business opportunities for industrial applications in Bio & Healthcare, which is one of the focus areas identified in MLMAP2023. HORIBA has more than 30 years' experience in the medical business centered around the sale of hematology analyzers. In recent years, we have expanded into the field of Life Science by uniting this with scientific analysis equipment technology. We are also cultivating human assets who will lead development of cutting-edge technology, and have high expectations for future growth.



## The timing of investment is momentary, affinity with the corporate culture is the key to success

Since the late 1990s, HORIBA has grown by actively accepting attractive technologies or companies with superior technical prowess into the group through investment, including corporate acquisitions. In the future, such strategic investments will become increasingly important. We will develop our business in several fields without being partial to any single business, and continue to generate cash even in the midst of economic ups and downs. The solid financial foundation that HORIBA has built up so far will definitely become a major strength.

I also believe that, rather than things like performance that are easy to evaluate, the most important aspects in assessing a company are its invisible corporate culture and

values. One of the things that makes a corporate acquisition successful is understanding of and affinity for one another's corporate culture. HORIBA has grown through mergers and acquisitions by not missing the chance to seize opportunities that present themselves from time to time. Jobin Yvon (current HORIBA FRANCE SAS) is a prestigious company in the field of optical spectroscopy that joined HORIBA in 1997. It boasts a history longer than HORIBA's, stretching back 200 years. In this way companies from around the world, with excellent technologies and histories, are breathing new life into HORIBA and adding value to the entire group.

## Weaving together diverse human assets and technologies –Unfading value like Kumihimo\*1–

HORIBA celebrated its 70th anniversary in 2023. In January, approximately 2,700 HORIBARIANS\*2 mainly in Japan, out of the roughly 8,500 employees at our group companies, gathered under one roof for a commemorative ceremony. Many representatives from overseas group companies participated as well to celebrate the 70th anniversary with us.

The commemorative ceremony was planned and run entirely by HORIBARIANS, mainly younger members. I'm sure that planning an event for thousands of people and incorporating fresh ideas on their own was an invaluable experience for the HORIBARIANS

involved. Also, when considering the future of the company, it is not possible to envision the future simply by extrapolating from our present state. A new dimension of thinking is required. Gaining knowledge is important, but being creative even more so. We have been planning and carrying out various events, including anniversaries, on our own since our company's foundation. We believe it contributes to human asset development by providing opportunities for HORIBARIANS to build flexible creativity.



Kumihimo

\*1 Kumihimo: Kumihimo is traditional Japanese braiding using cords. The braiding technique has been used in Japan for over 1,300 years and its uses range from kimonos to modern fashion and accessories.

\*2 HORIBARIANS: All HORIBA workers are regarded as family and called HORIBARIAN as a nickname.



At HORIBA, we view our employees as valuable assets. That is why we use the words “human assets” rather than “human resources”. However, a company that relies on just one person or a few people with exceptional abilities as its human assets cannot grow. Diverse and unique HORIBARIANS working together as a team is what produces great results.

Weaving together diverse human assets and HONMAMON technologies, like the braided cords that are a part of traditional Japanese crafts, has enabled HORIBA to develop

numerous products and services. As we pursue cutting-edge technologies, we aim to be a company that creates value like that of traditional crafts—value which does not fade even after many years. We look forward to your continued understanding and support in 2023.

May 2023

**Atsushi Horiba**  
Chairman & Group CEO

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“Joy and Fun”

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CEO  
MESSAGE



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**Editorial Policy**

We create the HORIBA Report to gain the interest of institutional investors who take a long-term perspective, and to allow them to attain a better understanding of HORIBA. We also believe that HORIBA's stakeholders can obtain benefits stemming from our growth, and that they take the same long-term perspective as institutional investors.

We want to provide our stakeholders with a tool to help understand HORIBA.

That tool is the HORIBA Report.

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■ Regarding our use of the term “human assets”

HORIBA considers employees to be valuable assets and refers to them as “human assets” in principle.

■ Regarding our use of the term “owners” (shareholders)

HORIBA fully recognizes the importance of its shareholders and frequently refers to them as “owners.”

■ Regarding our use of HORIBA and HORIBA, Ltd.

In this HORIBA Report, the HORIBA Group of companies is described as HORIBA and the parent company as HORIBA, Ltd.

■ Market share in the HORIBA Report

Market shares stated in this report are HORIBA's estimates as of fiscal 2022.

■ Change in revenue recognition standard

HORIBA, Ltd. and its domestic consolidated subsidiaries had formerly recognized revenue mainly on a shipping-date basis. However, starting from fiscal 2016, HORIBA, Ltd. and its domestic consolidated subsidiaries changed their revenue recognition method to recognize revenue on a completion-date-of-installation or delivery-date basis under the terms and conditions of the relevant contracts. The amounts in or before fiscal 2015 are not retrospectively revised.

■ Disclaimer regarding future plans and forecasts

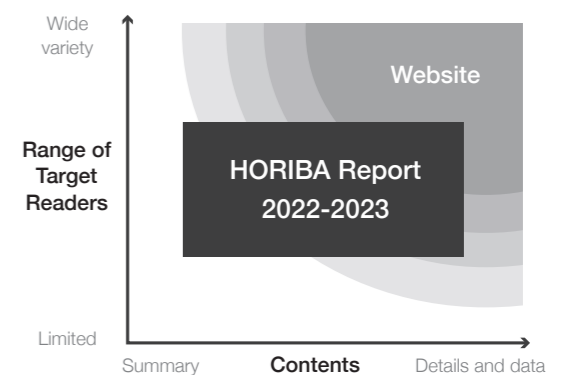
This HORIBA Report contains certain statements describing future plans, strategies, and performance forecasts of HORIBA, Ltd. and its affiliated companies. These statements reflect forecasts estimated on management's assumptions and beliefs based on the information available as of April 30, 2023. Actual performance may differ due to unforeseen circumstances in the operating environment and other factors.

■ Regarding the importance and comprehensiveness of information in the HORIBA Report 2022-2023

We have selected financial and non-financial information that we believe to be of high importance for inclusion in the HORIBA Report 2022-2023.

For more detailed information, please see our website.

The PDF version of the HORIBA Report 2022-2023 is also available through our website.



IR information

[Web Link](#)



CSR information

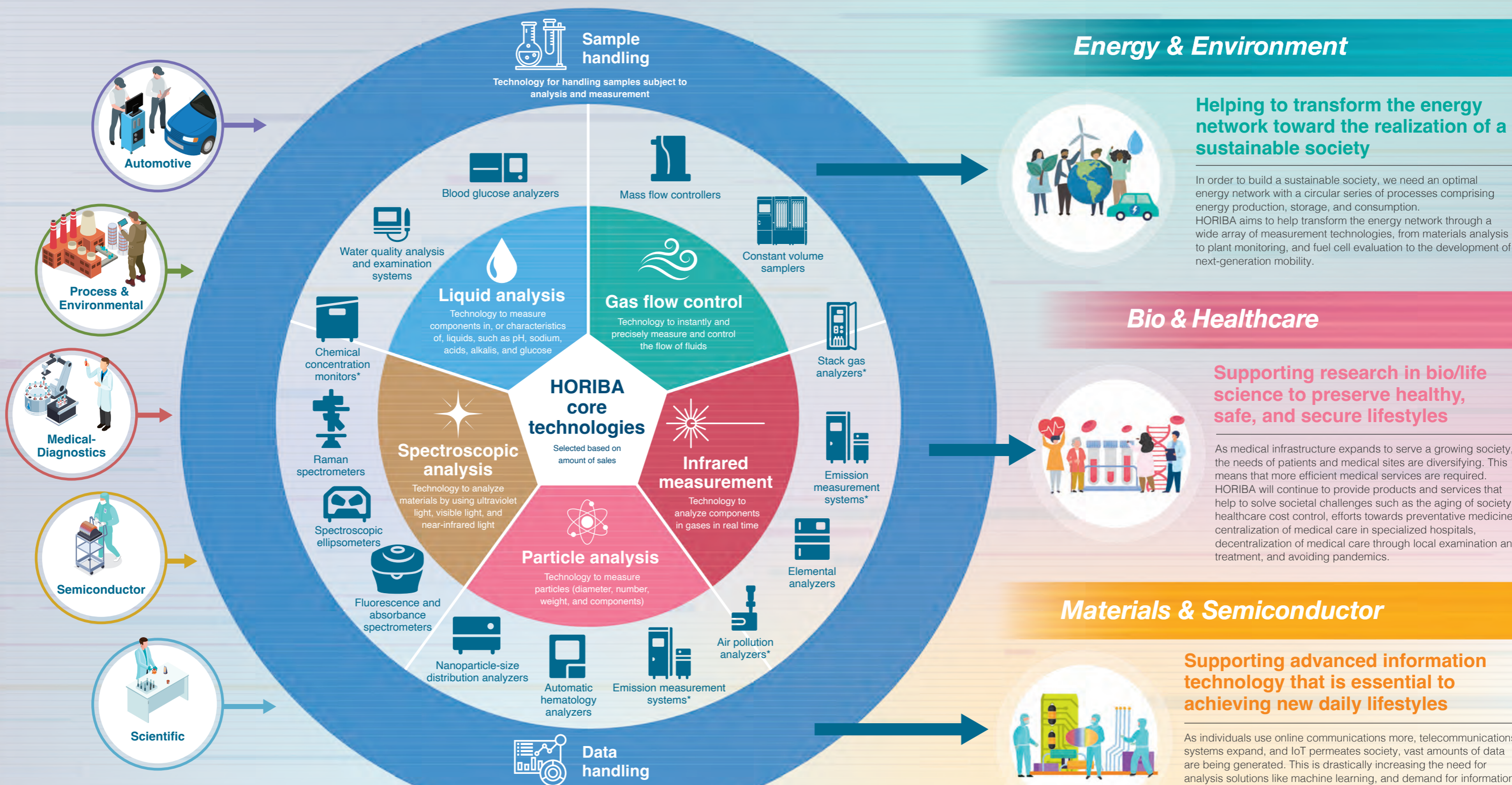
[Web Link](#)



# HORIBA's wide range of technologies and their development

HORIBA's measurement business

Three fields HORIBA is taking on



## Energy & Environment

**Helping to transform the energy network toward the realization of a sustainable society**

In order to build a sustainable society, we need an optimal energy network with a circular series of processes comprising energy production, storage, and consumption. HORIBA aims to help transform the energy network through a wide array of measurement technologies, from materials analysis to plant monitoring, and fuel cell evaluation to the development of next-generation mobility.

## Bio & Healthcare

**Supporting research in bio/life science to preserve healthy, safe, and secure lifestyles**

As medical infrastructure expands to serve a growing society, the needs of patients and medical sites are diversifying. This means that more efficient medical services are required. HORIBA will continue to provide products and services that help to solve societal challenges such as the aging of society, healthcare cost control, efforts towards preventative medicine, centralization of medical care in specialized hospitals, decentralization of medical care through local examination and treatment, and avoiding pandemics.

## Materials & Semiconductor

**Supporting advanced information technology that is essential to achieving new daily lifestyles**

As individuals use online communications more, telecommunications systems expand, and IoT permeates society, vast amounts of data are being generated. This is drastically increasing the need for analysis solutions like machine learning, and demand for information storage. Moreover, the importance of the semiconductor industry is growing as society comes to live with COVID-19. We will support changes in semiconductor technology, like miniaturization and multi-layering, and contribute to the semiconductor production processes required for the stable production of higher-performance semiconductors.

HORIBA's measurement technology began with electrochemical pH meters. Since then, we have expanded the analysis targets to include liquids, gases, and solids, while accumulating various analysis and measurement technologies using infrared rays and X-rays, and the like. We are also developing control technologies in addition to our analysis and measurement technologies. We utilize products born out of our core technologies, as well as advanced sample handling and data handling technologies that flexibly meet customer demands, to ascertain the changing needs of the market. HORIBA will continue to enhance the synergy between our resources to bring our customers the superior value produced by measurement technologies.

\* Products using multiple core technologies

EXTERNAL  
DIALOGUE

# Supporting all industries with our unique technologies we have built up over time



**Emi Osono**

Professor, Hitotsubashi University Business School, School of International Corporate Strategy

**Masayuki Adachi**

Doctor of Engineering  
President & COO

Special Feature

**Osono:** This is the first time President Adachi and I have talked like this since our interview about the Porter Prize\*1 (April 2020). Societal challenges such as global warming have become more pronounced now compared to when you received the Porter Prize, and we have entered a period of major change in the industrial structure. What kind of changes have you made at HORIBA?

**Adachi:** At HORIBA we are advancing our Mid-Long Term Management Plan, MLMAP2023 formulated in 2019. In MLMAP2023 we define three fields\*2 that are setting the pace on global megatrends. One of these, Energy & Environment, includes the Automotive Segment business for which we won the Porter Award.

**Osono:** The automotive industry currently finds itself transitioning to electric vehicles, however not all vehicles in all countries can be immediately switched to EVs. As we utilize electricity produced by renewable energy, the trend of utilizing energy from conventional combustion as a "bridge" will be essential to the energy transition.

**Adachi:** While the number of products aimed at measurement and control of combustion in applications such as engines has fallen from its peak, there is still demand and HORIBA will continue to handle them. At the same time, we are also putting our efforts into products related to hydrogen, which is gaining attention as a new energy source. HORIBA manufactures and sells

\*1 Porter Prize: Awarded to Japanese companies that have achieved and maintained superior profitability in a particular industry by implementing unique strategies. It was established in July 2001 by the Hitotsubashi University Business School, School of International Corporate Strategy. HORIBA, Ltd. received the award in 2005 for its engine measurement system equipment business. See the link on the right for an article about this interview.

\*2 Three fields: Energy & Environment, Bio & Healthcare, and Materials & Semiconductor. Defined as one of our priority measures in the "Market Oriented Business" section of MLMAP 2023.

Web Link

(Japanese only) Click!



HORIBA promotes cross-segment in its three fields, and is using the technologies we have built up thus far to develop new businesses. Professor Emi Osono of Hitotsubashi University and HORIBA, Ltd. President Masayuki Adachi discuss HORIBA's business strategy and vision for the future.

evaluation equipment such as that used to evaluate the water electrolysis equipment essential to clean hydrogen production, through HORIBA FuelCon GmbH in Germany. And demand is growing in Europe, where efforts to achieve carbon neutrality are accelerating.

Meanwhile, the overall picture of how the world will generate, store, and use energy from here out is yet to be settled. At HORIBA, we are taking a flexible approach on a global scale in the field of Energy & Environment. This includes the utilization of hydrogen and ammonia, and the efficient use of electricity in electric vehicles, in addition to energy from conventional combustion.

**Osono:** I think something that makes HORIBA different, is that while it is a global company located in Japan, its center is not necessarily in Japan. The local circumstances in Europe, the United States, and Japan are reflected to a considerable extent in the energy blueprints for the future drawn up by each. The fact that HORIBA has group companies rooted in each region is a great strength because it allows you to ascertain global trends in a balanced manner from multiple perspectives.

**Adachi:** Businesses that only take a Japanese perspective may not survive. I believe that taking a flexible approach on a global scale is the correct choice from a long-term perspective.

**Osono:** You could also rephrase this as, "When the future is uncertain, you should keep multiple options open." If you think that one of the options may become a global trend and unfold in a big way, it makes sense to keep as many options as possible. Since HORIBA promotes cross-segmentation, investments related to energy can be used not only in the Automotive Segment, but in the Process & Environmental and Scientific Segments as well. Thus, a business strategy of maintaining various options is very attractive.

**Adachi:** HORIBA operates our business on a segment basis, and each of our five segments has come to generate solid profits. On the other hand, so-called vertical divisions have appeared as a side effect of segmentation. There is no such thing as a final form or correct answer when considering organization and strategy. In fact, if I had to name a correct strategy, it would probably be to keep changing. The answers lie in continually taking on challenges through trial and error.



If the right answer has been determined, then that is probably because someone else had already gotten to it. I think that the history of HORIBA shows that it is worth taking on a challenge because you do not know the answer, and that taking on challenges leads to flourishing. This is so evident that we joke within the company that HORIBA is lucky.

**Osono:** If you look into the background of interesting business models, you will find cases that started by chance. Then someone within the company takes a bird's-eye view of the initiative, attaches meaning, and decides to adopt it as a business. These choices add up and result in the success stories we find in textbooks. There are not many companies like HORIBA, where initiatives start from the ideas of individuals or the spirit of "Joy and Fun." I think we should appreciate the fact that your starting point is already unique.

**Adachi:** I always tell HORIBARIANS that, "I want you to broaden your perspective to consider the social value of the things you are working on, and freely take on challenges." I want them to take on challenges with the conviction that "this is necessary for society, people, and the Earth."

**Osono:** Many societal issues are becoming clear around the world. I think that HORIBA technology is an indispensable part of their solutions. For instance, simulation is indispensable for manufacturers trying to reduce the environmental impact of production. And it is only because measurement technologies exist that they are able to conduct advanced data measurement, verification, and analysis.

**Adachi:** It is true that HORIBA considers itself a manufacturer of analytical and measurement instruments. But I also feel that we can be too strictly bound by the word "analysis." In fact, we have become a key company responsible for the measurement technologies that enable measurement and control in industry. HORIBA possesses technologies that hold the potential to measure and control the molecules that comprise substances. Devices which utilize these technologies could allow many industries to measure and control substances at a previously invisible molecular level. We recognize the value in this, and will take a cross-segment approach to transcend that barriers between businesses. Talking about this gets me excited, because it will take the way measurement and control is thought about in industry to a completely different level.







**When the future is uncertain, HORIBA has multiple options. Business strategies that contain multiple options are very attractive.**

**Emi Osono**

Professor, Hitotsubashi University Business School, School of International Corporate Strategy

Emi Osono received her MBA from The George Washington University School of Business, and her PhD after completing a post doctorate program at the Hitotsubashi University Graduate School of Business Administration Faculty of Commerce and Management. She taught as a visiting lecturer (full time) in the MBA program at Waseda University's Business School (Graduate School of Asia Pacific Studies), and as a full-time lecturer and associate professor at Hitotsubashi University Business School's School of International Corporate Strategy before assuming her current position. She is currently a temporary member of the Industrial Structure Council at the Ministry of Economy, Trade and Industry, serves as a board member for Tokyo Marine Holdings, as an advisory board member for Citigroup Japan Holdings G.K., and is on the Steering Committee for the Porter Prize.

**Emi Osono**

Process & Environmental segments. This company became a multi-segment company when it merged with the former HORIBA Jobin Yvon SAS, which was focused on the Scientific Segment, in 2017. After the merger, both sides were exposed to a new corporate culture, as well as different methods of production and ways of approaching customers. This enabled the company's employees to view the business from a new perspective.

**Osono:** So, without any instructions from headquarters, they borrowed aspects of each corporate culture and developed a new cross-segment approach on their own. Usually when two organizations become one through a merger or the like, their corporate cultures do not blend together naturally. Even though these were both group companies, it is a very interesting result.

**Adachi:** I think this is because when HORIBA Jobin Yvon SAS merged with HORIBA FRANCE SAS, 20 years had already passed since it became a part of HORIBA in 1997. I believe it is precisely because they became a member of HORIBA in both name and substance that this surprising sense of unity emerged following the merger. In France it is very important to build relationships of trust between people in business. When HORIBA acquires a company, we value the human assets it has. We also fully utilize HORIBA's global sales and service networks to enable the acquired

**Osono:** Overcoming that barriers between segments is actually a very daunting challenge. Did HORIBA make any organizational changes, or adopt or change any systems? Also, how are you promoting a cross-segment approach at your overseas group companies?

**Adachi:** HORIBA, Ltd. has carried out significant organizational reforms over the past few years, and I believe that the dramatic changes in the world due to the COVID-19 pandemic gave a boost to our cross-segment approach. The pandemic continues to change society, and the things required of companies have changed significantly as well. We cannot just keep doing what we've been doing all along. We kept noticing places where we could be doing a lot more. A rising sense of crisis spurred the company's shift to a cross-segment approach wherever possible.

And at our overseas group companies, a very interesting chemical reaction had been taking place even before the COVID-19 pandemic. For example, HORIBA FRANCE SAS had originally been focused on the Automotive and

company to grow. We also spare no effort in getting people to understand our corporate culture of "Joy and Fun." And we carefully cultivated a trusting relationship with HORIBA Jobin Yvon SAS. This approach to corporate acquisitions helps the acquired company to understand they can receive great value by becoming a member of HORIBA.

**Osono:** That is the ideal form of corporate acquisition. Companies that make others think "we would like to be bought by them" have the greatest advantage in corporate acquisitions. This is what many companies should aim for.

**Adachi:** I am truly happy to hear that.

**Osono:** Well, 2023 is the final year of MLMAP2023. What are you thinking and moving towards as you approach the next Mid-Long Term Management Plan?

**Adachi:** I believe that the three fields identified in MLMAP2023 will become more distinct in our next Mid-Long Term Management Plan. I also want technologies to be utilized in normal development activities regardless of the segment. In other words, our goal is for the term "cross-segment" not to be used within HORIBA.

The molecular measurement and control technologies I mentioned earlier have the potential to be used in various situations in the Life Science market on which HORIBA is focusing on. In pharmaceuticals manufacturing there is a movement similar to the so-called "fabless foundry" manufacturing distinct to the semiconductor industry, which divides up the work of planning, designing, and producing products. In other words, pharmaceuticals companies and Contract Development and Manufacturing Organization (CDMO) in the pharmaceuticals industry are beginning to split up the development and manufacture of drugs. HORIBA believes it can provide molecular measurement and control technologies not just for development by pharmaceuticals companies, but for CDMOs as well. In this way, we can contribute to vaccine production and drug quality testing, for example.

I am proud to say that HORIBA's technologies can contribute to both research and development, and production, at pharmaceuticals manufacturers. Pharmaceuticals manufacturers have made huge investments for long time in areas such as messenger RNA research. This is why they were able to develop and manufacture vaccines for COVID-19 in about a year. In the same way, we also continue to spend time on research and development. We have been able to establish advanced technologies that contribute to society, people, and the Earth, because we have taken time to work on each one.

**Osono:** This goes along with what you just said, but I get the impression that HORIBA approaches everything from a long-term point of view. This is reflected in how you build trust

during corporate acquisitions and the way you work to ensure permeation of your corporate culture. Your Mid-Long Term Management Plan looking five to ten years into the future also seem to be functioning well.

**Adachi:** We engage in analysis, measurement, and control in the fields of science and industry. That is to say, I think that in the realms of physical and scientific technology, you are allowed to take the time to work on things carefully. Near-term profitability is important, but I believe that it is even more important to determine the long-term benefits to society, people, and the Earth.

**Osono:** While there are investors who look at a company from a short-term perspective, I think it is important to be able to properly communicate your company's timeline. If you can convincingly explain how much time is needed to create value in the industries your company is involved in, I think investors will properly evaluate your firm.

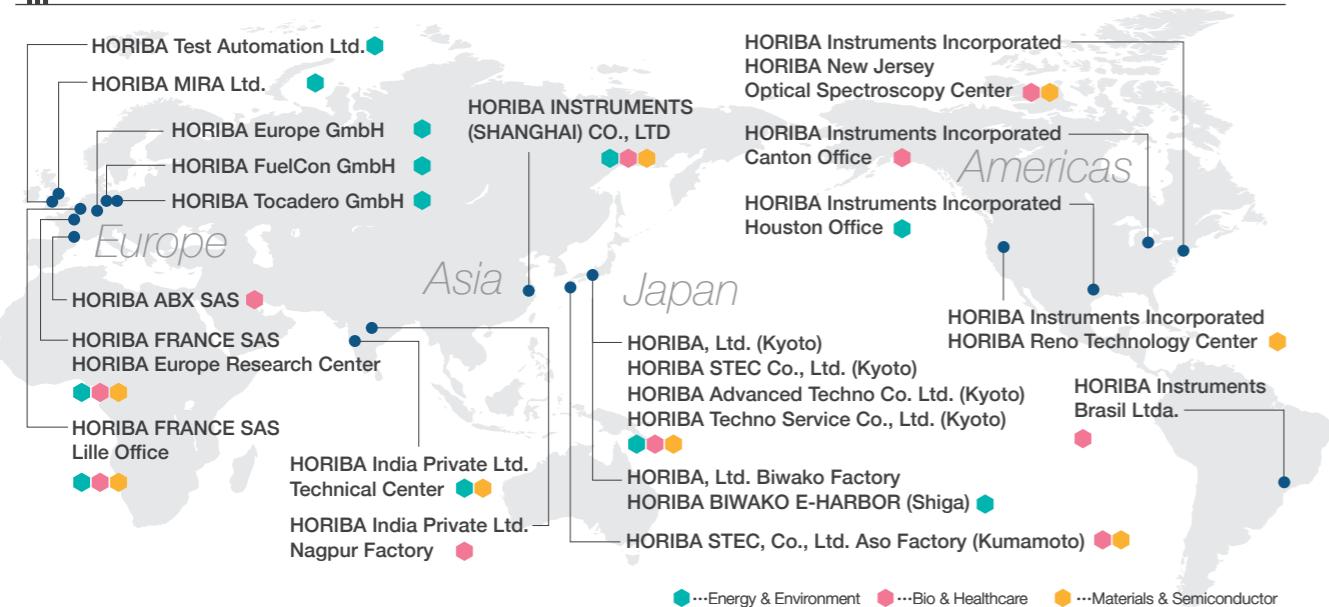
**Adachi:** Fortunately, the number of HORIBA owners (shareholders) who take a short-term perspective is limited. I feel that the world is becoming more interested in corporate sustainability than pursuing short-term profits, and that more investors are taking a long-term perspective.

**Osono:** Investors evaluate companies based not only on their performance at that time, but also on future growth and value creation. For a company engaged in what seems at first glance to be an unassuming B to B analysis and measurement business, I sense that the source of your brilliant ability to create value lies in HORIBA's corporate motto of "Joy and Fun." That wording is genius. With your unique corporate culture, I hope you will continue to tackle various challenges in the future.

**Adachi:** Thank you very much. We will move forward steadily and carefully, with confidence. We look forward to your continued support for many years to come.

(Conducted in February 2023)

**Global Spread of Business Locations and Technological Development in Three Fields**



**We have been able to establish advanced technologies that contribute to society, people, and the Earth, because of our deep and thorough research and development.**

**Masayuki Adachi**



# Contribution to realizing a carbon-neutral society

Energy & Environment

Special Feature

## H<sub>2</sub> HORIBA bands together to expand the hydrogen energy business

### HORIBA FuelCon's hydrogen energy business

HORIBA FuelCon GmbH forms the core of HORIBA's hydrogen energy business. In 2022, they began full-scale operation of their new facility, HORIBA eHUB, which boasts a 7,000 m<sup>2</sup> production area that is five times larger than their existing facilities. They plan to invest even more in human assets, and roughly triple their existing production capacity by the end of 2023.



Battery evaluation equipment



General-purpose hydrogen gas analyzers



Fuel cell and water electrolyzer evaluation systems

Building strong relationships with customers

Contributing to the use of hydrogen energy

Contributing through CO<sub>2</sub> Separation and Capture

HORIBA

Europe is on the cusp of adopting hydrogen energy throughout society, as efforts to reach carbon neutrality accelerate. With this in mind, manufacturers have begun to mass produce the electrolyzers that will generate hydrogen by utilizing renewable energy, leading to an uptick in demand from HORIBA FuelCon GmbH for electrolyzer development evaluation systems and production inspection systems. Meanwhile, HORIBA FRANCE SAS is participating in projects in France, where the government is taking the lead in building a decarbonized society, by supplying HORIBA FuelCon GmbH products, and other HORIBA Group analysis and measurement equipment. The entire HORIBA Group is coming together to help bring about a hydrogen-based society.

Supported establish the HORIBA Institute for Mobility and Connectivity<sup>2</sup> (HIMaC<sup>2</sup>) at the University of California, Irvine (UCI).



HORIBA FuelCon GmbH is participating in the H<sub>2</sub>Giga Project, spearheaded by the German Federal Government, due to its advanced water electrolysis evaluation technology.



Philippe Rosier, CEO of Symbio SAS

The fuel cell manufacturer Symbio SAS partners with HORIBA on test bench for construction of one of the largest new plants in France.

H<sub>2</sub> Hydrogen



HORIBA FRANCE SAS signs strategic agreement with CRMT to collaborate on hydrogen-based mobility solutions.

(Left in photo) Edoardo Bassano, Managing Director of CRMT SAS  
(Right in photo) Laurent Fullana, President of HORIBA FRANCE SAS  
Credits: © CRMT, 2020

Global partnerships

Achieving a carbon neutral society

High concentration gas monitoring  
Multi component gas analyzer

Monitor exhaust Gases

Low concentration gas monitoring  
Trace gas analyzer

Contributing to monitoring of various gases generated during each stage of the chemical absorption method.

Used to monitor the condition of the amine solution and determine when to change it or inject more.

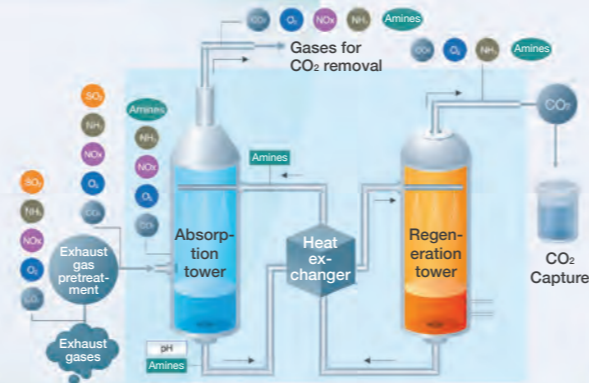


Process Raman/fluorescence analyzers



Outdoor type pH/electrical conductivity analyzers

Amine Solution Monitoring



Chemical absorption method using amine solution is widely employed to separate and capture CO<sub>2</sub>

HORIBA's Carbon recycling technology (Separation and Capture)

Separation and Capture

Exhaust gases, etc.

Storage (CCS)

Direct utilization  
Dry ice, etc.

Utilization (CCU)

Chemicals

Basic substances  
• Syngas, such as carbon monoxide or hydrogen  
• Methanol, etc.

Fuels  
• Biofuels, etc.

Minerals  
• Concrete products, etc.

Others

Independently created by HORIBA based on documents from the Agency for Natural Resources and Energy.  
[https://www.enecho.meti.go.jp/committee/council/basic\\_policy\\_subcommittee/035/035\\_004.pdf](https://www.enecho.meti.go.jp/committee/council/basic_policy_subcommittee/035/035_004.pdf)

\*1 e-fuels\*<sup>1</sup>  
\*1 e-fuels: Synthetic fuels created from hydrogen made using renewable energy

## Providing analysis and measurement solutions for carbon recycling

Carbon recycling technologies are gaining attention as a way to capture and utilize CO<sub>2</sub> resources. CO<sub>2</sub> that has been separated and captured through carbon recycling is also beginning to be used in various ways. One of these ways is to create e-fuels. E-fuels have the advantage of being able to be used as-is in existing fueling infrastructure and internal combustion engines. The use of CCUS\*<sup>2</sup> to separate and capture CO<sub>2</sub> is expanding, and HORIBA can provide various solutions at each step in CCUS processes. HORIBA will contribute from various angles as we make further progress towards achieving a carbon neutral society.

\*2 CCUS: Carbon Dioxide Capture, Utilization and Storage

# Mobility Solution Business

## Providing various R&D solutions in new automotive area

The automotive industry is accelerating its development of next-generation mobility solutions that will lead to societal transformation. And automotive manufacturers are responding to various technological demands, such as electrification, connected vehicles, and autonomous driving.

HORIBA plans to contribute to the future mobility of society by providing broad solutions that support vehicle development in new automotive areas like electrification, autonomous driving, and cybersecurity.

### Developing real-world simulation systems for autonomous driving / ADAS\* sensor evaluation

HORIBA is developing vehicle evaluation solutions for autonomous driving and ADAS features in the field of autonomous driving, where regulations are eventually expected to be introduced. In 2022, the National Traffic Safety and Environment Laboratory adopted our real-world conditions simulation systems for evaluating autonomous driving and ADAS sensors.

These systems can be used to reproduce conditions that occur in the real-world, allowing researchers to even more accurately validate the safety of ADAS. \* ADAS: Advanced Driver-Assistance Systems

- Reproduce rainy conditions to measure and evaluate environment recognition performance on public roads during bad weather
- Efficiently and quantitatively evaluate the limits of sensor performance



- 1 Environment simulator that can reproduce five levels of rainfall, from mist, through rain, to heavy rain\*  
\* 20 to 100 mm/h of rainfall
- 2 Equipment that can simulate actual driving conditions on a dynamometer in order to test ADAS operation (steerable four-wheel chassis dynamometer)

### HORIBA MIRA Ltd.

Supporting automotive development through close partnerships with manufacturers around the world

HORIBA MIRA Ltd. provides diverse solutions to a wide array of automotive manufacturers on a global scale. These start with vehicle development engineering, and include certification, compliance with standard-based testing, and local specifications testing.

We have various projects underway with companies developing next-generation mobility solutions, and are working with firms such as the UK's Viritech, Israel's REE, and Türkiye's TOGG to contribute to the development of next-generation mobility.

| HORIBA MIRA's Customers           | Engineering | Certification and standards testing | Local specifications testing | Benchmark testing | Convenient location |
|-----------------------------------|-------------|-------------------------------------|------------------------------|-------------------|---------------------|
| UK-based automotive companies     | ●           | ●                                   |                              |                   | ●                   |
| Non-UK-based automotive companies | ●           | ●                                   | ●                            | ●                 |                     |
| Automotive startups               | ●           | ●                                   |                              | ●                 |                     |
| Automotive suppliers              | ●           | ●                                   | ●                            | ●                 |                     |
| Material manufacturers            | ●           |                                     |                              | ●                 |                     |

# Service Lifecycle Management

## HORIBA will never stop combustion measurement

Conventional Energy

HORIBA has been an overwhelming presence in the field of combustion measurement.

But global trends towards carbon neutrality are putting automotive manufacturers under pressure to support electrification. In the meantime, society still has need of internal combustion engine vehicles, and there is steady demand for measurement equipment at development sites.

Most of our MEXA Series Emission Measurement Systems are still in operation, so we will continue our combustion measurement business with a multifaceted approach that includes updating, prolonging the life of, and recycling these devices.

### Generously supporting the use of existing emission measurement systems and development labs during the transition to electric vehicles

Multifaceted approach ensures development lab availability

#### Upgrade

Upgrading to the latest equipment for use into the future as well  
Introducing equipment with the latest specifications

#### Modify

Plan to maintain functionality by prolonging operation life  
Adding new functions



#### Recycle

Removing individual parts  
Managing stock of repair parts

#### —MEXA— Emission Measurement Systems

Monitoring combustion control in engines through emission measurement

We have shipped roughly 8,000 MEXA Series units since the year 2000, and most of these are still in operation.

### Increased emission business demand due to adoption of Euro 7

The European Commission announced Europe's next-generation emission regulation, Euro 7, in November 2022. It subjects all vehicles to regulation concerning the emission of pollutants such as ammonia and dust generated by wear on brakes and tires, and it is expected that the content of these regulations will be stricter than ever. Orders to HORIBA's emissions business have been recovering since bottoming out in 2020, and we expect the introduction of Euro 7 to further accelerate this trend.

### Contributing to conventional power plant efficiency to meet increasingly intense demand for electricity

#### —ENDA— Stack gas analyzers

Process control system for exhaust gas processing installed in facilities such as power plants

- Contributes to addressing challenges faced by thermal power plants, such as ensuring safe operation, supplying stable electric power, and improving power generation efficiency
- Supports power generation process efficiency with flue gas desulfurization system and flue gas denitrification system monitoring



# Advancing our business in the bio/life science field

Providing a wide range of analysis, measurement, and control solutions from research and development through production

Expanding our business to pharmaceuticals manufacturing processes

Pharmaceutical development is becoming longer and more complex, and development costs are steadily increasing. In light of this, pharmaceuticals manufacturers are accelerating to outsource drug manufacturing to CDMOs\* in order to concentrate their efforts on clinical development and drug discovery. In the same vein, we expect HORIBA products to be used in various aspects of the pharmaceutical manufacturing process. HORIBA is helping to improve yield in pharmaceutical company and CDMO manufacturing processes through technical capabilities that have contributed to research and development by global pharmaceutical manufacturers.

\* Contract Development and Manufacturing Organization: A company that contracts development and manufacturing of pharmaceuticals.

Analysis and measurement in cutting-edge research

Industry R&D departments

Research institutes

Strengthen field of expertise



Cells and biological sample analysis

Providing high-end analysis and measurement equipment such as Raman spectrometers

Small molecule drug analysis



Pharmaceutical business processes

Pharmaceutical companies —R&D—

Contract manufacturing of pharmaceuticals (CDMO)

Pharmaceutical companies —marketing and sales—

Pharmaceutical market

Research institutes

Industry R&D departments

Manufacturing processes

Expanding our business to manufacturing processes

Toward molecular-level measurement and control

Product process evaluation and manufacturing process monitoring

Manufacturing processes

Grow into new areas

pH/DO control

Perform real-time monitoring to help improve yield

Water management for pharmaceutical production



Medium component monitoring



Many HORIBA products are employed by research institutions and corporate R&D departments, and the area is one where HORIBA has proven its strength. We are leveraging the technologies and brand power that we have built up in this field to expand our business into the new area of industrial manufacturing processes. In this field, molecular level measurement and control are increasingly required by manufacturing processes. HORIBA can fully meet these needs because we possess a level of technology that allows us to measure and control the molecules which make up materials. Because HORIBA provides analysis, measurement, and control solutions, we remain the optimal partner in a wide range of fields, from research and development to manufacturing.

# HORIBA SEMICONDUCTOR

HORIBA built an extensive business network in the semiconductor industry from an early stage. In 1985 Japan took top market share in the world semiconductor market. That year, we exhibited at the world's largest semiconductor manufacturing equipment industry exhibition, SEMICON WEST 85, in San Francisco USA.

HORIBA also took part in joint research with Professor Tadahiro Ohmi of Tohoku University, who was a leading researcher on cleanrooms for semiconductor manufacturing and electronics industrial applications. And in 1989, we received the prestigious Inoue Harushige Award together with Prof. Ohmi. Then, in 1990, president and CEO of Horiba, Ltd. and STEC Inc., Atsushi Horiba, was elected to one of the Board Members of the global semiconductor industry association SEMI. The reason HORIBA has been able to maintain its presence in the semiconductor industry is that we have used our network within the industry to continually provide high-value-added products to the leading-edge of the semiconductor market.

Even when business conditions in one segment have been sluggish, we have been able to flexibly utilize management resources to continue investment in each segment and achieve sustainable growth. As we have continually striven to maintain and improve our competitiveness in the rapidly changing semiconductor market, our semiconductor business had grown to become the most profitable of HORIBA's businesses. At present, our primary products for the Semiconductor segment are mass flow controllers, chemical concentration monitors, and particle detection systems. But now we are focused on creating businesses that will become future pillars of the company.

HORIBA will continue to contribute to the development of the semiconductor industry by providing high-quality solutions for semiconductor manufacturing processes.



Chemical concentration monitors



Mass flow controllers

Reticle/mask particle detection systems



## HISTORY

- 1980 Released mass flow controller, SEC-L/H, that can precisely measure and control flow rate
- 1982 Semiconductor manufacturers recognize its impressive performance
- 1984 Completed first particle detection system, the PD-200
- 1985 Opened sales office in Sunnyvale, California to expand business in the U.S.
- 1985 Exhibited at world's largest semiconductor manufacturing equipment industry exhibition, SEMICON WEST 85
- 1988 Completed construction of (then) STEC's Aso factory to meet increasing demand for mass flow controllers
- 1989 Received the Harushige Inoue Award, together with Professor Tadahiro Ohmi of Tohoku University and others, for joint development of the ultra-clean gas supply system proposed by Prof. Ohmi
- 1992 Delivered prototype in-line chemical concentration monitor to meet the need for strict control of wafer cleaning solution concentrations
- 1995 Commercialized in-line chemical concentration monitor, the CS220
- 1999 Atsushi Horiba appointed to Board of Directors of SEMI, a global industry association that integrates the entire supply chain for electronics manufacture and design
- 2003 Signed agreements with Ferran Scientific (March) and FuGacity (April) Began developing mass flow controllers that apply the pressure-related technologies of both companies
- 2007 Established development site in Reno, Nevada, USA
- 2007 Opened HORIBA Technology Center as a development site in Silicon Valley (Santa Clara, California)
- 2013 Opened Fukuchiyama Technology Center to pursue higher accuracy and reliability of fluid measurement and control necessitated by miniaturization and high integration of semiconductor devices
- 2015 Opened HORIBA Advanced Technology Center to consolidate cleanroom functions dispersed between different HORIBA Group locations, and promote integrated manufacturing from development to production
- 2015 Expanded HORIBA STEC's Aso Factory
- 2018 Established HORIBA Reno Technology Center, strengthening our development capabilities in the U.S., where many semiconductor production equipment manufacturers are concentrated, and enabling us to rapidly respond to customer needs
- 2021 Established Optical Smart Sensing division at HORIBA STEC CO., Ltd., to develop HORIBA's various sensing technologies for the semiconductor market



# Concentrate all HORIBA technologies into the semiconductor manufacturing process to show the presence in the industry

**Juichi Saito**

HORIBA, Ltd.  
Executive Vice Chairman & Group COO



HORIBA  
×  
SEMICONDUCTOR  
DIALOGUE



**Hideyuki Koishi**

HORIBA, Ltd.  
Director  
HORIBA STEC Co., Ltd.  
Director  
(Former President)

**Dan Horiba**

HORIBA, Ltd.  
Senior Corporate Officer  
HORIBA STEC Co., Ltd.  
President



Mass flow controller\* (MFC) is one of the main products of HORIBA semiconductor business. Our MFC business has grown to expand market share and drive overall HORIBA performance, even in the face of the cyclicity known as the 'Silicon Cycle' in the semiconductor market. HORIBA STEC Co., Ltd. (hereinafter HORIBA STEC) our leading group company in the semiconductor business, is responsible for the development, manufacturing, and sales of MFC. Under the leadership of Juichi Saito and Hideyuki Koishi, and with Dan Horiba taking over as the company's president from 2023, they looked back on their journey and discussed the future direction of the company.

## The History of our Main Product, Mass Flow Controllers

**D. Horiba:** At present, our main product in the semiconductor segment, MFC gains 60%\* market share worldwide. Meanwhile, we entered the semiconductor market with the introduction of MFC and particle detection systems. Can you look back on the evolution of the semiconductor business in HORIBA?

**Saito:** In early 1980s, HORIBA was making strides to enter the semiconductor market and initiated the 'PD Project' in 1982 for the development of system to rapidly detect particles on Reticle<sup>2</sup> (photomasks). In 1984, we successfully completed the first particle detection system, the 'PD-200'.

**Koishi:** We started to develop and manufacture MFC for the semiconductor market at the same period. Originally, when HORIBA STEC was named by "Standard Technology", we rolled out the MFCs to equip on standard gas generators which were used for calibration of air pollution analyzers.

**Saito:** At that time, we used to purchase MFCs from overseas manufacturers, however we achieved success in independent development of the first MFC made in Japan.

**D. Horiba:** So, HORIBA didn't develop MFCs specifically for semiconductor production equipment at the very beginning.

**Saito:** We determined that the MFC we developed for the standard gas generators could also be applied in the semiconductor manufacturing process. Upon developing MFC that could accurately measure and control gas flow rates, semiconductor manufacturers recognized our innovation, and it became a catalyst for the growth of our

semiconductor business. In the 1980s, many Japanese semiconductor production equipment manufacturers grew, and Japanese IC manufacturers became world leaders using those manufacturing equipment, our MFC took pride in playing a significant role in this achievement.

**D. Horiba:** That is to say, HORIBA's MFC business grew up together with Japanese semiconductor production equipment manufacturers. But today overseas equipment manufacturers account for a large share of the HORIBA's shipments.

**Saito:** Unfortunately, Japanese semiconductor device manufacturers were unable to adapt to market changes such as the rapid expansion of production capacity, gradually lost market share to the U.S. and South Korean manufacturers and slipped from their position as industry leaders. As a result, semiconductor equipment manufacturers in the U.S. and South Korea significantly grew. However, in the field of semiconductor manufacturing equipment, Japanese manufacturers have also leveraged their strengths, and our MFC business now exists in a balanced landscape. During the era of 200mm wafers<sup>3</sup>, HORIBA's MFC, like Japanese semiconductor device manufacturers, held the top position worldwide. However, as the industry transitioned to 300mm wafers, both Japanese semiconductor device manufacturer and HORIBA found themselves falling behind in the race to adopt new technological developments, resulting in HORIBA competing for the third position in global market.

**D. Horiba:** Nevertheless, we have regained the top share\* of the global MFCs market again.

**Saito:** When we experienced a significant drop in market share, we initiated a new project with the goal of developing unique MFCs unlike anything else in the market.

**Koishi:** Different type of MFC is employed depend on the type and flow rate of gas used. As entered into 300mm era, we went on to develop MFCs that could easily



*We successfully followed the trends of the next era through ceaseless upfront investments focused on development.*

**Juichi Saito**

HORIBA, Ltd.  
Executive Vice Chairman & Group COO

change the type and flow range of gas used, or so-called "multi-range, multi-gas compatible MFCs". We released the SEC-Z300 series, and then the SEC-Z500 series in 2003, which came to be adopted as standard by semiconductor production equipment manufacturers.

**D. Horiba:** Pressure MFCs are then introduced to the market.

**Koishi:** A series of contracts were signed in 2003 with Ferran Scientific and FuGasity in the U.S., which led to the development of a new concept MFC based on the pressure-related technologies owned by both companies.

\*All are HORIBA's estimates



JUICHI SAITO



**When the 2016 Kumamoto earthquake threatened the continued existence of our Aso Factory, I was very moved by everyone's encouragement.**

**Hideyuki Koishi**

HORIBA, Ltd.  
Director  
HORIBA STEC Co., Ltd.  
Director (Former President)

**Saito:** We acquired the intellectual property rights to the technology from the company in Reno called "FuGacity" and welcomed their engineers to join us. The tangible and intangible assets formed the basis for HORIBA's current research and development site in the U.S., the HORIBA Reno Technology Center.

**Koishi:** Development of pressure-type MFCs moved forward in the U.S., but production was carried out in Japan. The Japanese design team took the lead in moving the MFCs towards mass production, and collaborated with Reno members to make considerable changes to the internal design of the product. However, this presented major difficulties. It was around 2010 that we managed to generate business income utilizing the technology adopted in 2003.

**Saito:** During this period, the rapid digitization of society led to an explosive increase in data volume, which, in turn, drove the rapid advancement of flash memory storage capacity. The demand

for 3D NAND<sup>4</sup> flash memory led to increased complexity in the etching<sup>5</sup> process and a rising demand for equipment. While the epitome of semiconductor manufacturing equipment had long been represented by CVD<sup>6</sup> (Chemical Vapor Deposition), the rise of 3D NAND technology quickly made etching equipment the new trendsetter.

**D. Horiba:** The 3D NAND production process requires etching equipment capable of drilling narrow contact holes<sup>7</sup> in wafers. The fact that this equipment used HORIBA MFCs was made it a big driver of growth.

**Saito:** Even during challenging times when we lost market share, we continued to invest in R&D and introduced unique technologies, allowing us to lead the new technology trend.

**Driving HORIBA's Semiconductor Business**

**D. Horiba:** Looking back at the history of our semiconductor business, we can see that overseas business development was critical for business expansion.

**Saito:** When I was stationed in Sunnyvale California in mid 1980s, the size of our business was very small. Therefore, I took care all customers in the U.S. on my own, and I spent about half of my week traveling by plane. At that time making international calls to Japan was very expensive. I had no choice but to solve problems on my own, I sometimes spent days in a customer's clean room.

**Koishi:** My first assignment was in Taiwan. My task was mainly service maintenance, and I spent every day working in clean rooms at customer. There were many challenges at the time. I repaired damaged units at site instantly. Sometimes I took back them to the office for repair and returned to customer site the next morning. During overseas assignments, every time I returned to Japan, I could feel the change of our original place in Japan. It was interesting experience to get a sharper sense against the evolution thanks to overseas assignment.

**Saito:** "Standard Technology" was originally established through joint investment by multiple companies. As the company gradually grew, in 2005, it came fully under HORIBA Group as HORIBA STEC. Balancing HORIBA culture with maintaining the original Standard Technology culture posed a different set of challenge than business expansion. I believe this was the period that HORIBA STEC changed the most.

**D. Horiba:** I'm sure you have faced challenging situations during your time in senior management. Can you share some of the most memorable incidents?

**Saito:** Undoubtedly, the 2009 Lehman Shock was a pivotal moment. The sudden drop in orders was completely unexpected. Simultaneously, we faced many quality issues, which forced us into staff reductions. The memories of those challenging times still linger as bitter experiences. Nevertheless, it was those experiences that brought our hearts together as one, and I believe it is because of that unity that we have the strong HORIBA STEC and semiconductor business we have today.

**D. Horiba:** Quality and delivery time are important in any industry, but I have impression that there is even strict requirements from customers in semiconductor market.

**Saito:** One day, we received strong complaint from customers regarding delay. At the time, Hideyuki Koishi, who was vice president at the time, took the lead in conducting an investigation, reported the results to customers, and taking steps to address the issue. As vice president, he took the lead himself in solving the problem. The fact senior management showed great agility brought high reputation from customers. Even when faced tough requirements, sincere response can create trust with customers and enable us to become "partner". This is just one example, but there were many similar experiences that have reinforced our trust.

**Koishi:** I must share you about the response at HORIBA STEC to the 2016 Kumamoto earthquake during my assignment as a president. HORIBA STEC's Aso Factory was faced a survival crisis, but I was struck by the HORIBARIANS at the factory having stood up for recovery. Many HORIBARIANS whose own houses were damaged in the earthquake still came in to get the factory running again and

resume production as soon as possible. The head quarter provided generous support to achieve the recovery. Our sales team also made effort to explain the situation to customers, and negotiate to maintain relationship with customers. Many customers reacted to support us by adjusting their own production plan and waiting for deliveries from us, instead of switching to competitors. I strongly felt the support from everyone.

**The Future of the Semiconductor Business**

**Saito:** In January 2023, Dan Horiba, you took over the role of President of HORIBA STEC from Hideyuki Koishi. Dan Horiba, as the new president of HORIBA STEC please share your thoughts on how you intend to lead the company and our semiconductor business.

**D. Horiba:** Recently actions to deploy HORIBA's various technologies in the semiconductor market has been taking shape. At the same time, we need to accelerate the deployment of MFCs in other business field as well which means horizontal deployment of our MFC business. We have been good at responding steadily to the customers requirement at the forefront of the semiconductor market. This is due to the sense of responsibility which each HORIBARIAN at HORIBA STEC has approached their work, and has made our MFC business what it is today.

However, I think that rolling out our MFC business to other business fields will require us to look for an entirely new approach. I would like to take current leveling-off situation positively in the semiconductor market and take new initiatives with agility.

**Koishi:** For a long time, we have been trying to keep our MFC business less than 80% to the semiconductor market and increase 20% or more to other markets. However, when the semiconductor business becomes busy, everyone tends to become too focused on semiconductors. It is important to somehow exercise restraint in this regard. It may be necessary to go back to the

basics of how we handle fluid control technology, and reconsider our business itself.

**Saito:** Reflecting on our past, it becomes evident that it was the establishment of operations in Reno that contributed to the strength of our current MFC business. Looking ahead, we believe that the need for such technology development hubs will arise not only in Japan and the U.S. but also in Europe, China, India, and other regions. As market diversification continues, having development hubs tailored to the specific requirements of each market will further fortify our business.

**Koishi:** We have been gathering exceptionally talented employees both in Japan and globally, both in terms of technology and sales. We look forward to their continued involvement in the overall semiconductor business moving forward.

**D. Horiba:** Customers' expectations for technological innovation are growing, not only for the fluid control technology that is HORIBA STEC's core competence, but for HORIBA's various other technologies as well. I promise further development of the MFC and semiconductor businesses which both of you and other senior members has developed. At the same time, I also promise to clarify our vision for the next stage.

(Conducted March 2023)



**Expectations are growing not just for fluid control technology, but for HORIBA's various other technologies as well.**

**Dan Horiba**

HORIBA, Ltd.  
Senior Corporate Officer  
HORIBA STEC Co., Ltd.  
President



**Terminology**

1. Mass flow controller: A component used in semiconductor manufacturing processes to precisely control the flow of gases or liquids in supply lines
2. Reticle: A glass plate engraved with a circuit pattern and used when etching circuits in silicon wafers with lithography equipment in the semiconductor production process
3. Wafer: Material used as a substrate for semiconductor manufacturing
4. 3D NAND: Vertical loading of memory elements on a semiconductor substrate to increase memory density
5. Etching: Forming precise irregularities in semiconductors
6. CVD : Equipment for depositing thin films of approximately 10 nm to 1,000 nm on the surface of semiconductors
7. Contact hole: A hole for passing through a conductor to connect the wiring on the upper and lower

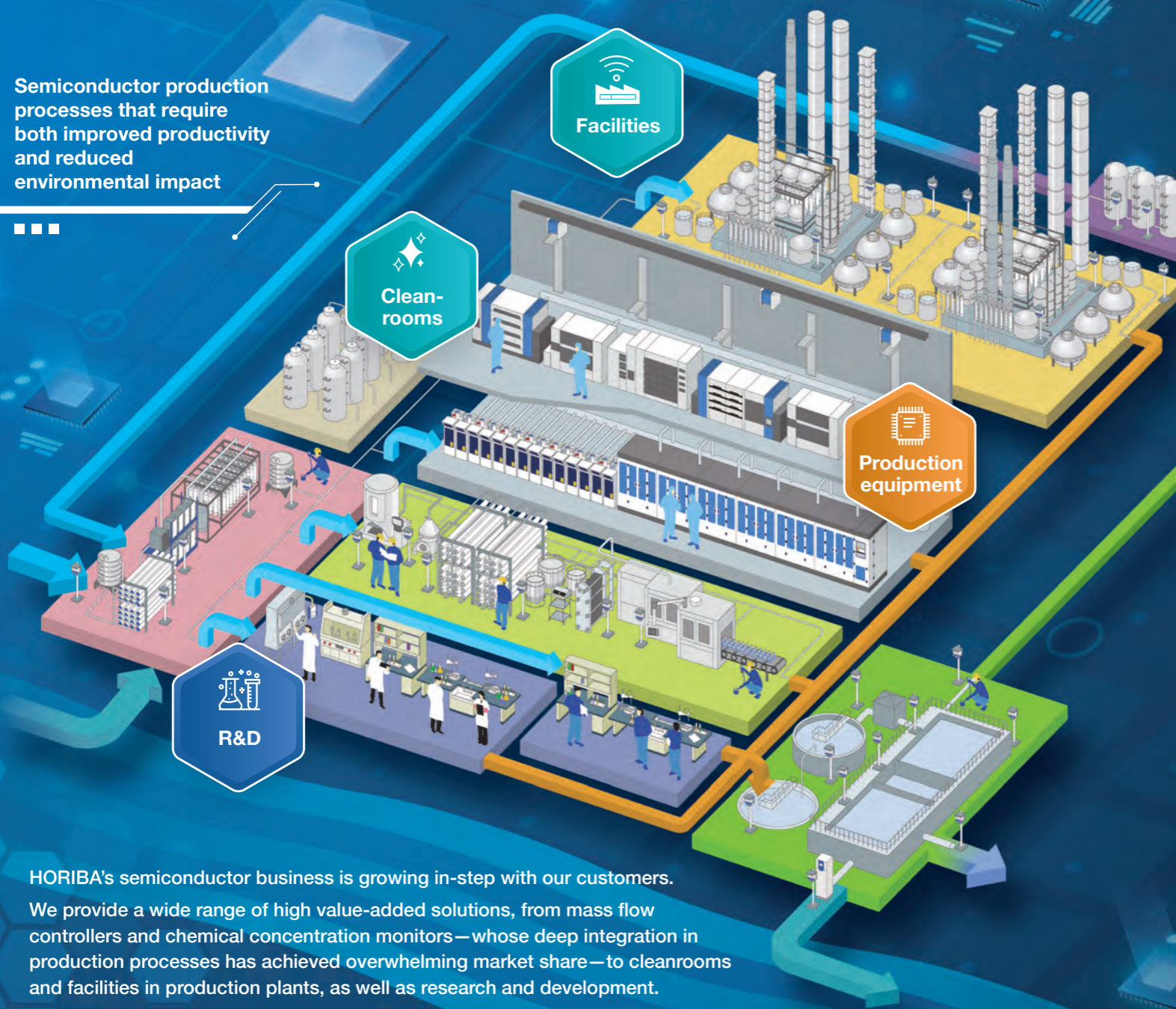
HIDEYUKI KOISHI

DAN HORIBA

# Expanding semiconductor business opportunities by cross-segment approach

## Bringing HORIBA products to all processes in the semiconductor industry

Semiconductor production processes that require both improved productivity and reduced environmental impact



### Key components and equipment in the semiconductor production process

Mass flow controllers and chemical concentration monitors are our primary products that have built a solid position in the market as indispensable components in semiconductor production equipment. Demand is also increasing for plasma emission monitors which detect the end point of the etching process, and particle detection systems used to remove foreign matter from wafer surfaces in the production process.



Mass flow controllers

Chemical concentration monitors

Plasma emission monitors

Infrared thermometers

Reticle/mask particle detection systems



### Monitoring airborne molecular contaminants (AMC) in cleanrooms

As semiconductor devices become smaller and more highly integrated, manufacturers seek higher levels of atmospheric cleaning inside cleanrooms, and consider contamination of equipment and materials by AMC\* to be a problem. HORIBA's AMC monitoring systems make the contamination level in cleanrooms visible through automatic and continuous measurement. This helps to increase semiconductor production yields.



AMC monitoring systems

\*Airborne Molecular Contaminant



### Continuous monitoring for smart factories

In the rapidly growing semiconductor industry, reducing the environmental impact of manufacturing plants is an urgent issue. HORIBA is helping advance smart factories with continuous monitoring provided by exhaust gas measurement and water quality monitoring technologies cultivated in our Process & Environmental Segment.



Highly sensitive silica monitors

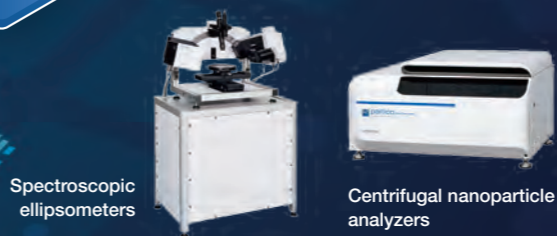
Gel-filled self-cleaning pH electrodes

Process laser gas analyzers



### Contributing to R&D through film thickness and CMP slurry evaluation

Many high-end HORIBA analysis and measurement equipment are used in the field of research and development. These include spectroscopic ellipsometers used to evaluate the thickness and quality of films in the film-forming process, and centrifugal nanoparticle analyzers used to evaluate CMP slurry\*.



Spectroscopic ellipsometers

Centrifugal nanoparticle analyzers

\*Chemical mechanical polishing (CMP) slurry

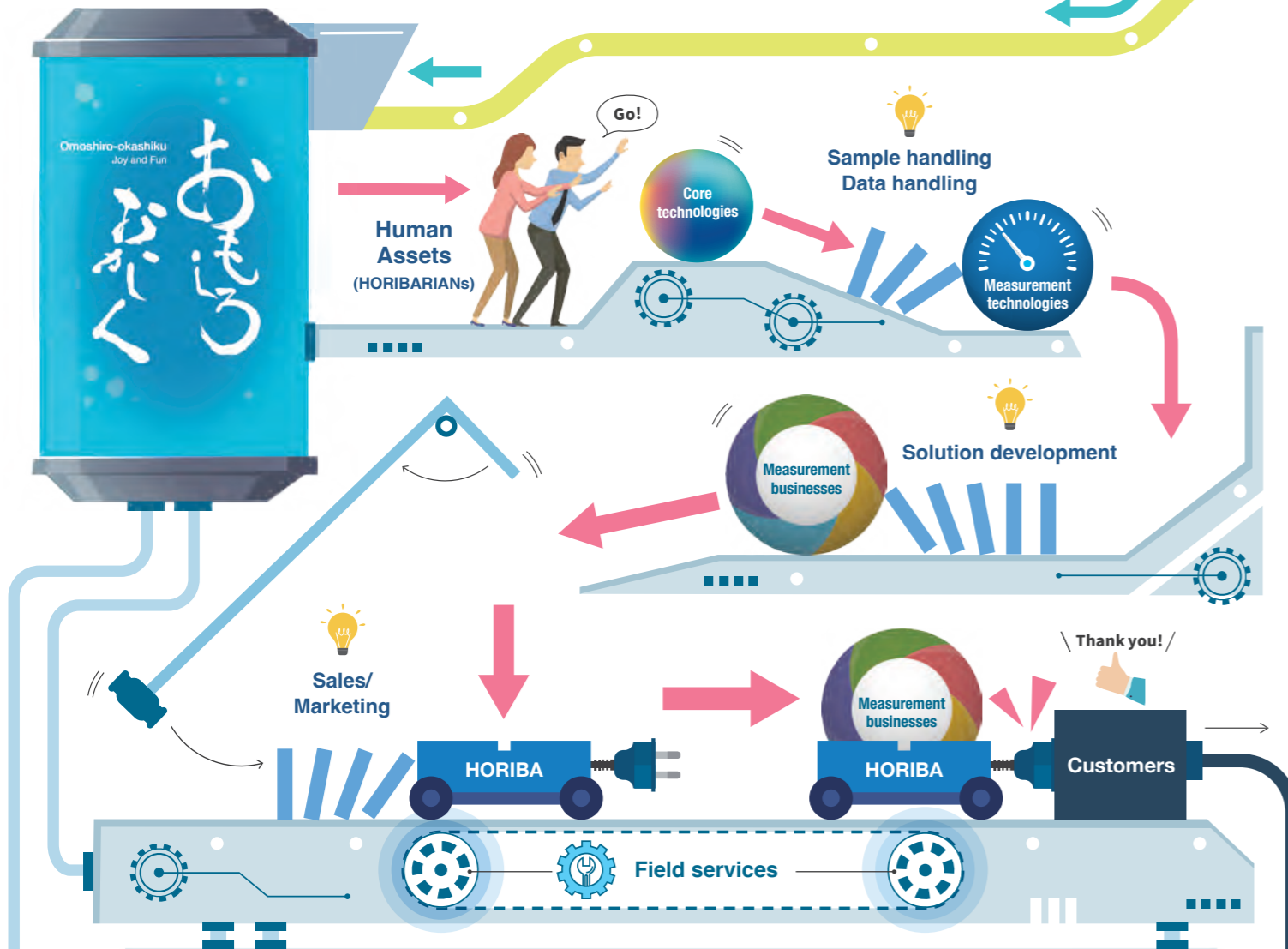
HORIBA's semiconductor business is growing in-step with our customers. We provide a wide range of high value-added solutions, from mass flow controllers and chemical concentration monitors—whose deep integration in production processes has achieved overwhelming market share—to cleanrooms and facilities in production plants, as well as research and development. HORIBA's products contribute to the sustainable growth of the semiconductor industry which supports modern society.



HORIBA's value creation cycle

# Value creation through technology and diversity of human assets

HORIBA supplies products with analysis and measurement technologies, which provide solutions to social issues. Technology and human assets support our business. HORIBA will partner with customers to contribute to building a better society and generating greater social value.



## Creating social value

— Contributing to the SDGs\*

Creating value by expanding business that addresses various social issues

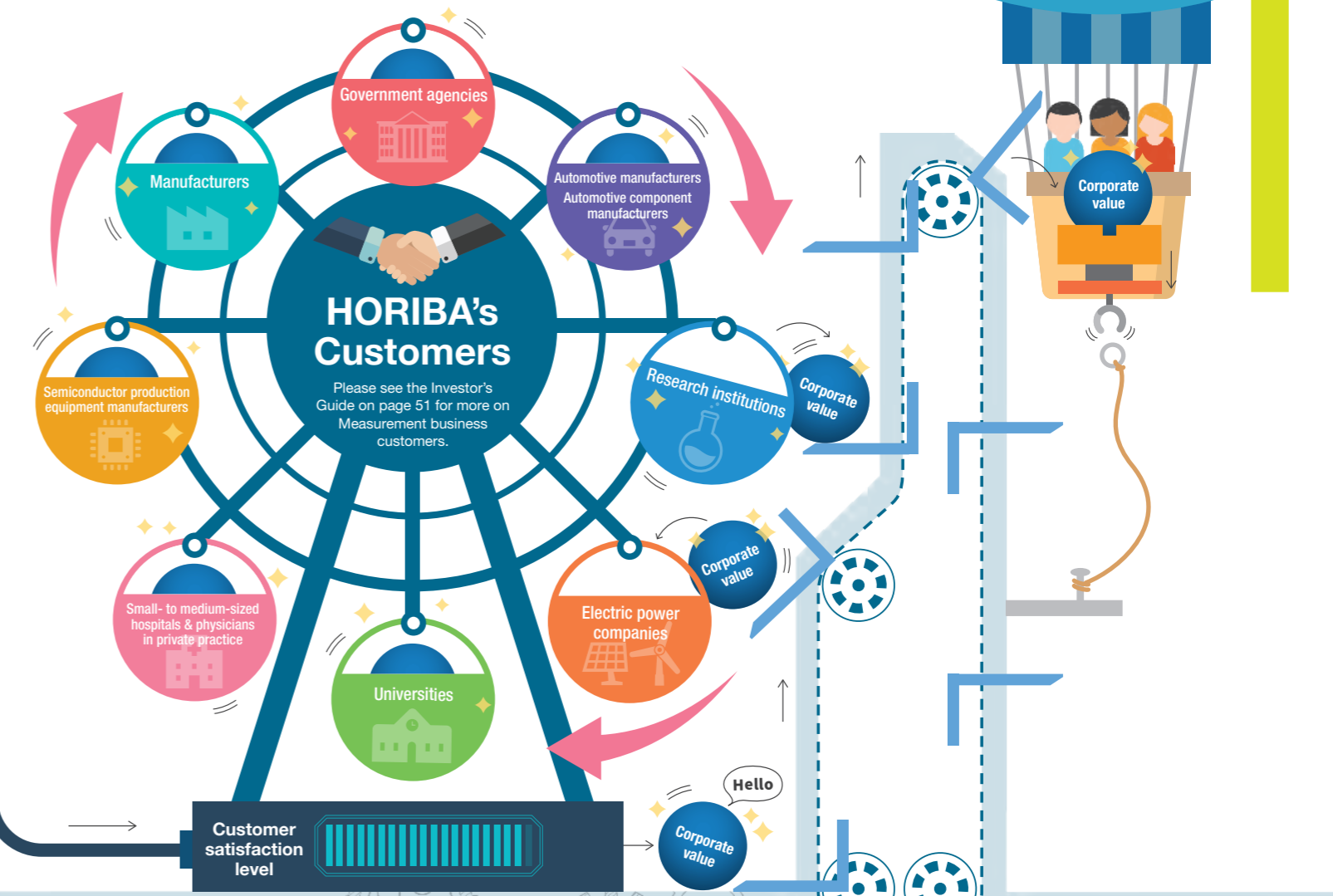
|                    |   |                                   |                               |
|--------------------|---|-----------------------------------|-------------------------------|
| Priority Measure 1 | 3 GOOD HEALTH AND WELL-BEING              | 6 CLEAN WATER AND SANITATION      | 7 AFFORDABLE AND CLEAN ENERGY |
| Priority Measure 2 | 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE | 14 LIFE BELOW WATER               | 15 LIFE ON LAND               |
| Priority Measure 3 | 5 GENDER EQUALITY                         | 8 DECENT WORK AND ECONOMIC GROWTH | 10 REDUCED INEQUALITIES       |

\*"SDGs" refers to the Sustainable Development Goals unanimously adopted by the United Nations General Assembly in 2015.



**MLMAP 2023**  
Mid - Long Term Management Plan

|                    |  |
|--------------------|--|
| Priority Measure 1 | <b>Market Oriented Business</b><br>To develop analysis and measurement solutions, utilizing HORIBA's core technologies, in the leading three business fields of megatrend<br><b>Three fields</b> Energy & Environment, Bio & Healthcare, and Materials & Semiconductor |
| Priority Measure 2 | <b>Solution Provider Beyond Life Cycle Management</b><br>To support customers' businesses from all aspects, from installation to replacement   |
| Priority Measure 3 | <b>HORIBA Core Values</b><br><b>The Next Stage of Super Dream Team</b><br>To enhance the organizational structure that fosters resilient human assets, which are the driving force of all business operations  |

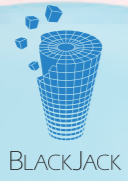




Various initiatives focused on human assets

# Various measures to support the activities of HORIBARIANS

The driving force behind business growth is the power of people. At HORIBA, we view our employees as valuable assets and have continuously striven to maximize the individuality and skills of HORIBARIANS. Going forward, we are committed to putting our corporate motto of "Joy and Fun" into concrete practice, while also building structures that allow each and every employee to shine.



## The BlackJack Project

HORIBA launched the BlackJack Project in 1997 with the purpose of changing employee awareness and behavior. To date, more than 13,000 project themes have been registered. Employees themselves select themes to tackle from many questions and issues, such as improving work efficiency, developing human assets, and strengthening organizational capabilities. Then they determine how things ought to be, and work toward organizational reform. Every year, we hold BlackJack World Cup to select the best themes of projects from each country. This provides an opportunity to report the results, and the motivations behind them, to the management team. It also plays an important role in sharing our corporate culture, experience, and knowledge across HORIBA globally.



Nine people from six countries were selected for the 2022 World Cup. The project at our headquarters in Japan won the gold prize for the first time in five years.



## Basic human resources policies

### Open and Fair

We ensure that important information and rules are shared openly so that there is free communication within the company. We provide fair opportunities for uniquely individual and diverse human assets to challenge themselves.

### HORIBA's five pillars of *omoi* \*

We firmly hold and implement the five pillars of *omoi*, to ensure each and every employee can personally attain our company motto of Joy and Fun. "Omoi" means an emotional feeling, passion, thoughts, enthusiasm, desire, aspiration, ambition, commitment, mission, and objective. We encourage our employees to have the following "Omoi," which is the essence of acting on "Joy and Fun" through their work.

- To be a part of a collaborative community, at the forefront of new ideas and creations.
- To achieve goals and make life memorable by fostering the highest intellectual potential.
- To reach across the globe to expand learning that captures key business developments, wherever they occur.
- To be proud of sharing what I do and what HORIBA delivers.
- To be helpful to the world and its people.

\* The Japanese word *omoi* is used in English as well, to engender shared values among global employees.

### Point-added policy

HORIBA's point-added policy doesn't confer any points unless an employee takes on challenges, even if they have not necessarily failed in their endeavors. Points are conferred for taking on challenges. If successful, further points are conferred. This system supports and recognizes ambitious human assets, while valuing the start-up mindset.

### Two-way communication

Information is not conveyed, it is shared. We employ various mechanisms, including global gatherings where ideas are directly voiced to management and birthday gatherings for employees, to remove the barriers of position and organization. This helps us to achieve true reciprocal communication.



## HORIBA COLLEGE

HORIBA COLLEGE allows HORIBARIANS to determine what programs they need, become lecturers themselves, and share their skills and experience within the company. Each participant asks themself, "What do I need to learn now?" This ensures that know-how continues to be passed on efficiently and systematically, and builds a foundation for the growth of many HORIBARIANS.

The FUN HOUSE, where HORIBA COLLEGE lectures are held, is a training facility that employees will want to visit. Located in a valley of abundant nature and greenery, it aims to provide participants with true value. We offer a program intended to transform participant knowledge in a first-class environment where all five senses are engaged.



## Promoting diversity

HORIBA launched our Stained Glass Project in 2014. This project portrays the company as a beautiful stained glass picture; each employee is a piece of stained glass with a unique color, shape, and size. We have inherited a culture that allows people to exhibit diverse personalities and talents, and believe that creating a suitable working environment for diverse people will create new value and lead to enhanced global competitiveness. We are also working to organically connect senior management, worksite employees, and the Human Resource Division, hold workshops for thinking about work styles and careers, change employee awareness through exchange with other companies, introduce systems that increase flexibility in working hours and location, and other initiatives.

Establishing a working group to envision the future. We regularly hold HORIBA HIROBA (town square) events that act as a place for dialogue and create opportunities to take the first steps towards tackling challenges.



## Deploying human asset development measures globally

We implement various measures such as our Career Challenge System that achieves optimal personnel rotation and allows HORIBARIANS to achieve their own career autonomy and fulfill their desires, through open recruitment within the company. Moreover, as we aim to produce even greater numbers of global leaders, we are pushing forward with personnel development measures that bring out the abilities of each HORIBARIAN. This includes promoting our GHE (Global HORIBARIAN Exchange) Program for international human asset exchange, which forms the core of our personnel development efforts.



Winnie Ho Xin Ni, who was dispatched from HORIBA, Ltd. to HORIBA ABX SAS on the GHE Program (back row, third from left)



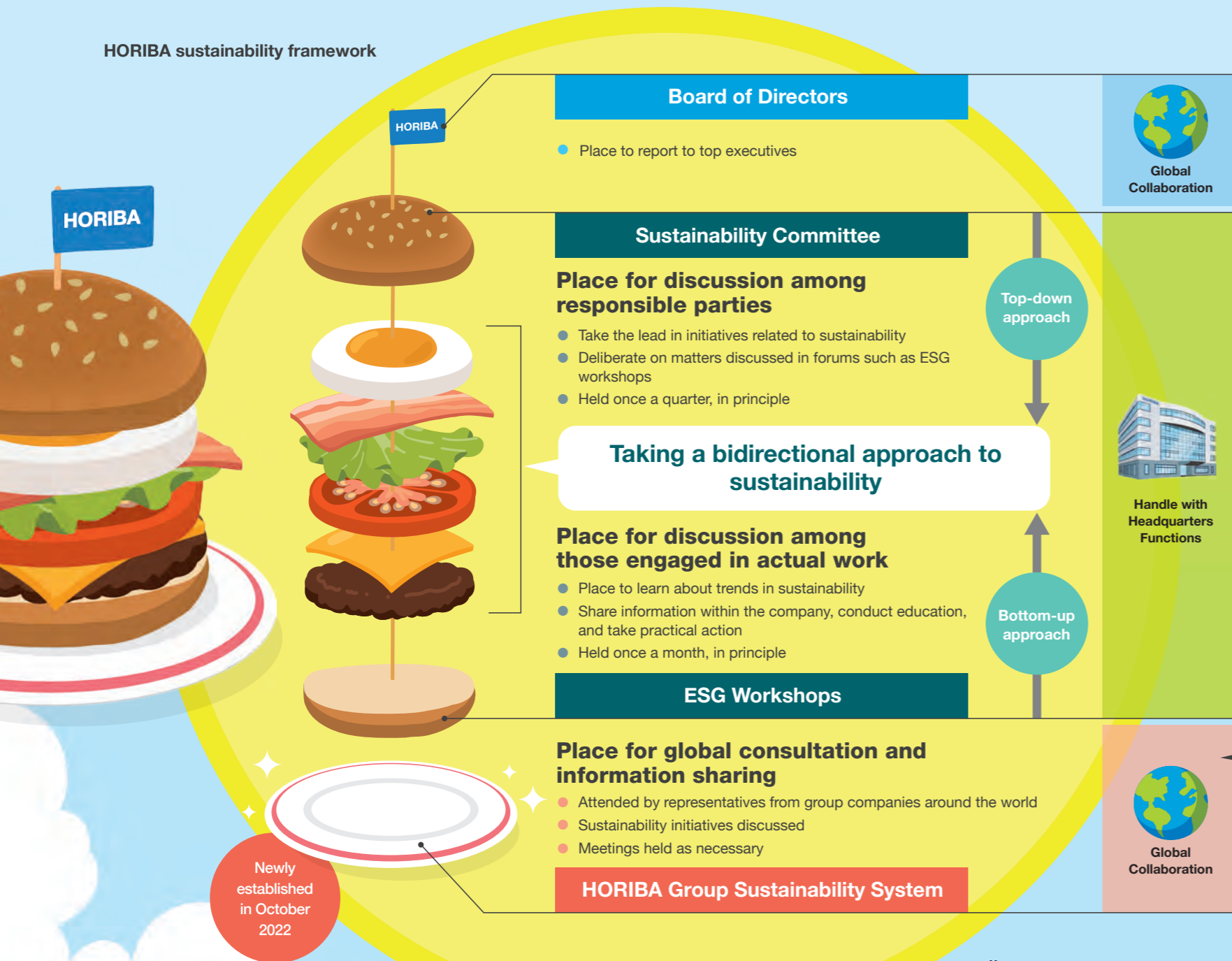
HORIBA approach to sustainability

# Promoting comprehensive company-wide initiatives

Approach to Sustainability

The HORIBA set forth the HORIBA Corporate Philosophy under the corporate motto "Joy and Fun." It expressed our basic position on improving corporate value in four areas: business operations, customer responsiveness, responsibility to shareholders and investors, and HORIBARIANS. The HORIBA Corporate Philosophy is also part of the HORIBA Sustainability Policy. By conducting business in accordance with this policy, we aim to increase our corporate value and contribute to the realization of a sustainable society.

HORIBA sustainability framework



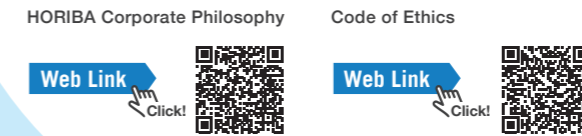
Newly established in October 2022

We disclose the detailed information related to sustainability on the HORIBA website.  
<https://www.horiba.com/int/company/social-responsibility/home/>



## HORIBA Corporate Philosophy and Code of Ethics

The HORIBA Corporate Philosophy spells out HORIBA's mission in society, and the Code of Ethics outlines eight guiding principles for doing business. These include respect for human rights and environmental issues. Both are written in English and form the basis of HORIBA's approach to sustainability.



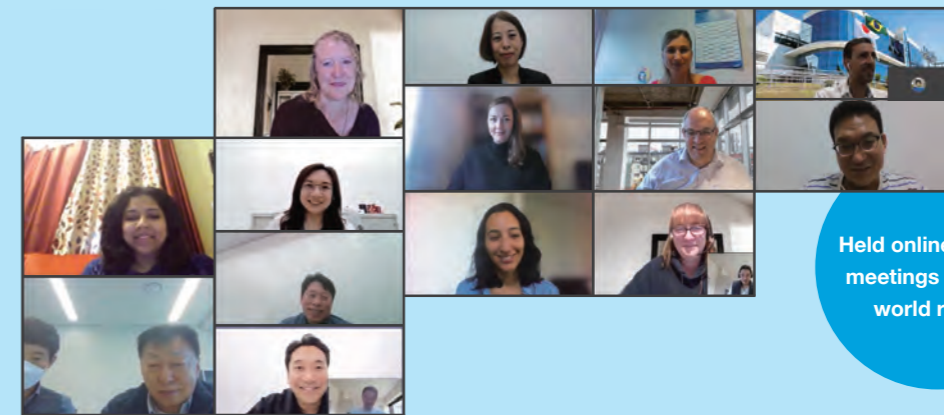
## Signatory to international initiatives

**United Nations Global Compact (UNGC)**  
 HORIBA, Ltd. has supported the initiatives of the United Nations Global Compact since we became a signatory in 2012 through the agreement of senior management.



## Increasing global collaboration – HORIBA Group Sustainability System

HORIBA established the HORIBA Group Sustainability System in October 2022 in order to promote initiatives for global sustainability. It is composed of 16 members selected by the management of group companies in Japan and overseas, and holds global discussions about sustainability. The kick-off meeting was held online and split into three parts, in the Americas, Europe, and Asia. As a global corporation, HORIBA regularly reviews our stance on sustainability.



Held online kick-off meetings for each world region

For society, people, and the earth



# We intend to further increase corporate value by pursuing profit through existing businesses while continuing to invest in growth.

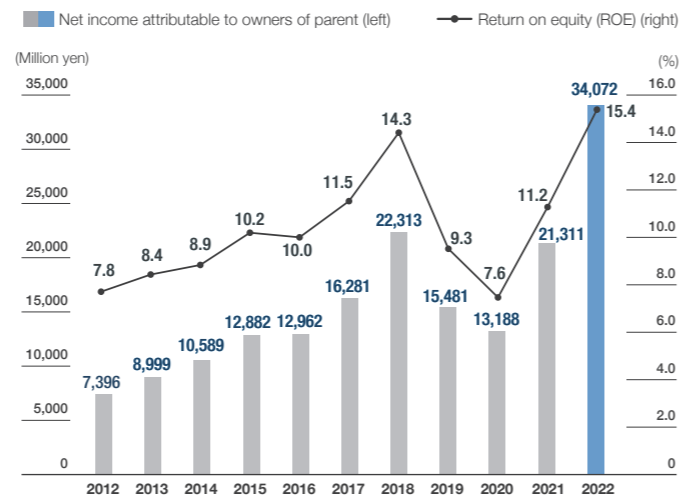
## Results of HORIBA – Looking back on the year ended December 31, 2022 –

In fiscal 2022, sales increased by 45.8 billion yen (20.4%) year-on-year to 270.1 billion yen. This was due to factors such as increased capital expenditure by semiconductor manufacturers, which significantly increased our sales to semiconductor production equipment manufacturers. Thanks to the increase in sales and depreciation of the yen, operating income increased by 13.7 billion yen to a total of 45.8 billion yen (up 43.1% year-on-year). Sales, operating income, ordinary profit, and net income attributable to owners of parent all set new records, and ROE reached 15.4%.

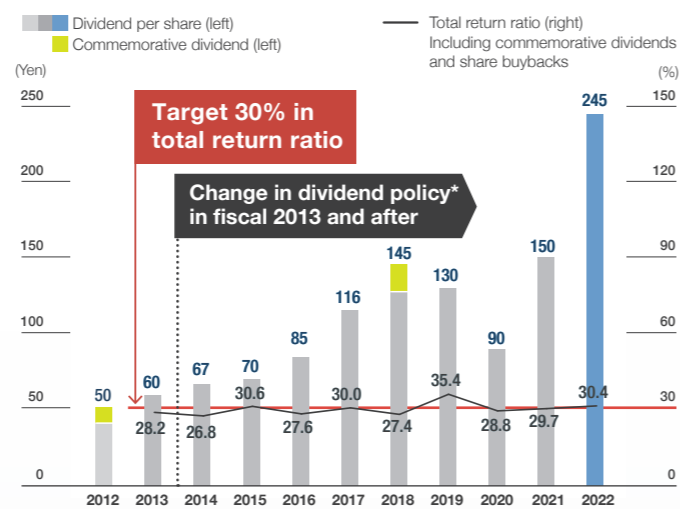
In accordance with these results, we decided to provide a dividend of 245 yen per share for fiscal 2022, our highest dividend ever. HORIBA has adopted a policy of setting its total shareholder return ratio, which includes dividends and share buybacks, to about 30% of consolidated net profit.

We intend to pursue profit through existing businesses while continuing to invest in long-term growth. We also aim to further increase corporate value, and provide sustainable dividends to owners (shareholders).

### Net income and ratio of net income to shareholders' equity (ROE)



### Dividend payments and total return ratio



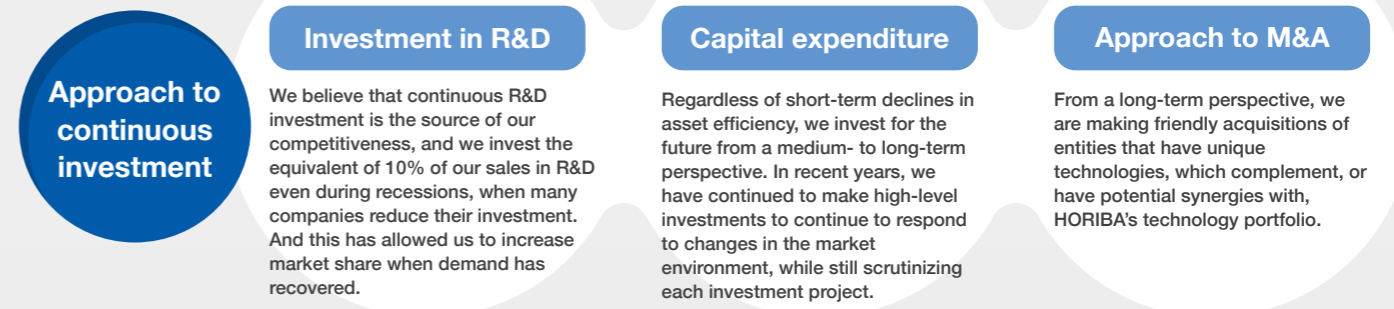
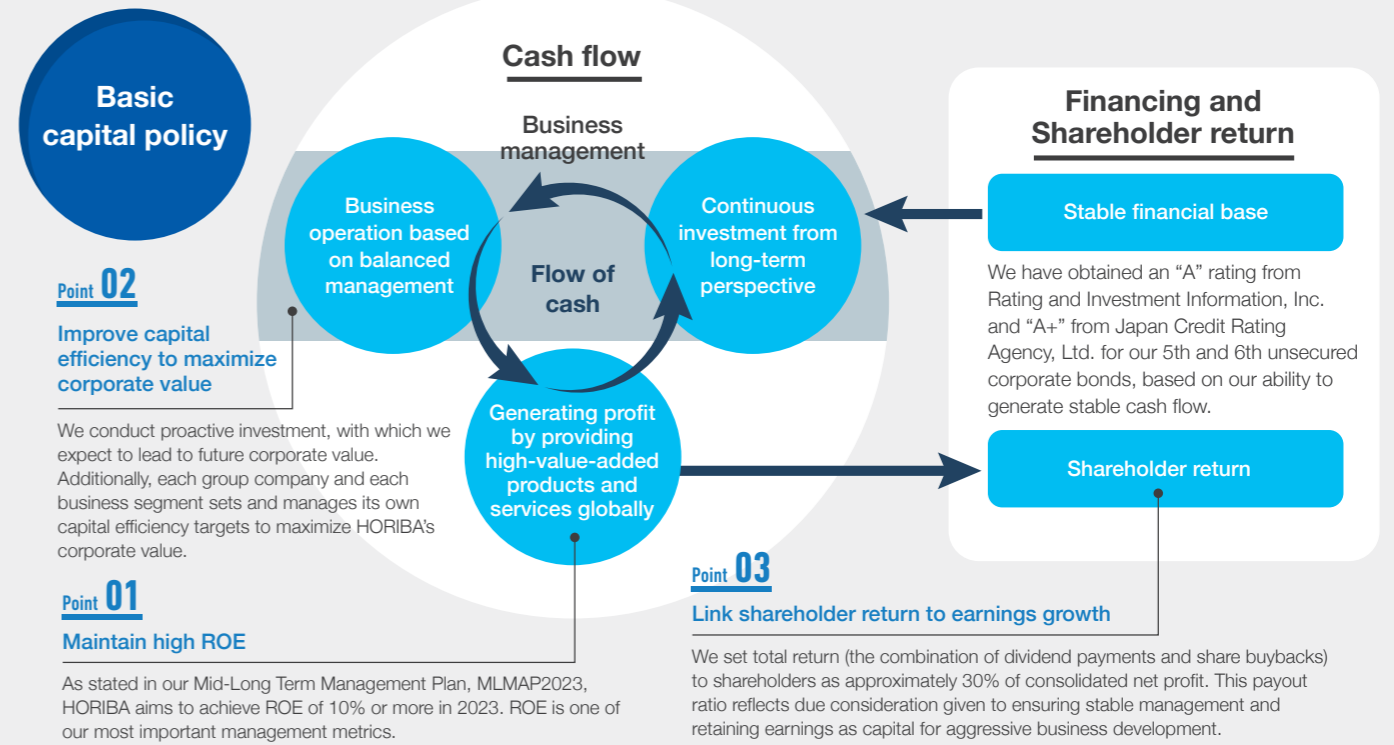
\*In fiscal 2013, we switched from a non-consolidated dividend payout ratio, which is based on non-consolidated net income at HORIBA Ltd., to a total return ratio, which is based on HORIBA's consolidated net profit.

## Masao Okawa

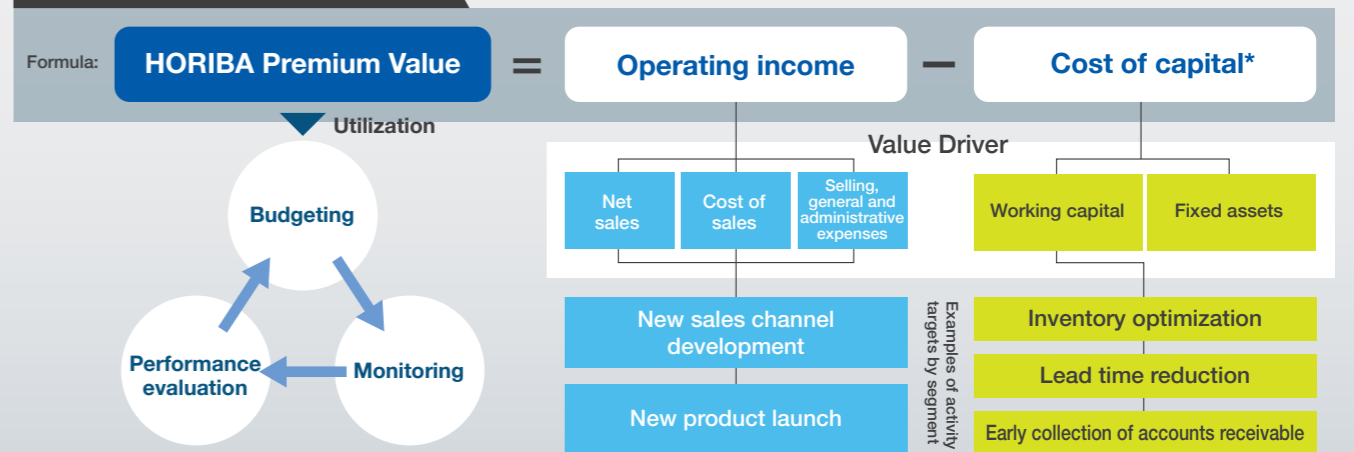
Managing Director and General Manager of Finance and Legal Division



## HORIBA's basic financial policy



### Tree of indices of asset efficiency



\*Cost of capital: Invested capital × In-house rate of cost of capital. We apply a unique benchmark that is based on HORIBA's WACC and comparable with operating income in connection with our cost of a capital target. Currently, we conduct this evaluation by applying the same rate to all regions and businesses and monitoring degrees of improvement.

## Company growth and cash management

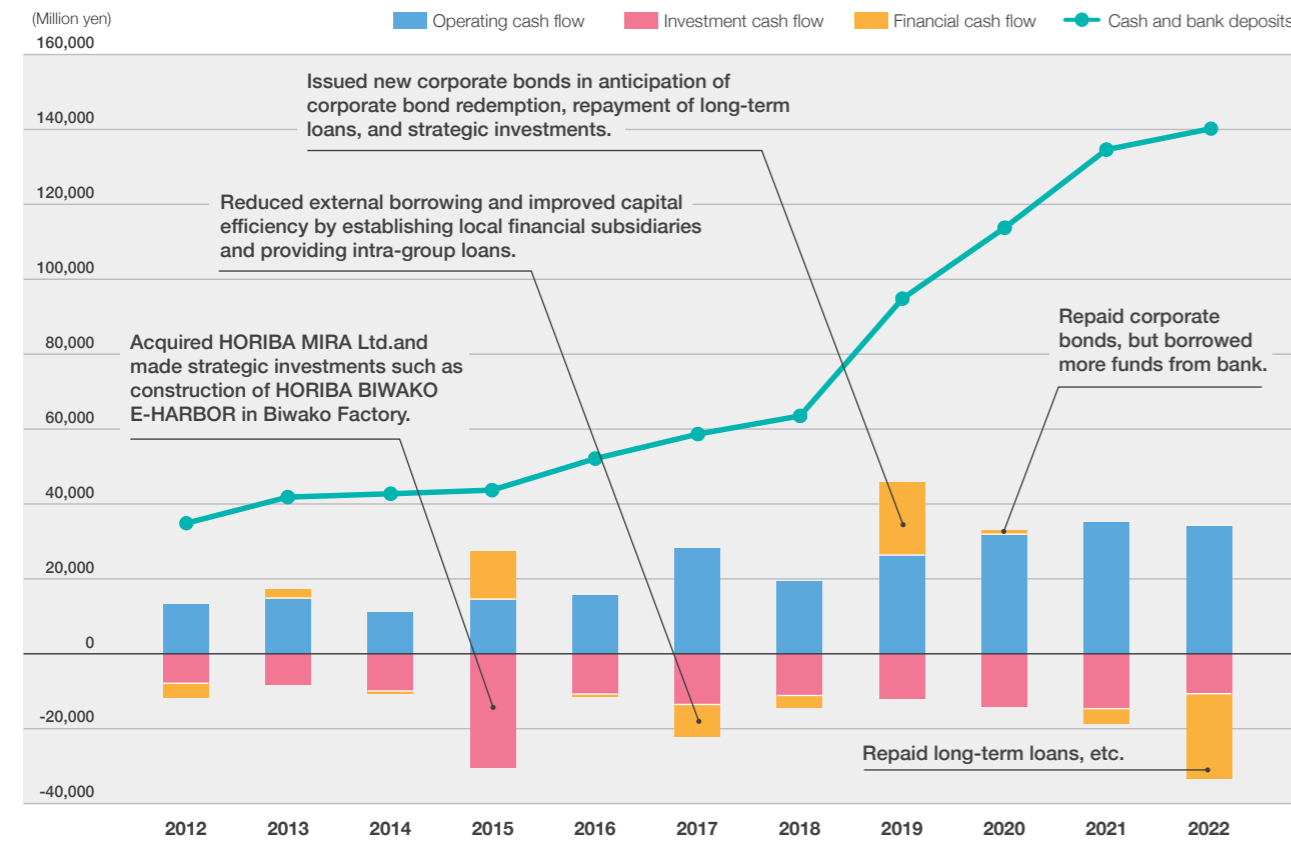
In 2020, COVID-19 spread rapidly around the world, and the global economy went into crisis mode. To prepare for such crises, HORIBA borrowed 20 billion yen from the bank to increase our level of cash on hand. Interest rates are currently rising as inflation accelerates in many countries due to the global increase in energy prices and difficulties with procurement. However, since we borrowed beforehand, we have been able to control cost for financing.

In addition, we believe it is crucial to increase on-hand liquidity in order to increase working capital as the business expands, make strategic investments such as acquisitions, and respond to temporary funding needs in the event of an emergency. Until now, HORIBA has obtained capital from business expansion and continued to make investments based on this capital, including acquisitions. We have also made continuous investments in companies following acquisition. Strategic investment is also essential to business expansion in the three fields identified in our Mid-Long Term Management Plan,

MLMAP2023. And we expect the scale of investment to be larger than ever.

On the other hand, we should not make investments that blindly seek to expand without thought for profitability. HORIBA has grown by acquiring technologies we do not have and that are directly adjacent to the technologies we do possess. Going forward, we will continue to comprehensively evaluate whether investments are worthwhile in the long run. Plus, an increase in slow moving inventory and stagnant account receivable will end up weakening the company's financial base. We aim to build a robust financial structure and pursue asset efficiency while taking advantage of our solid financial base. HORIBA will continue to make appropriately timed investments promptly that contribute to growth. To this end, the finance division is coming to play an increasingly important role for things like scrutinizing investment projects and managing cash flows. We will continue to contribute to the company's growth from a financial perspective.

### Cash Flows / Cash and Deposits



In addition to the continuous generation of operating cash flow, the balance of cash and deposits gradually increased due to improvements in capital efficiency and strategic financing. As of the end of 2022, the balance of cash and deposits came to 139.8 billion yen—four times higher than in 2012. In order to continue to promptly make appropriately timed investments that contribute to growth, we will continue striving to build a robust financial structure.

## Region-centric global operations

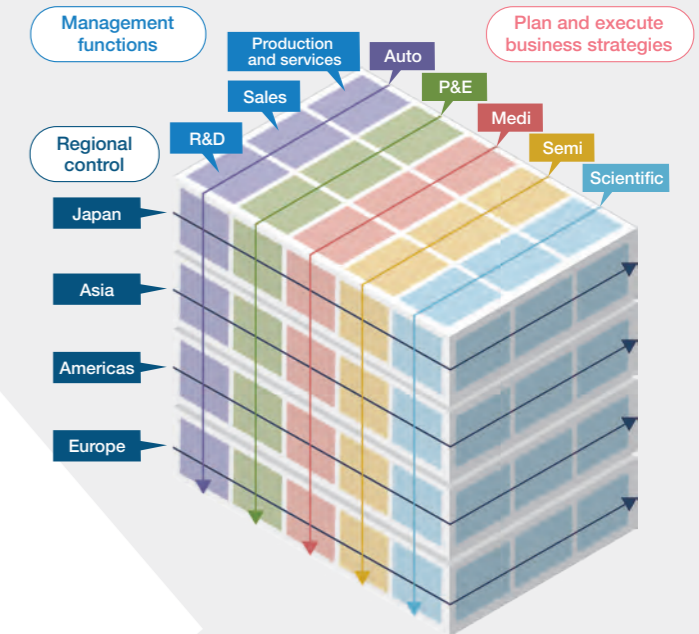
HORIBA's global operations are region-centric and respect the independence of each affiliate. This is why it is important for local management to understand HORIBA's policies and culture as they carry out operations.

HORIBA actively promotes communication between headquarters and the management of our overseas locations primarily through global meetings (Global Strategy Meeting/Global Budget Meeting) held twice a year. In 2022, we utilized online communication tools and invited some of our overseas senior management to Japan for the first time in two and a half years, where we held meetings in a hybrid format that blended real-world and online interactions. Participants were able to communicate face-to-face not just during meetings, but during meals and social gatherings after meetings as well. The experience reaffirmed the importance of such communication.

In the finance division, all CFOs at overseas locations are people from that country or region. And we build regional organizations capable of taking autonomous action rooted in the local area. Developments like the spread of COVID-19 and Russia's invasion of Ukraine are making the international situation increasingly complex. However,

we will utilize the internal group network we have built up thus far to overcome difficult situations and provide appropriate support for business transformation.

### HORIBA's global matrix management



## Communication with investors

HORIBA conducts IR activities in line with our IR Activities Policy, determined by the Board of Directors in February 2016. It clearly explains, not only our management policies and conditions, but our corporate culture. By working hard to secure the understanding of owners (shareholders), we hope to earn their continued support as HORIBA fans.

Since the first quarter of 2020, we have held financial results briefings for investors and analysts online due to the impact of COVID-19. In 2022, as a full-fledged recovery from the pandemic began to come into sight, we held the financial results briefings in a hybrid format, with around 10 investors and analysts participating in-person at the showroom in the HORIBA Tokyo Branch Office and around 70 joining online. After the briefing, senior management had the opportunity to interact directly with investors and analysts who visited the Tokyo office and were able to realize the benefits of holding an event in-person for the first time in a long while. In the future, we will leverage the strengths of both real-world and online interaction, and continue to value building better relationships with investors and analysts by facilitating smooth communication.

2023 is the final year of MLMAP2023. As the technologies and customer requirements in each field continue to evolve at a rapid pace, I believe it is important to correctly understand and evaluate how HORIBA will change and progress through MLMAP2023.

We will propel our business forward in a way that allows us to flexibly demonstrate HORIBA's capabilities in various industries, without being bound to any particular segment. We aim to continuously improve our corporate value in cooperation with all of our stakeholders.

May 2023



Please see our website for our IR Activities Policy (Japanese only).

Web Link



# Corporate Governance

Corporate governance structure diagram



\*1 Number of corporate officers  
\*2 IMS: Integrated Management System

## Basic policy on corporate governance

Based on the corporate philosophy of Open and Fair, HORIBA has pledged to (1) establish an organizational structure that promptly responds to changes in the business environment, (2) improve its managerial monitoring of performance, and (3) enhance compliance-related arrangements. These objectives have the aim of establishing a world-class governance structure. At the same time, we are committed to establishing good relationships with all stakeholders, including owners (shareholders), customers, employees, and local communities. In addition to proper information disclosure, we seek to promote constructive dialogue with our owners, contributing to our sustainable growth and medium-to long-term improvement in corporate value.

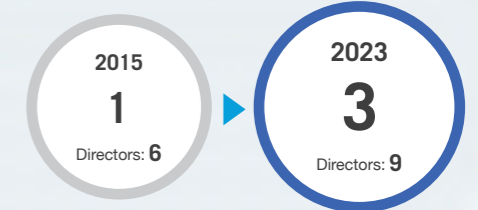
## Corporate governance system

HORIBA has adopted a type of organization defined in the Companies Act as a Corporation with Audit and Supervisory Board. Since its founding in 1953, HORIBA, Ltd. has appointed non-executive directors and audit and supervisory board members (outside & independent auditors) based on this organizational design. The aim of this is to avoid management with an inward-looking bias.

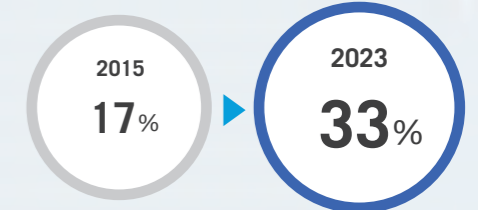
In 2022, the Board met 13 times, had energetic discussions, and made prompt decisions. HORIBA also introduced a corporate officer system in 1998 which enables smooth and agile execution of operations under the supervision and guidance of directors.

The Audit and Supervisory Board audits and monitors the work of the Board of Directors in an objective and appropriate manner. To this end, it cooperates with independent auditors, internal auditors (from the Group Internal Audit Office positioned directly under the Executive Vice Chairman & Group COO), and non-executive directors.

Non-executive directors



Percentage of non-executive directors on the Board of Directors



## Director/Audit & Supervisory Board Member skills matrix

| Director/<br>Audit & Supervisory Board Member name | Knowledge and insight that HORIBA considers particularly important |            |            | Three fields of expertise for Market Oriented Business as laid out in our Mid-Long Term Management Plan MLMAP2023 |                           |                  |
|--|--|------------|------------|---|---------------------------|------------------|
|  | Business administration  | Technology | Governance | Energy & Environment  | Materials & Semiconductor | Bio & Healthcare |
| Director   | Atsushi Horiba   |            |            |   |                           |                  |
|  | Juichi Saito   |            |            |   |                           |                  |
|  | Masayuki Adachi  |            |            |   |                           |                  |
|  | Masao Okawa  |            |            |   |                           |                  |
|  | Jai Hakhu  |            |            |   |                           |                  |
|  | Hideyuki Koishi  |            |            |   |                           |                  |
|  | Haruyuki Toyama  |            |            |   |                           |                  |
|  | Fumihiko Matsuda   |            |            |   |                           |                  |
| Audit & Supervisory Board Members                  | Tomoko Tanabe  |            |            |   |                           |                  |
|  | Atsushi Nakamine   |            |            |   |                           |                  |
|  | Keiji Yamada   |            |            |   |                           |                  |
| Sayoko Kawamoto                                    |  |            |            |   |                           |                  |

This skills matrix summarizes the knowledge, insight, and expertise required of the directors responsible for managing the company. The shaded areas indicate the strengths of each director.  
Governance ensures transparency in management, and targets skills in finance, accounting, and law, which are vital for appropriate disclosure of information to stakeholders.  
All directors have the necessary international management experience required for HORIBA's global operations.  
We review each item as appropriate based on the external environment and company situation.



Board of Directors

### Main agenda items in Board of Directors meetings

With appropriate involvement and advice from non-executive directors, the Board of Directors freely discusses and exchanges opinions on matters for resolution, reporting, and matters contributing to the long-term improvement of corporate value.

The progress of matters resolved by the Board of Directors is reported on a regular basis, and mechanisms are in place by which directors can monitor the status of their implementation.

#### Major matters resolved at and reported to Board of Directors meetings in 2022

- Investment projects
- Business transfers
- Financing
- Cross-shareholdings
- Decisions on executive personnel matters and remuneration
- Resolution on dividends
- Sustainability Committee Report
- Implementation of the Masao Horiba Awards
- Adapt to stricter export control regulations
- Product quality improvement
- Payment of invention rewards
- Status of group company management

#### Matters regularly reported throughout the year

- Progress on matters for resolution by the Board of Directors
- R&D schedules and achievements
- Status of sales/production/quality
- Organizational restructuring/major personnel changes
- Business performance

### Evaluating the effectiveness of the Board of Directors

From December 2022 to January 2023, we distributed a questionnaire to all nine directors and to all three audit and supervisory board members concerning the effectiveness of the Board of Directors. We received responses from all twelve people.

The questionnaire contained questions regarding the three roles and responsibilities of the Board according to Basic Rule 4 of the Corporate Governance Code. It asked, "Is the board adequately involved in directing major courses of action," "Is the board establishing an environment that supports suitable risk-taking by managerial staff," and "Is the board properly fulfilling its roles and responsibilities for supervision of directors and managerial staff." Most responses evaluated these matters as "Adequate" or higher. In addition, these members evaluated the composition of the Board (number of members, diversity in terms of gender and nationality, knowledge, experience, ability, etc.) as acceptable at present.

These results were analyzed, evaluated, and reported to the Board of Directors for discussion.

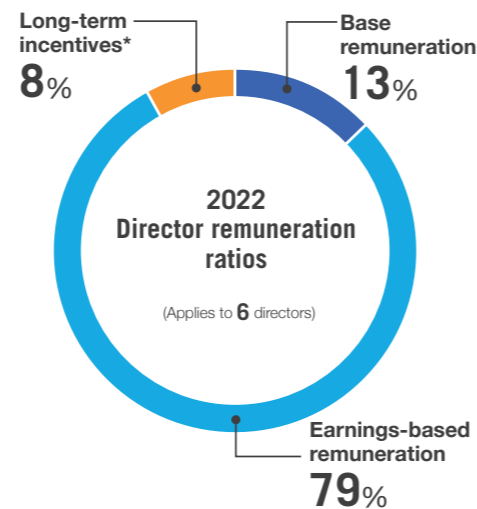
### Director remuneration

At HORIBA, director remuneration is aimed at helping to sustainably increase corporate value over the long term. The remuneration system is linked to shareholder profits, and is designed to provide a level of remuneration that will attract top managerial talent.

Remuneration for directors consists of base remuneration (regular fixed salary), earnings-based remuneration linked to the earnings results of each fiscal year, and transfer-restricted stock-based/post-delivery stock-based compensation linked to medium-to long-term earnings performance. We set the percentage of each remuneration based on the maximum limits of remuneration determined by vote at the general meeting of shareholders. In addition, the Board of Directors determines the amount of remuneration for each director in accordance with their position and the scope of their role. Remuneration for non-executive directors, however, consists strictly of base remuneration (fixed-amount salary), that, given the nature of their assignment, is not linked to earnings performance. Moreover, the 84th ordinary general meeting of shareholders held on March 26, 2022, decided to introduce a new stock-based remuneration system, in lieu of the stock option system, to allocate transfer-restricted stock and post-delivery stock.

The process for determining director remuneration involves the General Meeting of Shareholders approving a total compensation amount for directors, then the Board of Directors deciding on how this is distributed. We also established a voluntary Nomination and Remuneration Advisory Committee to handle director remuneration. It consists primarily of independent management members (three non-executive directors, and two internal directors). This allows us to obtain advice from an independent standpoint to improve objectivity and transparency in the decision-making procedures of the Board of Directors.

Breakdown of director remuneration (excluding non-executive directors)



\* Starting from 2022 we are introducing a new stock-based remuneration system which distributes transfer-restricted stock and post-delivery stock in lieu of stock options.

For more information on director remuneration, please see our Securities Report (Japanese only).

Web Link



### Relationship with owners (shareholders) and investors

#### Open general meeting of shareholders

Since our initial stock listing in the second section of the Osaka Securities Exchange in 1971, HORIBA has held the annual general meeting of shareholders on a Saturday so that a greater number of owners are able to attend. Afterwards, we host an informal gathering of shareholders with management. From 2020 to 2022, we called upon shareholders to refrain from attending the general meeting of shareholders due to the spread of COVID-19, and also canceled the informal gathering. Instead, we streamed the meeting online to maintain transparency.

#### Shareholder returns policy

HORIBA considers one of our most important tasks to be returning profits to our owners, while still keeping internal reserves sufficient to maintain a stable management foundation and provide for expansion of our business. Our basic policy is to make the total return of shareholders, including cash dividends and share buybacks, 30% of consolidated net income. We pay dividends twice a year. In 2022, we paid an interim dividend of 65 yen per share and a year-end dividend of 180 yen per share, for a total dividend of 245 yen per share. Internal reserves will be used as working capital for business expansion, investment in facilities and R&D, and basic funds to improve our balance sheet. This will be returned to owners through future business development.

#### Philosophy behind shares held for strategic purposes other than pure investment

HORIBA believes that collaboration with other companies is necessary for us to grow sustainably. Toward that end, we decide what shares to hold based on comprehensive consideration of matters including business strategy, the strengthening of relationships with business partners, and the maintenance of relationships with local communities. Every year, the Board of Directors confirms whether the amount of shares we hold for strategic purposes other than pure investment is appropriate. They also consider whether individual shares are appropriate to hold, by confirming whether they are fit for purpose, and whether the benefits and risks associated with them are commensurate with the cost of capital. When we recognize that shares are inappropriate for retention, we consider taking measures such as share curtailment.



IR Meeting

### General Meeting of Shareholders



#### Anti-takeover measures

HORIBA has not adopted any anti-takeover measures. Our "Basic policy on those who control decision-making over the financial and business policies of HORIBA," explains our way of thinking concerning the event that we are faced with a hostile mass acquisition of shares. This basic policy was announced in our Corporate Governance Report.

Please see our website for more information about our Corporate Governance Report.

Web Link



#### Constructive dialogue

We make efforts to clearly explain our corporate policy, financial condition, and corporate culture to our owners and ask for their understanding and continued support as fans of HORIBA. We also strive to disclose information based on the perspective of fair disclosure, so that various stakeholders have access to the same quality of information. HORIBA abides by the Basic Policy for Constructive Dialogue with Shareholders as announced on our website.

Please see our website for information about our Basic Policy for Constructive Dialogue with Shareholders (Japanese only).

Web Link



#### Status of IR-related activities

##### For analysts and institutional investors

- Financial results briefing: held four times per year
- Visitations and individual interviews (within Japan): about 180 times
- Visitations and individual interviews (overseas): about 120 times

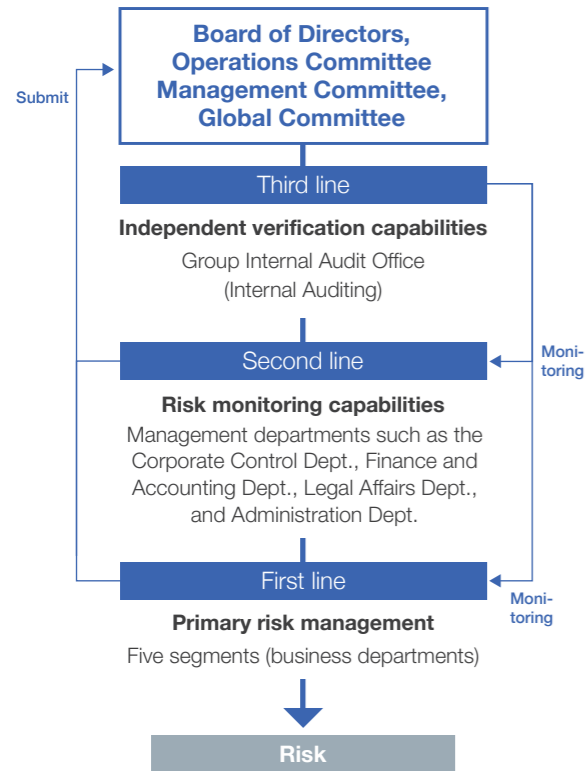
##### For individual investors

- Briefings, etc.: held about two times per year

## Risk management



### Risk management system — Three Lines Model



### Risk management system

We have created a risk management structure known as the Three Lines Model. The first line, HORIBA's five segments (business departments), provides active risk management. The second line, management departments, such as the Corporate Control Dept., Finance and Accounting Dept., Legal Affairs Dept., and Administration Dept., provides risk monitoring capabilities. And the third line, the Internal Audit and Group Internal Audit offices, provides independent verification capabilities. Our business departments and management departments are always aware of the individual business risks both inside and outside Japan. When appropriate, they report important matters at the Global Strategy Meeting/Global Budget Meeting which bring together the Board of Directors, Operations Committee, Management Committee, and the management of our locations outside of Japan. This ensures that senior management can make decisions and share information in a timely manner. In addition, the Internal Auditing department periodically monitors the effectiveness of the risk management system, and the way the business departments and management departments are handling risks, from an independent standpoint. When necessary, it reports its findings to the Board of Directors and Audit & Supervisory Board.

We also formulated the Basic Rules for Group Risk Management to strengthen our risk management system. These rules classify risks into the following categories: risks for each segment, risks related to business, risks related to development and manufacturing, and risks related to finance. They also establish the management system for these risks, and the system of responsibility in the event of a crisis. We have also established the HORIBA Group Risk Control Committee, which includes our major group companies in Japan.

### Business and other risks

To identify critical risks, the business and management departments selected individual risks for HORIBA, based on the risk items specified in the HORIBA Group risk management regulations. They scored each risk on a three-point scale according to its likelihood of occurrence and the impact on operations. Then, they created a risk map by organizing the risk items they had scored. This was then deliberated on by the HORIBA Group Risk Control Committee.

The shaded areas of the risk map shown on the right indicate the risk items that HORIBA has identified as critical risks.

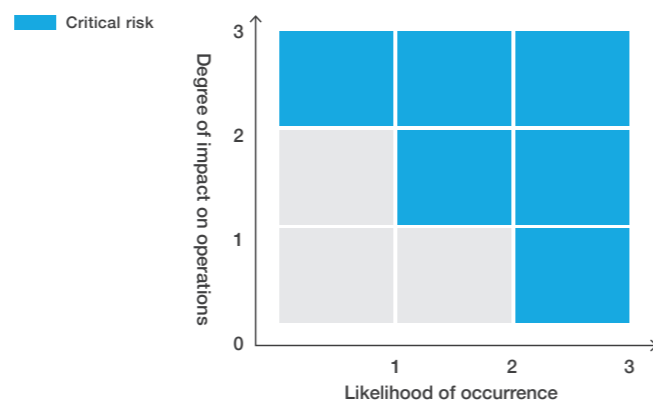
These critical risks are broadly divided into "risks for each segment" and "risks for the entire company." The critical risks facing the entire company are listed in the table on the right. We have also disclosed these risks in our Securities Report.

Please see our website for more information about our Securities Report (Japanese only).

Web Link



### HORIBA risk map



### HORIBA critical risks (Risks facing the entire company)

- Risks related to currency exchange
- Risks related to the international situation
- Risks posed by changes in performance and financial position due to acquisitions and alliances
- Risks related to information security
- Risks related to intellectual property rights
- Risks related to rises in raw materials prices and supply disruptions
- Risk of impairment loss for fixed assets
- Risks related to pandemics
- Risks related to climate change
- Risks related to business and human rights

## List of Management Members

(as of April 1, 2023)

### Board of Directors

#### Atsushi Horiba

Chairman & Group CEO



In 1971, Atsushi Horiba joined OLSON-HORIBA Incorporated, a U.S. joint venture of HORIBA, Ltd. In 1977, he returned to HORIBA, Ltd. after receiving a master's degree in Electronic Engineering from the University of California, Irvine Graduate School. He was appointed President in 1992, and has concurrently served as Chairman, President and CEO since 2005. In 2018, he was appointed Chairman and Group CEO.

He has been invited to serve as a member committees such as the Ministry of Economy, Trade and Industry's Industrial Structure Council and Manufacturing Industry Committee, the Cabinet Office's Advisory Panel on the Modalities of Government and Administration. He has also served as Chairman of the Japan Electric Measuring Instruments Manufacturers' Association and President of the Japan Analytical Instruments Manufacturers' Association. At present, he devotes himself to stimulating industry and the local economy by serving as Vice Chairman of the Kansai Economic Federation, Vice Chairman of the Kyoto Chamber of Commerce and Industry, and Chairman of the Kansai Science City Construction Promotion Conference.

He was awarded the L'Ordre National du Mérite (Officier) in 1998 and the L'Ordre National de la Légion d'Honneur (Chevalier) in 2010 by the French government, in recognition of his contributions to the development of science, technology, and industry in France. He was also awarded a Doctor Honoris Causa degree by the University of Montpellier, France in 2015 and received the Order of the Rising Sun, Gold Rays with Neck Ribbon in 2019 from the Japanese government.

#### Juichi Saito

Executive Vice Chairman & Group COO



Juichi Saito joined HORIBA, Ltd. in 1982. After a few years as an electrical engineer gaining experience designing automotive emission testing systems, he was transferred to the U.S. where he was in-charge of sales and service for the Semiconductor and Automotive sectors. He was then assigned to new product planning for the Scientific and Process & Environmental sectors at our U.S. headquarters in Irvine. Upon his return to Japan in 1992, he served as General Manager of Automotive R&D. In 1998, he moved back to the U.S. and went on to become President of HORIBA Instruments Incorporated in 2002. In 2004, he moved to HORIBA STEC Co., Ltd., where he took charge of strengthening the Group's Semiconductor segment. In 2010, he returned to HORIBA, Ltd., where he was appointed Executive Vice President in 2013, and Executive Vice Chairman and Group COO in 2018. Since 2021, he has also been Chairman of Supervisory Board of HORIBA Europe Holding SASU in France.

In addition, he serves as Chairman of the Japan Electric Measuring Instruments Manufactures Association, Vice Chairman of the Japan Scientific Instruments Association, and as President of the Kyoto Scientific Instruments Association.

#### Masayuki Adachi, Ph.D.

(Doctor of Engineering)

President & COO



Masayuki Adachi joined HORIBA, Ltd. in 1985. He worked to develop new products for the Engine Measurement Systems Division, before serving as Department Manager of R&D, General Manager, and Corporate Officer. He then moved to the U.S. in 2007 as president of HORIBA International Corporation (now HORIBA Instruments Incorporated (the U.S.)). There he experienced the difficulties arising from the Global Financial Crisis in the U.S. After returning to Japan in 2011, he was appointed General Manager of the R&D Division, which directs the R&D departments of all segments. He joined the board in 2014, and served as President of HORIBA Jobin Yvon SAS (now HORIBA FRANCE SAS) and Chair of the Management Supervisory Committee. He became Senior Managing Director of HORIBA, Ltd. in 2016, and has served as President and COO since 2018. As President of the Japan Analytical Instruments Manufacturers' Association, Chairman of Industry Memberships to Create the Future with RIKEN, and Fellow of the Society of Automotive Engineers International, he has contributed to the advancement of the science and technology related to analysis and measurement, and to the promotion of science and technology in general, as well as industrial and economic development.



## List of Management Members

(as of April 1, 2023)

### Board of Directors

#### Masao Okawa

Managing Director



Masao Okawa joined the Bank of Japan in 1988. Before joining HORIBA, Ltd. in 2017, he served as General Manager of its Kyoto Branch, Chief Representative of its Frankfurt Office, and on loan to Harvard Law School (LL.M.) and the Bank for International Settlements (Basel, Switzerland). As General Manager of Finance and Legal Division at HORIBA, he has used the knowledge and global experience in finance and governance he gained at the Bank of Japan to build a global financial strategy. This included improving financing efficiency through financial holding companies outside of Japan, and working to strengthen compliance and corporate governance.

He also actively contributes to the vitalization of economy and industry by serving as a director of the Kyoto Association of Corporate Executives and as a director of the Tokyo Scientific Instruments Association.

#### Jai Hakhu, Ph.D.

(Doctor of Engineering)

Director



Jai Hakhu built up experience as Vice President at both Rockwell International Corporation and Varian Semiconductor Equipment Associates Inc. before working as Corporate Vice President and General Manager at Intel Corporation. In 2010, he joined HORIBA, Ltd. as an Executive Corporate Officer. He has been a Director since 2022.

He has held a number of important positions in our group companies outside of Japan, including Chairman & CEO of HORIBA Instruments Incorporated, President of HORIBA ABX SAS (France), and Chairman of HORIBA India Private Ltd. He has also worked as President and CEO of R.C. International LLC, a Chancellors Roundtable Member at the University of California, Irvine, and on the Board of Directors at both Montpellier University of Excellence (MUSE) and the University of Montpellier (UM). In addition to his extensive knowledge based on management experience at global corporations, he has led HORIBA's Medical-Diagnostic Segment in the United States, France, and India, and contributed to various aspects of HORIBA's global operations.

#### Hideyuki Koishi

Director



Hideyuki Koishi joined STEC Inc. (now HORIBA STEC Co., Ltd.) in 1985. Having gained experience in Sales Division at STEC Inc., and in roles such as Taiwan Branch Manager and International Sales Division Manager, he moved to the U.S. in 2006 as Executive Vice President of STEC Instruments Inc. (the U.S.). After returning to Japan in 2010, he served as Managing Director and Executive Vice President of HORIBA STEC Co., Ltd. before being appointed President in 2016. He also became President of STEC Korea, Ltd. that same year. He has served as an Corporate Officer and Senior Corporate Officer of HORIBA, Ltd. since 2012, and became a Director in March 2023.

Starting in 2016, he has contributed to the sustainable growth of the global electronics design and manufacturing supply chain as a member of the SEMI Japan Regional Advisory Board.

### Board of Directors (Non-executive)

#### Haruyuki Toyama

Directors (Non-executive)  
Independent Director



Haruyuki Toyama joined the Bank of Japan in April 1982. He graduated from the University of California School of Law (LL.M.) in 1988 and became a Visiting Scholar at Harvard Law School in 1989. He served as the Alternate Executive Director for Japan of the International Monetary Fund (IMF) from 2000, and subsequently held a number of other positions at the Bank of Japan, including General Manager of the Okayama Branch, Associate Director-General of the Payment and Settlement Systems Department, Director-General of the Financial Markets Department, General Manager for the Americas, and Director-General of the International Department. During his tenure at the Bank, he was involved in a number of international activities, including secondments to the U.S. Federal Reserve Board (FRB) and the European Commission (EC), and serving as a member of the Bank for International Settlements (BIS) Committee on Payments and Market Infrastructure and Markets Committee. He also served as a lecturer on Financial Laws at the Graduate School of Hokkaido University.

After leaving the Bank in 2014, he registered as a lawyer in 2015. In the same year, he became an Outside Director of Hitachi Construction Machinery Co. Ltd. (scheduled to leave office at the General Meeting of Shareholders on June 26, 2023\*). He joined the Iwata Godo law office in 2019 and brings a wealth of knowledge and experience in the field of international finance. He has been a Non-executive Director of HORIBA, Ltd. since 2021.

\*He left office at the General Meeting of Shareholders on June 26, 2023.

#### Fumihiko Matsuda, Ph.D.

(Doctor of Medicine)

Directors (Non-executive)  
Independent Director



Professor Fumihiko Matsuda obtained his Ph.D. in medicine from Kyoto University Graduate School of Medicine in 1990. After working as an assistant professor at the Center for Molecular Biology and Genetics and the Faculty of Medicine at Kyoto University, he joined the Centre National de Génotypage (CNG) in Evry, France in 1998, as the head of gene identification. He then received a joint appointment as a professor at the Kyoto University Graduate School of Medicine in 2003, and divided his activities between Kyoto and Paris for five years as he pursued his research in genomic medicine through the end of 2007. In 2008, he became the director of the Center for Genomic Medicine at the Kyoto University Graduate School of Medicine, and since 2020, has served as principal assistant to the president of Kyoto University.

Professor Matsuda has created two spin-off bio-venture companies, GenoConcierge Kyoto, Inc. in 2018 and RADDAR-J for Society Inc. in 2020. He serves as a Director (Chief Advisor) of both companies, contributing to active collaboration between academia and industry. He has been a Non-executive Director of HORIBA, Ltd. since 2021.

He also devotes himself to cultural exchange between Japan and France through involvement in artistic and cultural activities. In recognition of his achievements, contributions, and efforts to date, he received the Chevalier de l'Ordre National du Mérite of the French Republic in 2021. In January 2023 he was appointed Representative Director and Executive Director of the Foundation Pasteur Japan.

#### Tomoko Tanabe, M.D.

Directors (Non-executive)  
Independent Director



Dr. Tanabe graduated from the Kyoto Prefectural University of Medicine (KPUM) in 1996. After completing one-year internal medicine internship at the University Hospital at KPUM, she became licensed to practice medicine in the U.S. where she moved in 1997. During her 12-year stay in the U.S., she engaged in clinical medicine and medical education at the Perelman School of Medicine of the University of Pennsylvania, and taught at the University of California San Diego School of Medicine. Upon her return to Japan, she joined the Shinyukai Medical Group where she was first put in charge of women's health at Oike Clinic in 2009. She became a member of the board at Shinyukai Holdings in 2010, and in 2018, became the president of the Kyoto Medical Club. She is also currently a visiting professor in the Departments of Physiology and Integrated Physiology at the Kyoto Prefectural University of Medicine (KPUM), deputy director of Oike Clinic and head of the Ningen Dock Center. In June 2023, she also became one of the directors of the Japan Chapter of the American College of Physicians. Dr. Tanabe was appointed an Audit and Supervisory board member of HORIBA, Ltd. in 2020, and will serve as a Director from 2023.

Dr. Tanabe believes strongly in a holistic approach to clinical medicine, primarily focusing on preventive medicine and continuity of care. She also has a keen interest in promoting the careers of women and works to advance support for childcare. In 2010, she was one of the five founding members of the Center for the Promotion of Gender Equality at the Kyoto Prefectural School of Medicine.

# List of Management Members

(as of April 1, 2023)

## Audit & Supervisory Board members

### Atsushi Nakamine

Audit & Supervisory Board Member (Standing Auditor)



Atsushi Nakamine joined HORIBA, Ltd. in 1978. He worked in departments related to accounting and corporate finance, and built up his career at HORIBA Europe GmbH in Germany. Since 1995, he carried various projects to promote new business development, such as business alliance, acquisition, corporate foundation. In 2001, he became Executive Vice President & COO of ABX S.A. (now HORIBA ABX SAS (France)). He was appointed a Corporate Officer of HORIBA, Ltd. in 2002, and in 2005, became President & CEO of ABX S.A. Then, in 2008, he also became President of the newly established HORIBA Europe Holding SASU (France). After returning to Japan, he served as General Manager of Group Production Management and Division Manager of the IT & BPR Center of HORIBA, Ltd., and has been a Substitute Audit & Supervisory Board Member since 2018. He was appointed to serve as an Audit & Supervisory Board Member in 2020.

### Keiji Yamada

Audit & Supervisory Board Member (Outside) Outside & Independent Auditor



Keiji Yamada joined the Ministry of Home Affairs (now the Ministry of Internal Affairs and Communications) in 1977. He retired after serving as Director of the Cabinet Legislation Bureau, Director of the Kyoto Prefecture General Affairs Department, and Vice Governor of Kyoto Prefecture. He served four terms as Governor of Kyoto Prefecture starting in 2002 and four terms as President of the National Governors' Association from 2011. He has been a Professor at the Department of Interdisciplinary Studies in Law and Policy, Faculty of Law and Advisor to the President (present Special Advisor to the President) at Kyoto Sangyo University since 2018. He became a member of the Board of Directors in 2021.

In 2020, he was appointed an Audit & Supervisory Board Member of HORIBA, Ltd. He also serves as an outside director at Kawasaki Kisen Kaisha, Ltd., TOSE CO., LTD., and Nitto Pharmaceutical Holdings, Ltd. He is the President of the Kyoto Culture Foundation, which engages in financing and enlightenment activities related to the protection of cultural properties. It aims to foster more abundant creation and development of Kyoto culture, which has long been at the core of Japanese culture.

### Sayoko Kawamoto

Audit & Supervisory Board Member (Outside) Outside & Independent Auditor



Sayoko Kawamoto joined AMS Corporation in the year 2000 and now serves as a Director of the company. In 2010, she also became a Director of Ayaha Corporation. In 2022, having served as Deputy General Manager of the General Affairs Division and Deputy General Manager of the Business Management Division, she was appointed to Vice President and Representative Director of the company. She was appointed an Audit and Supervisory Board Member of HORIBA, Ltd. in March 2023.

She has extensive experience in management of a corporate group with various businesses including retail, manufacturing, real estate, hotels, and golf courses. She also serves as Director of the Kawamoto Education and Welfare Promotion Association, which aims to foster the sound development of young people by promoting education in schools and society, as well as improving culture and contributing to the development of educational administration and enhancing welfare promotion activities.

## Corporate officers

### Executive Corporate Officer

#### Takashi Nagano

Chairman of Supervisory Board of HORIBA Europe Holding SASU in France  
Chairman of HORIBA KOREA Ltd. (Korea)  
Automotive Board member

#### George Gillespie, Ph.D. (Doctor of Engineering)

Executive Chairman of HORIBA MIRA Limited. (U.K.)  
Automotive Board Leader

### Senior Corporate Officer

#### Dan Horiba

President of HORIBA STEC Co., Ltd. (Japan)

#### Hiroo Chihara

President of HORIBA Techno Service Co., Ltd. (Japan)

#### Yasuo Yamashita

General Manager of General Administration Division

#### Hiroshi Nakamura, Ph.D. (Doctor of Engineering)

General Manager of R&D Division

#### Toshiya Higashino

President & COO of HORIBA Instruments Incorporated (U.S.)

#### Laurent Fullana

President of HORIBA FRANCE SAS

#### Stuart Knight

President of HORIBA UK Ltd.

### Corporate Officers

#### Rajeev Gautam, Ph.D. (Doctor of Bio-Technology)

President of HORIBA India Private Limited (India)

#### Arnaud Pradel

General Manager of HORIBA ABX SAS (France)

#### Dale Poole

Executive Vice President of HORIBA Instruments Incorporated (U.S.)

#### Tadao Nakamura

In charge of Process & Environmental business

#### Hiroyuki Urabe

Director of Sales at HORIBA Europe GmbH (Germany)

#### Yuko Kimura

Chief Director & President of HORIBA INSTRUMENTS (SHANGHAI) CO., LTD.  
Chief Director & President of HORIBA (China) Trading Co., Ltd.  
Chief Director & President of HORIBA Technology (Suzhou) Co., LTD.

#### Declan Allen

Managing Director of HORIBA MIRA Limited.(U.K.)

#### Sal Atzeni, Ph.D. (Doctor of Analytical Chemistry)

Executive Vice President of HORIBA Instruments Incorporated (U.S.)

### Junior Corporate Officers

#### Kentaro Nishikata, Ph.D. (Doctor of Engineering)

President of HORIBA Advanced Techno Co., Ltd. (Japan)

#### Hitoshi Motokawa

General Manager, Finance and Legal Division Responsible for Financial Control

#### Maki Moriguchi

Deputy General Manager of General Administration Division

#### Masashi Nishimura

Corporate Officer at HORIBA Advanced Techno Co., Ltd. (Japan)

#### Haruhito Mori

Deputy General Manager of Energy & Environment Division






#### Kazuya Tsurumi

General Manager of Energy & Environment Division

#### Junichi Tajika

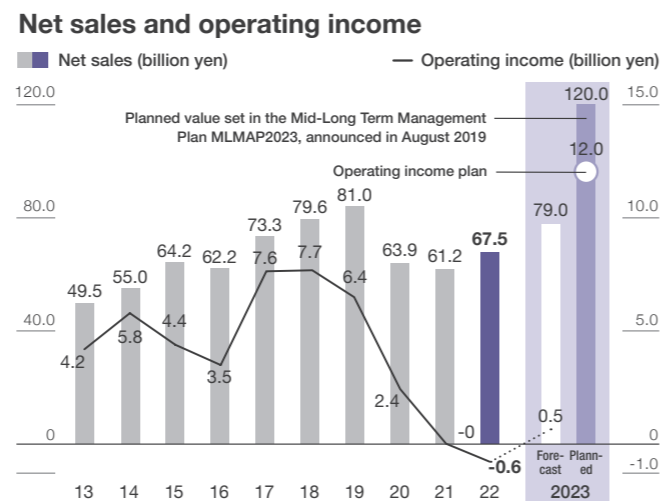
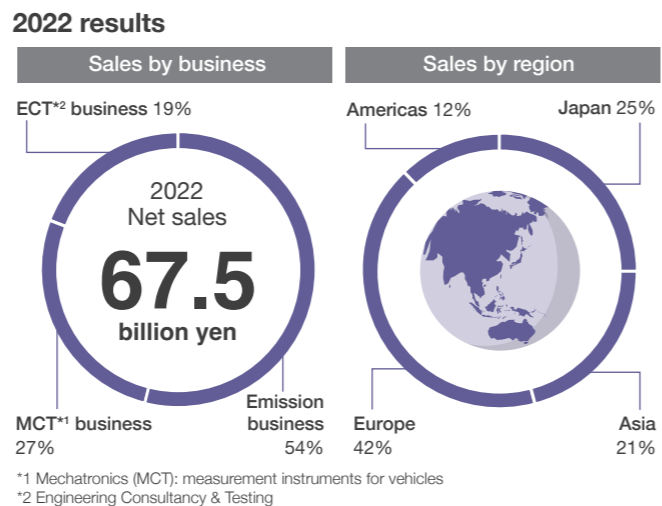
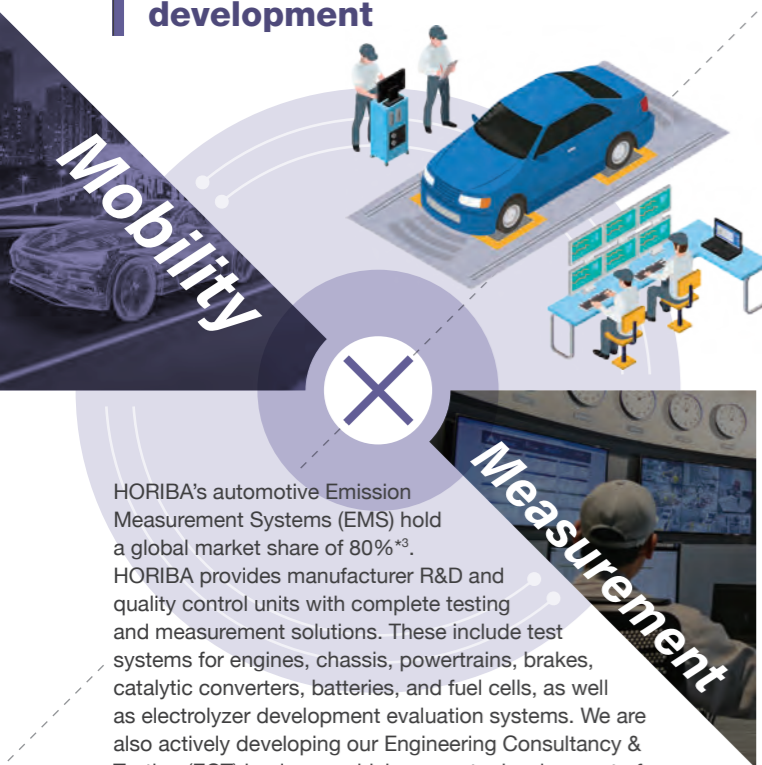
President of HORIBA KOREA Ltd. (Korea)

# HORIBA's five measurement businesses

|  | Automotive segment   | Process & Environmental segment  | Medical-Diagnostic segment   | Semiconductor segment   | Scientific segment  |
|--|--|--|--|---|---|
| <p><b>Major products and market share of each</b></p> <p>(Note: Market share for each product is HORIBA's estimate.)</p> | <p><b>Emission measurement systems</b></p> <p>Global market share: 80%<br/>Sales composition ratio: 38%</p> <p><b>Driveline test systems</b></p> <p>Global market share: 15%<br/>Sales composition ratio: 3%</p> <ul style="list-style-type: none"> <li>Onboard emission measurement systems</li> <li>Emission measurement for in-use vehicles</li> <li>Engine test systems</li> <li>Brake test systems</li> <li>Fuel cell test systems</li> <li>Battery test systems</li> <li>Vehicle development engineering</li> <li>Testing engineering</li> <li>Lease and management of R&amp;D facilities</li> </ul> | <p><b>Stack gas analyzers</b></p> <p>Market share in Japan: 50%<br/>Sales composition ratio: 36%</p> <p><b>H-1 series of industrial water quality analyzers</b></p> <p>Market share in Japan (For all water quality analyzers): 30%<br/>Share of segment sales (For all water quality analyzers): 36%</p> <ul style="list-style-type: none"> <li>Water quality analysis and examination systems</li> <li>Air pollution analyzers</li> <li>Environmental radiation meters</li> <li>Process measurement equipment</li> </ul> | <p><b>Hematology analyzers</b></p> <p>Global market share: 7%<br/>Sales composition ratio: 68%</p> <ul style="list-style-type: none"> <li>Hematology and CRP analyzers</li> <li>Hematology analyzers</li> <li>Immunology analyzers</li> <li>Clinical chemistry analyzers</li> <li>Blood glucose analyzers</li> </ul> | <p><b>Mass flow controllers</b></p> <p>Global market share: 60%<br/>Sales composition ratio: 83%</p> <p><b>Chemical concentration monitors</b></p> <p>Global market share: 80%<br/>Sales composition ratio: 13%</p> <ul style="list-style-type: none"> <li>Reticle/mask particle detection systems</li> <li>Residual gas analyzers</li> <li>Vaporizers</li> </ul> | <p><b>Raman spectrometers</b></p> <p>Global market share: 30%<br/>Sales composition ratio: 22%</p> <p><b>pH meters</b></p> <p>Market share in Japan: 50%<br/>Sales composition ratio: 8%</p> <ul style="list-style-type: none"> <li>Water quality analysis and examination systems</li> <li>Particle-size distribution analyzers</li> <li>X-ray fluorescence analyzers</li> <li>Elemental analyzers</li> <li>Fluorescence spectroscopy/fluorescence lifetime spectroscopy</li> <li>Optical components; spectrometers and detectors</li> <li>Gratings</li> </ul> |
| <b>Major customers</b>   | Automotive and automotive component manufacturers<br>Research institutions<br>Universities/Government agencies   | Electric power companies<br>Government agencies<br>Manufacturers   | Medical testing centers<br>Small-to medium-sized hospitals<br>Physicians in private practice   | Semiconductor production equipment manufacturers<br>Semiconductor device makers   | Manufacturers/Research institutions<br>Universities/Government agencies<br>Electric power companies   |
| <b>Product applications</b>  | Development of new gasoline, diesel, alternative fuel, and electrified powertrains<br>Certification and quality control of completed and in-use vehicles<br>Development engineering  | Measurement of drinking water, wastewater, and gaseous emissions<br>Monitoring of production process<br>Research and development   | Diagnostic testing<br>Medical checkup  | Controlling flow of gases and liquids, monitoring cleaning fluid concentrations in semiconductor manufacturing processes<br>Quality control inspections of semiconductors and LCDs  | Research and development<br>Product quality testing<br>Criminal forensics   |
| <b>Major risks and opportunities</b>   | Changes in emission regulations<br>Capital spending and R&D investments by the automotive industry   | Changes in environmental regulations by government agencies<br>Developments in energy efficiency improvement at factories and power generation plants  | Changes in total healthcare expenditures caused by changes in population and other factors<br>Changes in medical insurance systems in different countries  | Capital spending of semiconductor manufacturers and others in association with fluctuating demand for semiconductors<br>Production trends of manufacturers of semiconductor production equipment  | Changes in R&D budgets at government agencies, universities, and research institutions<br>Changes in R&D spending and capital spending for production in the private sector   |
|  |  <p>Automotive<br/>→ P.53</p>   |  <p>Process &amp; Environmental<br/>→ P.54</p>   |  <p>Medical-Diagnostic<br/>→ P.55</p>   |  <p>Semiconductor<br/>→ P.56</p>   |  <p>Scientific<br/>→ P.57</p>  |

# Automotive segment

Providing powerful support for the optimization of vehicle testing and acceleration of automotive development



HORIBA's automotive Emission Measurement Systems (EMS) hold a global market share of 80%\*3. HORIBA provides manufacturer R&D and quality control units with complete testing and measurement solutions. These include test systems for engines, chassis, powertrains, brakes, catalytic converters, batteries, and fuel cells, as well as electrolyzer development evaluation systems. We are also actively developing our Engineering Consultancy & Testing (ECT) business, which supports development of next-generation mobility technologies for applications such as electrified vehicles, autonomous driving, functional safety, and cybersecurity.

\*3 HORIBA's estimate

- Increased expenses due to higher procurement prices and investment in growth areas
- Growing demand for electrification and hydrogen energy

Segment sales increased due to higher sales in our MCT and ECT businesses. In terms of profit, we recorded an operating loss owing mainly to an increase in expenses due to expanded investments in growth areas, as well as rising purchasing prices. Meanwhile, we have begun selling high-precision hydrogen gas measurement equipment to contribute to the area of hydrogen energy. Demand in Europe is also growing for electrolyzer development evaluation systems and production inspection systems which generate hydrogen for renewable

energy. So, we are strengthening our ability to supply such equipment. In the area of connected and autonomous driving, we have begun full-scale operation of our comprehensive development and engineering facility at HORIBA MIRA Ltd. in the UK. We have established a framework for providing complex simulation testing and engineering services, and continue to carry out research and development into new products and services that can respond to the customers' needs of developing autonomous driving technologies.



SPCS-ONE Solid Particle Counting System

**Topic**

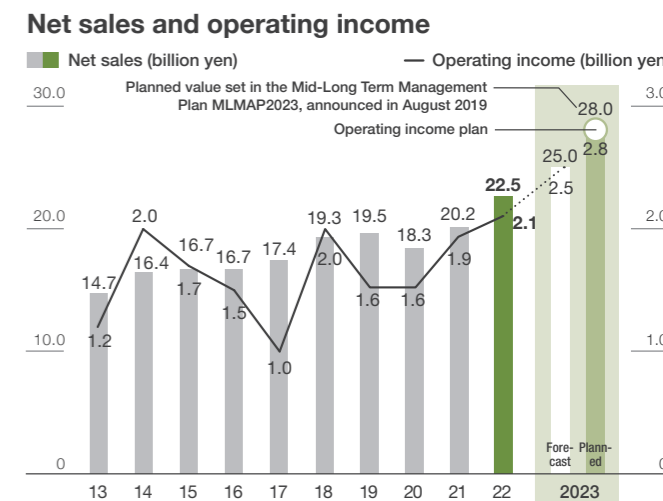
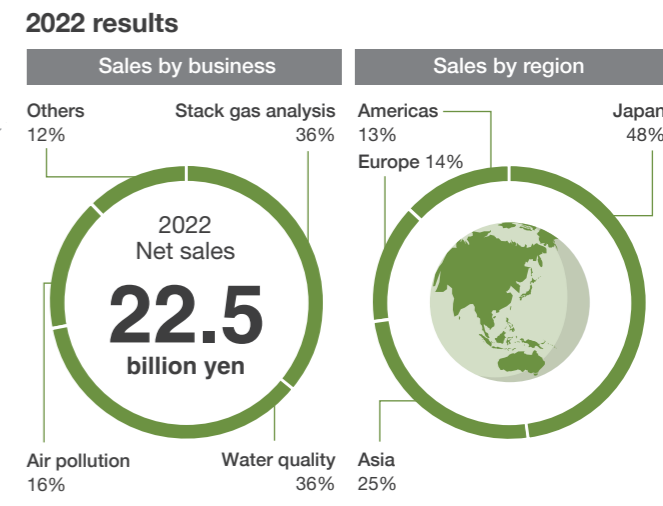
**Launched the SPCS\*4-ONE Solid Particle Counting System**

SPCS Series continuously measures solid particles emitted from sources such as vehicle engines. Since its release in 2009, it has been used in automotive development sites to continuously meet the measurement needs required by the latest regulations. This product can effectively measure brake dust, tire dust\*5 and particles with diameters of 10 nm or more (SPN\*610), which is being considered for regulation under Europe's new Euro 7 emission regulation. In addition, newly adopting our original comprehensive measurement platform, the HORIBA ONE PLATFORM, enables central management of measurements data from multiple devices. By enabling efficient operation, we are contributing to digital transformation (DX) at research and development sites.

\*4 SPCS: Solid Particle Counting System \*5 Dust generated by the wearing of brakes and tires \*6 Solid Particle Number

# Process & Environmental segment

HORIBA helps monitor global environmental preservation, and production and quality management processes



We supply a broad range of analytical and measurement instruments for analyzing air pollution, water quality, and soil quality. HORIBA products play an important role in many industries. They enable the measurement of gases and the monitoring of industrial wastewater in energy and heavy chemical industries like electric power, steel, and petrochemicals. They also allow for management of air quality of cleanroom and purified water for semiconductor use, and the monitoring and control of water quality in the medical, food, and cosmetics sectors. In essence, the analytical and measurement technology we provide helps to preserve the global environment, and leads technological innovation in support of public safety, security, and health. This is how we are helping to achieve a sustainable society.

- Accelerated expansion of process measurement business in industrial sectors
- Demand related to environmental regulation remained strong

Mainly due to expanded demand for manufacturing process measurement, sales increased for stack gas analyzers in the Americas and Japan and water quality systems in Japan and Asia. This led to increased sales and profits. Meanwhile, in the field of gas measurement, we have been actively developing automatic monitoring systems for Airborne Molecular Contamination (AMC) for use in cleanrooms. We have also developed a measuring device that uses our original gas analysis technology IRLAM™\*1 to monitor the

detoxification of gas before it is released into the atmosphere from semiconductor production processes. In the area of water quality measurement, we have released residual chlorine concentration monitor that enhances food hygiene management, and gel-filled self-cleaning pH electrodes that make wastewater and sewage treatment processes more efficient. We will help to reduce the burden on customers in managing manufacturing processes.

\*1 IRLAM is a trademark or registered trademark of HORIBA, Ltd. in Japan and other countries

**Topic**

**Launched gel-filled self-cleaning pH electrodes**

In plants with wastewater and sewage treatment facilities, it is particularly important to control the pH of processes that use activated sludge\*2, in order to make wastewater and sewage treatment processes more efficient. This product is the first of its kind to use\*3 antifouling technology. It combines photo-catalyst technology (porous titanium oxide) developed based on insights gained through joint research by HORIBA and Mie University, with HORIBA's unique technology which incorporates a UV-LED (ultraviolet light-emitting diode) into the electrode. Together, these produce an antifouling effect. This greatly reduces the frequency of electrode maintenance, and decreases the workload on customers who previously had to perform cleaning and calibration work every day. Thus, it helps to address the issue of labor shortage at sites.

\*2 A collection of microorganisms that serve to purify water by breaking down dirt in wastewater \*3 As glass electrode pH meter (as of October 2022, based on our research)



Gel-filled self-cleaning pH electrodes

# Medical-Diagnostic segment

Contributing to healthy lives through in-vitro diagnostic systems

Health

Measurement

HORIBA mainly provides instruments and reagents (consumables) for blood sample testing to the global market for in-vitro diagnostic (IVD) systems. Our business model for this segment is based on recurring revenues generated from sales of reagents. We aim to ensure stable earnings from sales of reagents by expanding our installed base of medical diagnostic instruments. In particular, HORIBA's strength lies in small and medium-sized hematology analyzers for point of care testing (POCT)\*1 in private clinics and hospital operating rooms, as well as small-to medium-sized hospitals and testing centers.

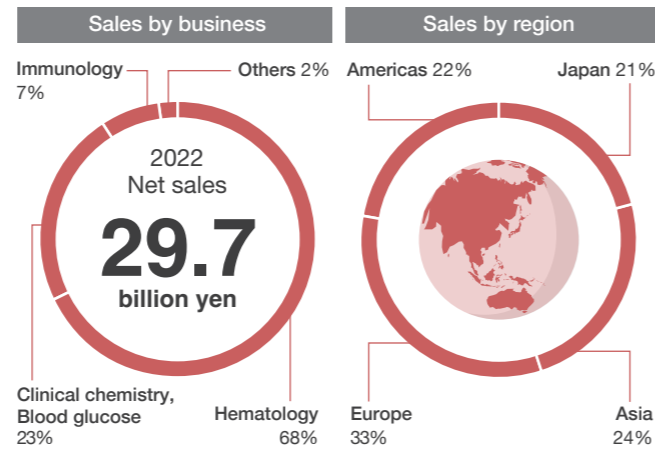
\*1 Point of Care Testing (POCT): A general term for testing performed at locations close to patients, such as private practitioner offices, diagnostic clinics, hospital wings, and outpatient clinics.

- Increased sales of hematology analyzers, clinical chemistry analyzers, and reagents
- Promoted the development of new products with the aim of expanding our business in the global market for our core products

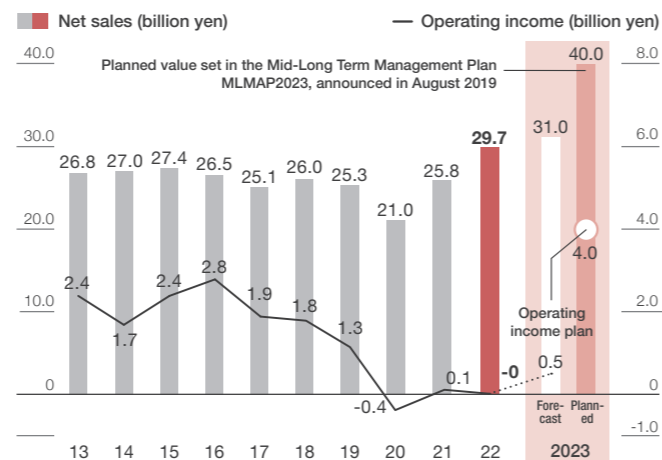
Increased in sales of hematology analyzers in Japan and Asia, as well as clinical chemistry analyzers and reagents in the Americas, led to increased segment sales. In terms of profit, although sales of reagents increased year on year, an operating loss was recorded owing mainly to an increase in rising purchasing prices.

During this period, we introduced new models of automated hematology and CRP\*2 analyzers in Japan. This series hold the top market share in Japan, and is capable of fast, reliable testing. With the

## 2022 results



## Net sales and operating income



\*2 CRP: C-Reactive Protein. A type of protein that whose count increases in blood serum when there is acute inflammation or tissue damage in the body, and thus is a typical marker of inflammation. It reacts quickly and sensitively to inflammation in cells and tissues, making it possible to ascertain the degree of inflammation. Moreover, since it decreases rapidly when the pathological condition improves, it is useful for diagnosing pathologies, offering prognosis, and observing therapeutic effects.



Yumizen H330 CRP, Automated Hematology and CRP Analyzer

Topic

### Released "Yumizen H330 CRP" Automated Hematology and CRP Analyzer

Our automated hematology and CRP analyzers have been at the forefront of global medical care for more than 20 years, since they were first\*3 introduced to the world in 1998. This product allows anyone to easily and consistently measure constituents in blood with high accuracy and without coming into contact with blood. This helps to reduce the risk of infection for healthcare workers. It also comes in a smaller footprint than previous models. Due to our high domestic market share in the field of automated hematology and CRP analyzers, and our position as an industry pioneer, we can reliably support the needs of the market and help to develop better medical care.

\*3 Based on our research (As of June 2022)

# Semiconductor segment

Contributing to yield enhancement and technology innovation in semiconductor manufacturing processes with HORIBA's flow control and measurement technologies

Semiconductor Industry

Measurement

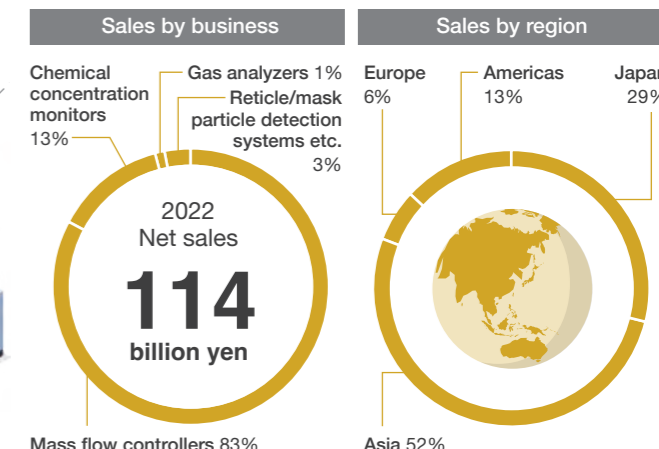
Mass flow controllers, used in the manufacturing process (front-end) of devices such as semiconductors, are a major product in the Semiconductor segment. Our mass flow controllers boast leading global market share\*, thanks largely to our cutting-edge flow control technology which contributes to enhanced yield and miniaturization in the semiconductor manufacturing process. We intend to provide solutions for responding to technological advances in semiconductor manufacturing processes, while supplying measurement equipment such as chemical concentration monitors and reticle/mask particle detection systems. This will allow us to establish an important position in the growing semiconductor industry.

\*HORIBA's estimate

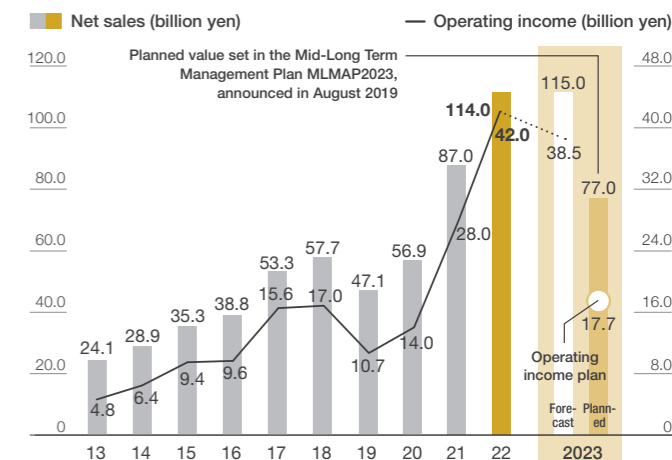
- Expanding capital investment by semiconductor manufacturers significantly increased demand
- Demand for mass flow controllers grew for use in solar panel and artificial diamond production

Sales to semiconductor production equipment manufacturers increased significantly, in response to expansion of semiconductor manufacturers' capital expenditures. This led to higher segment sales and profits. In the meantime, we have been working to increase response speed performance and improve flow rate accuracy on our primary products, mass flow controllers. We also saw demand grow for general industrial mass flow controllers equipped on the film

## 2022 results



## Net sales and operating income



formation equipment used in the production of solar panels and artificial diamonds. So, we are working to strengthen global deployment. Moreover, we are developing applications for cutting-edge processes that use reticle/mask particle detection systems, and enhancing their customization to meet customer needs.

Topic

### Introduced GR-500 Series Wafer Back Side Cooling System

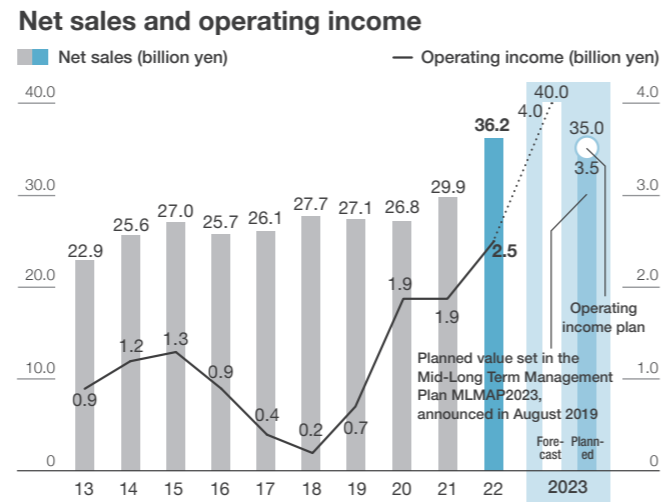
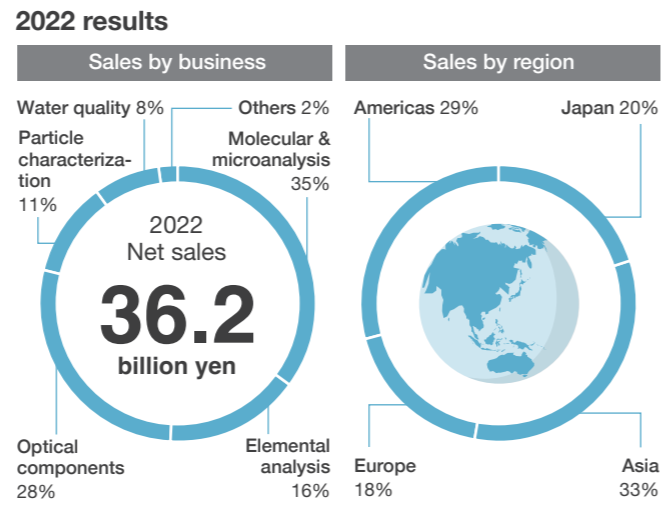
Wafer temperature control during the semiconductor production process is extremely important for the consistent production of high-quality wafers. Our GR Series Wafer Back Side Cooling Systems are mounted in the line that carries gas to the chamber, and contribute to precise wafer temperature control through stable accurate pressure control of the heat-transfer gas. In recent years wafer temperature control has become increasingly important, not only for the etching process, but for film formation and ion implantation as well. To meet these needs, we have begun to develop and sell new products equipped with pressure sensors developed in-house, which can control the pressure of trace gases in high-vacuum conditions even better than conventional products.



GR-500 Series Wafer Back Side Cooling System

# Scientific segment

Supporting HORIBA's core technologies and pioneering cutting-edge fields



HORIBA's analysis technology began with research and development that lead to Japan's first glass electrode pH meter, and has expanded to include gas analysis using infrared light, elemental analysis using X-rays, and Raman spectroscopy and Fluorescence spectroscopy using optical technology. These contribute to R&D activities at the frontline of scientific technology and help explore the unknown frontiers of science. HORIBA's analyzers are also used widely in industry for foreign object examination and active ingredient analysis for pharmaceuticals and foods, defect analysis for electronic components, as well as analysis in wide areas such as forensic science and archaeological surveys. While delivering high-end equipment for research and development, we are also actively developing products for manufacturing process monitoring, and supplying analysis and measurement technology to a wide range of fields.

- Expanded products sales for semiconductor and life science markets
- Accelerated development of new products for process measurement

Mainly due to the expansion of demand for products targeted for the semiconductor and life-science markets, sales of Raman spectrometers and optical modules increased. This caused sales and profits to increase. During this period, we developed and launched an X-ray analytical microscope that is the world's first\*1 bench-top energy-dispersive X-ray fluorescence analyzer in the world to achieve analysis from the light element boron (B). In addition, we focused on

basic development of metal film thickness gauges for industry using X-ray fluorescence, and spectrometers for chemical, pharmaceutical, and semiconductor processes, to meet demand for process measurement. We are working to strengthen our customer-focused engineering capabilities on a global scale, as we expand our business into new areas such as semiconductors and life sciences.

\*1 As bench-top energy-dispersive X-ray fluorescence analyzer (as of August 2022, based on our research)

**Topic**  
**Released XGT-9000 Pro and XGT-9000 Expert X-ray Analytical Microscopes**

XGT-9000 Series are X-ray Analytical Microscopes that analyzes the types and amounts of elements contained within materials with high accuracy. This product greatly reduces analysis time due to an improved detector and faster signal processing using our proprietary algorithm (patented\*2). And the XGT-9000 Expert is the first in the world\*3 to achieve analysis from the light element boron (B). Being able to analyze boron, an element that is very difficult to detect with X-rays fluorescence, means more common elements such as carbon, nitrogen, and oxygen can be analyzed with high sensitivity. Moreover, in addition to inorganic substances such as metals, this single device is capable of analyzing oxides, nitrides, and organic substances as well. This saves significant time and space, and boosts the efficiency of materials analysis during quality control and research and development in a wide array of industries such as materials manufacturing.



XGT-9000 Pro X-ray Analytical Microscope

\*2 Japan Patent No.: 6857174, U.S. Patent No.: 10795031, Europe: patent pending

\*3 As bench-top energy-dispersive X-ray fluorescence analyzer (as of August 2022, based on our research)

## Corporate information

**Head Office**  
2 Miyanohigashi-cho, Kisshoin, Minami-ku, Kyoto 601-8510 Japan

**Founded**  
October 17, 1945

**Incorporated**  
January 26, 1953

**Net sales**  
270,133 million yen (consolidated)  
(Year ended December 31, 2022)

**Paid-in capital**  
12,011 million yen (consolidated)  
(As of December 31, 2022)

**Number of employees**  
8,432 (consolidated)  
(As of December 31, 2022)

**Fiscal closing date**  
December 31

**Annual Meeting of Shareholders**  
Held in March

**Transfer agent**  
Sumitomo Mitsui Trust Bank, Limited

**Independent auditor**  
KPMG AZSA LLC

**Stock listings**  
Tokyo Stock Exchange, Prime Market  
Securities Code: 6856



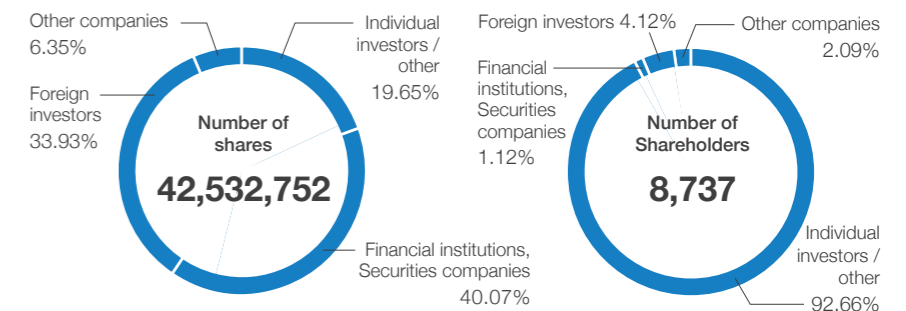
Head Office

## Major shareholders (Top 10)

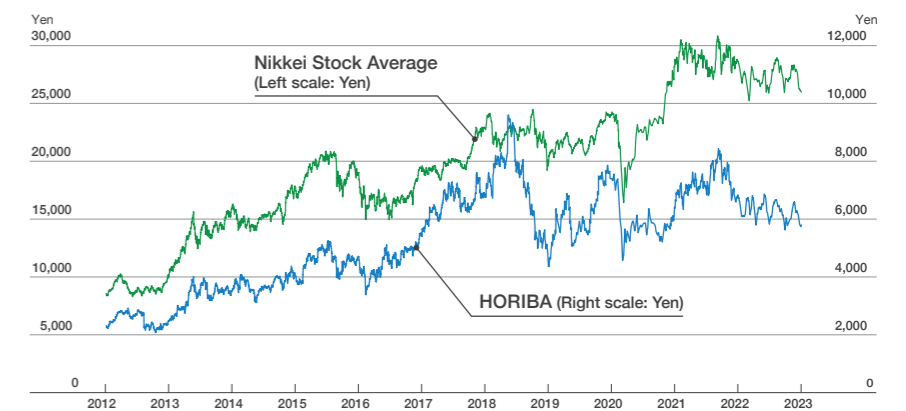
\* Percentages of shares are calculated by deducting our own shares (302,553 shares).

| Name of shareholder   | Shares (Thousands) | Percentage* (%) |
|---|--------------------|-----------------|
| The Master Trust Bank of Japan, Ltd.                              | 5,867              | 13.89           |
| Custody Bank of Japan, Ltd.                                       | 3,011              | 7.13            |
| National Mutual Insurance Federation of Agricultural Cooperatives | 1,682              | 3.98            |
| BBH (LUX) FOR FIDELITY FUNDS - SUSTAINABLE WATER AND WASTE POOL   | 1,283              | 3.04            |
| Atsushi Horiba  | 1,082              | 2.56            |
| The Kyoto Chuo Shinkin Bank                                       | 830                | 1.97            |
| The Bank of Kyoto, Ltd.   | 828                | 1.96            |
| HORIBA Raku-Raku Kai  | 810                | 1.92            |
| SMBC Nikko Securities Inc.  | 770                | 1.83            |
| HORIBA Employee Shareholding Association                          | 760                | 1.80            |

## Distribution by shareholder



## Stock Price Trend (Closing price each day)



## TSR\*1 Index

\*1 Total Shareholders' Return: Total return on investment that combines capital gains and dividends

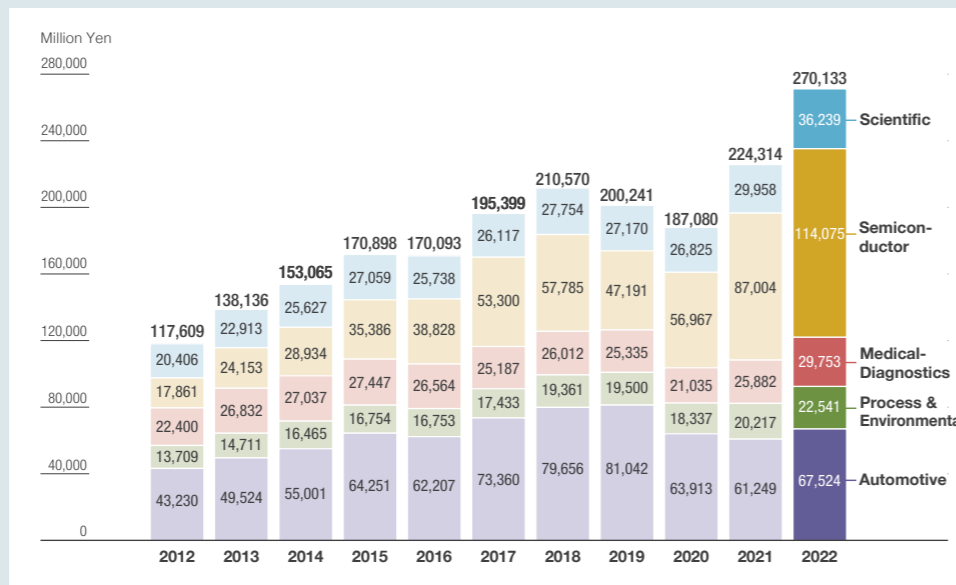
| Investment period           | 2018       | 2019       | 2020       | 2021       | 2022       |
|-----------------------------|------------|------------|------------|------------|------------|
|                             | Cumulative | Cumulative | Cumulative | Cumulative | Cumulative |
| HORIBA                      | 68.3%      | 112.0%     | 94.5%      | 107.1%     | 95.6%      |
| TOPIX (including dividends) | 82.2%      | 94.7%      | 99.3%      | 109.6%     | 104.1%     |

• The TSR in this table is calculated based on the stock price at the end of the fiscal year  
• HORIBA's stock price rose after announcing its full-year financial results for 2022. Our TSR at the end of February 2023 was 118.1%, which is higher than TOPIX (109.7%)

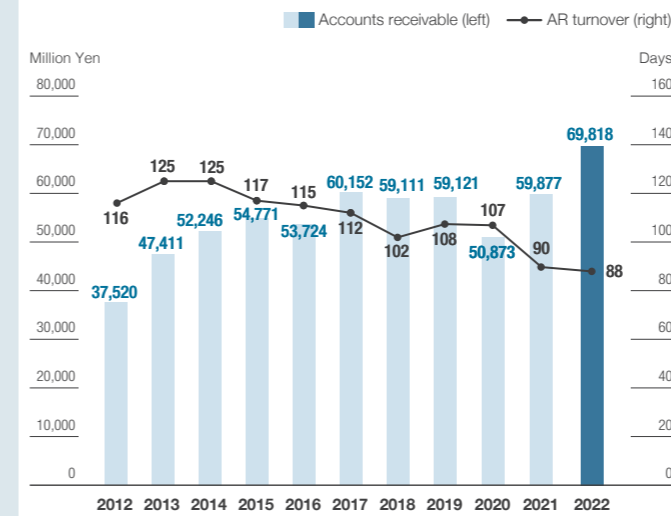
# Financial Data Eleven-year summary

## Net sales by segment

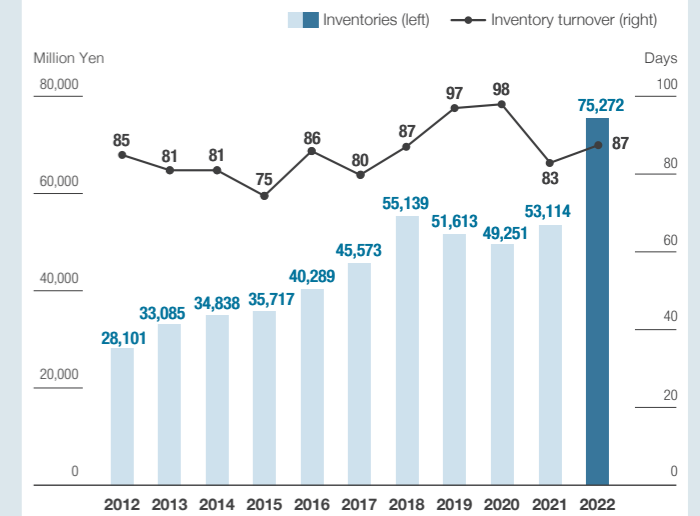
The fiscal year ended December 31, 2022 saw the sales increase for the second year in a row. This was primarily due to the continued high level of capital investment by semiconductor manufacturers.



## Accounts receivable (AR) and AR turnover (days)

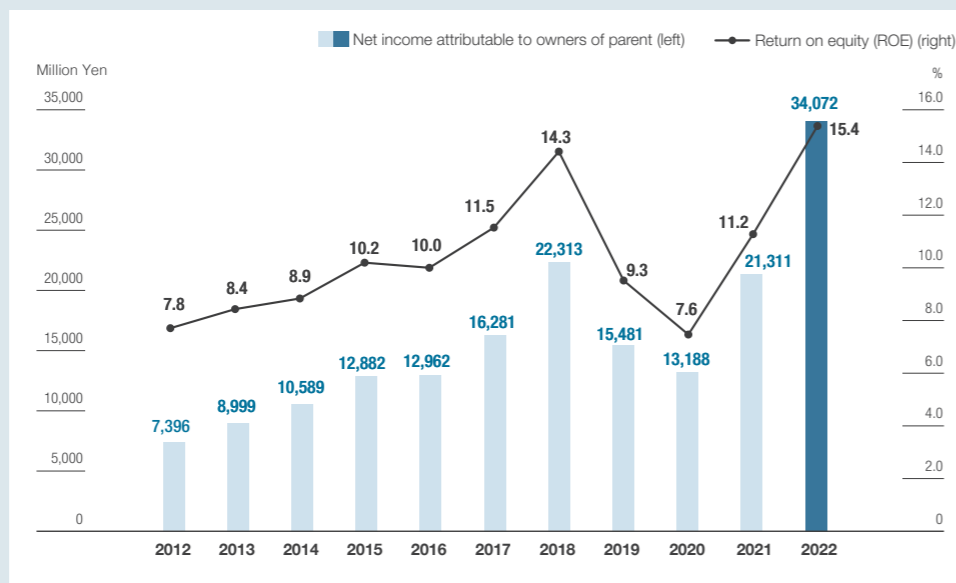


## Inventories and inventory turnover (days)

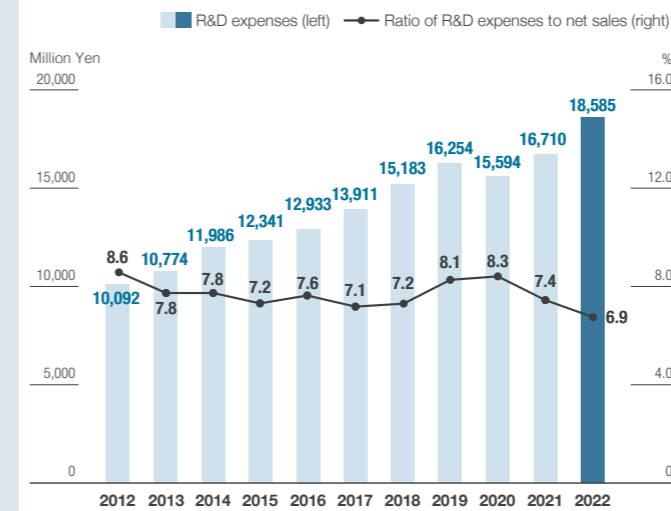


## Net income and return on equity (ROE)

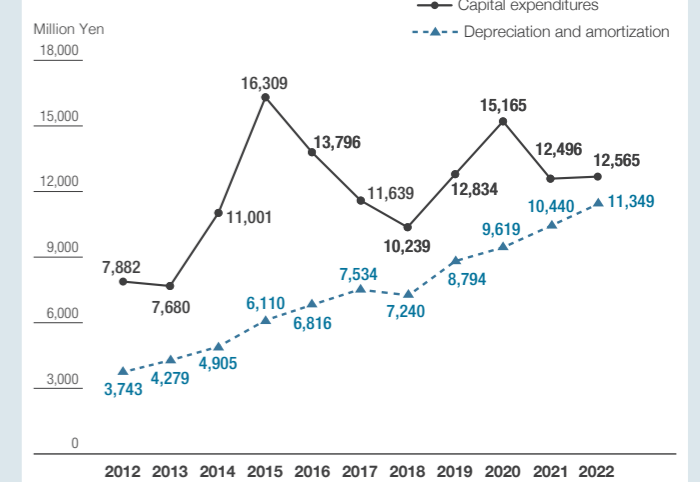
We saw net income attributable to owners of parent increase for the second year in a row for the fiscal year ended December 31, 2022. This was due to factors such as the increase in operating income accompanying the increase in revenue. This resulted in an ROE of 15.4%.



## R&D expenses and R&D expenses to net sales

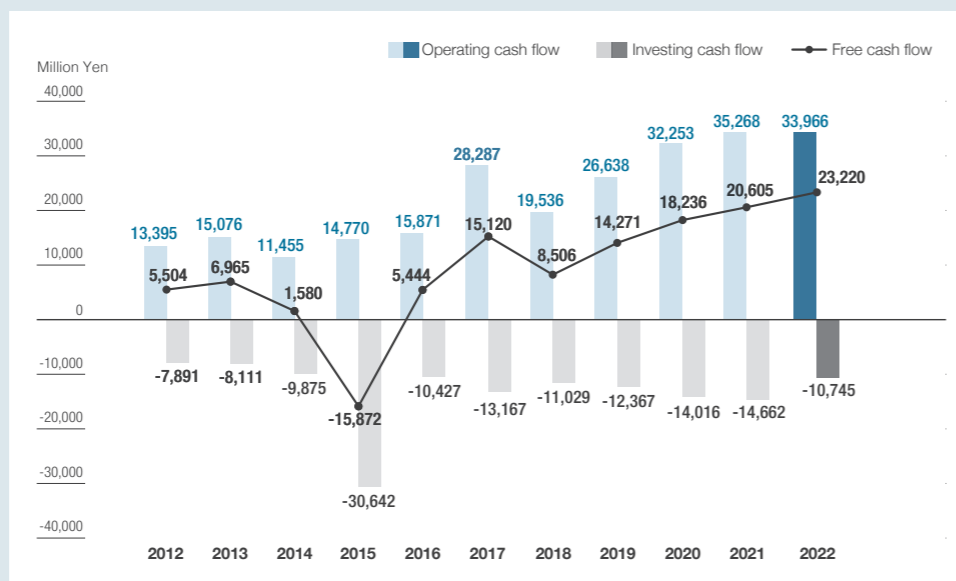


## Capital expenditures and depreciation and amortization

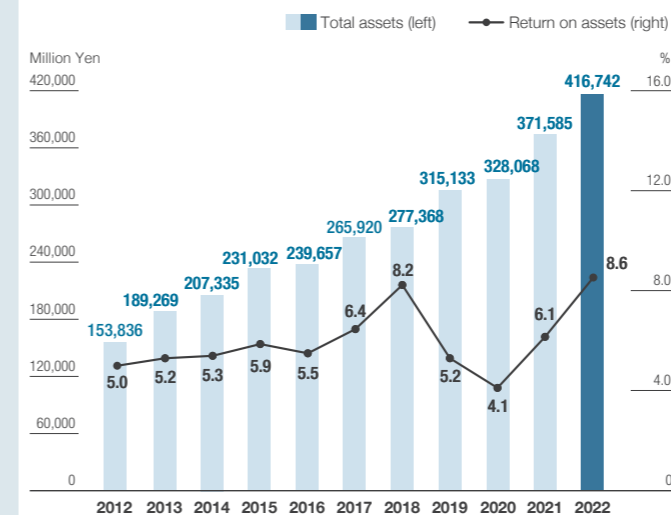


## Cash flows

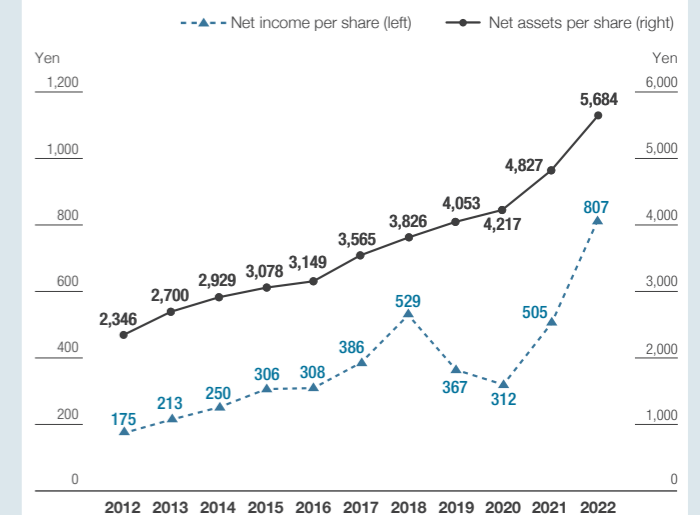
Although we attained record high profits for fiscal year 2022, operating cash flows decreased slightly year on year due to factors such as an increase in inventory. On the other hand, thanks to careful selection of fixed asset investment projects, free cash flows increased by 23.2 billion yen year on year—the fifth year in a row.



## Total assets and return on assets (ROA)



## Net income per share and net assets per share



|  |               | 2012.12  | 2013.12  | 2014.12  | 2015.12  | 2016.12  | 2017.12  | 2018.12  | 2019.12  | 2020.12  | 2021.12  | 2022.12  |
|--|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Profit and Loss</b>                               |               |          |          |          |          |          |          |          |          |          |          |          |
| Net sales  | (Million Yen) | 117,609  | 138,136  | 153,065  | 170,898  | 170,093  | 195,399  | 210,570  | 200,241  | 187,080  | 224,314  | 270,133  |
| Operating costs and expenses                         | (Million Yen) | 105,857  | 124,402  | 135,851  | 151,526  | 151,593  | 168,565  | 181,731  | 179,325  | 167,385  | 192,267  | 224,290  |
| Operating income                                     | (Million Yen) | 11,751   | 13,733   | 17,214   | 19,372   | 18,499   | 26,834   | 28,838   | 20,916   | 19,694   | 32,046   | 45,843   |
| Ratio of operating income to net sales               | (%)           | 10.0     | 9.9      | 11.2     | 11.3     | 10.9     | 13.7     | 13.7     | 10.4     | 10.5     | 14.3     | 17.0     |
| Net income attributable to owners of parent          | (Million Yen) | 7,396    | 8,999    | 10,589   | 12,882   | 12,962   | 16,281   | 22,313   | 15,481   | 13,188   | 21,311   | 34,072   |
| Ratio of net income attributable to owners of parent | (%)           | 6.3      | 6.5      | 6.9      | 7.5      | 7.6      | 8.3      | 10.6     | 7.7      | 7.0      | 9.5      | 12.6     |
| <b>Financial Position</b>                            |               |          |          |          |          |          |          |          |          |          |          |          |
| Total assets   | (Million Yen) | 153,836  | 189,269  | 207,335  | 231,032  | 239,657  | 265,920  | 277,368  | 315,133  | 328,068  | 371,585  | 416,742  |
| Liabilities with interest                            | (Million Yen) | 18,083   | 24,577   | 28,412   | 45,227   | 47,153   | 42,496   | 44,516   | 73,889   | 80,376   | 83,717   | 71,326   |
| Shareholders' equity                                 | (Million Yen) | 99,248   | 114,209  | 123,924  | 129,581  | 132,654  | 150,282  | 161,362  | 170,953  | 177,964  | 203,688  | 240,065  |
| Shareholders' equity ratio                           | (%)           | 64.5     | 60.3     | 59.8     | 56.1     | 55.4     | 56.5     | 58.2     | 54.3     | 54.3     | 54.8     | 57.6     |
| <b>Cash Flows</b>                                    |               |          |          |          |          |          |          |          |          |          |          |          |
| Cash flows from operating activities                 | (Million Yen) | 13,395   | 15,076   | 11,455   | 14,770   | 15,871   | 28,287   | 19,536   | 26,638   | 32,253   | 35,268   | 33,966   |
| Cash flows from investing activities                 | (Million Yen) | -7,891   | -8,111   | -9,875   | -30,642  | -10,427  | -13,167  | -11,029  | -12,367  | -14,016  | -14,662  | -10,745  |
| Free cash flow                                       | (Million Yen) | 5,504    | 6,965    | 1,580    | -15,872  | 5,444    | 15,120   | 8,506    | 14,271   | 18,236   | 20,605   | 23,220   |
| Cash flows from financing activities                 | (Million Yen) | -3,304   | 2,324    | -273     | 12,843   | -451     | -9,044   | -3,240   | 19,215   | 843      | -4,045   | -22,447  |
| <b>Investments, etc.</b>                             |               |          |          |          |          |          |          |          |          |          |          |          |
| Capital expenditures                                 | (Million Yen) | 7,882    | 7,680    | 11,001   | 16,309   | 13,796   | 11,639   | 10,239   | 12,834   | 15,165   | 12,496   | 12,565   |
| Depreciation and amortization                        | (Million Yen) | 3,743    | 4,279    | 4,905    | 6,110    | 6,816    | 7,534    | 7,240    | 8,794    | 9,619    | 10,440   | 11,349   |
| R&D expenses   | (Million Yen) | 10,092   | 10,774   | 11,986   | 12,341   | 12,933   | 13,911   | 15,183   | 16,254   | 15,594   | 16,710   | 18,585   |
| R&D expenses to net sales                            | (%)           | 8.6      | 7.8      | 7.8      | 7.2      | 7.6      | 7.1      | 7.2      | 8.1      | 8.3      | 7.4      | 6.9      |
| <b>Per Share Information</b>                         |               |          |          |          |          |          |          |          |          |          |          |          |
| Net income   | (Yen)         | 174.87   | 212.76   | 250.28   | 305.73   | 307.74   | 386.30   | 529.24   | 367.09   | 312.58   | 505.05   | 807.06   |
| Net assets   | (Yen)         | 2,346.45 | 2,699.88 | 2,928.82 | 3,078.40 | 3,148.70 | 3,565.00 | 3,826.44 | 4,053.30 | 4,217.45 | 4,827.06 | 5,684.68 |
| Dividend   | (Yen)         | 50.00    | 60.00    | 67.00    | 70.00    | 85.00    | 116.00   | 145.00   | 130.00   | 90.00    | 150.00   | 245.00   |
| <b>Other Indicators</b>                              |               |          |          |          |          |          |          |          |          |          |          |          |
| Return on equity (ROE)                               | (%)           | 7.8      | 8.4      | 8.9      | 10.2     | 10.0     | 11.5     | 14.3     | 9.3      | 7.6      | 11.2     | 15.4     |
| Return on assets (ROA)                               | (%)           | 5.0      | 5.2      | 5.3      | 5.9      | 5.5      | 6.4      | 8.2      | 5.2      | 4.1      | 6.1      | 8.6      |
| Consolidated dividend payout ratio                   | (%)           | 28.6     | 28.2     | 26.8     | 22.9     | 27.6     | 30.0     | 27.4     | 35.4     | 28.8     | 29.7     | 30.4     |
| Nonconsolidated dividend payout ratio                | (%)           | 37.5     | 48.9     | 38.5     | 35.1     | 46.7     | 53.8     | 50.7     | 46.4     | 52.3     | 333.1    | 71.0     |
| Overseas sales ratio                                 | (%)           | 61.1     | 64.9     | 69.0     | 69.3     | 66.8     | 66.7     | 68.7     | 69.0     | 69.2     | 70.4     | 72.8     |
| <b>Human Assets</b>                                  |               |          |          |          |          |          |          |          |          |          |          |          |
| Number of employees                                  | (Employees)   | 5,530    | 5,787    | 5,965    | 6,831    | 7,149    | 7,399    | 7,943    | 8,288    | 8,269    | 8,205    | 8,432    |
| Ratio of employees outside of Japan                  | (%)           | 57.0     | 57.9     | 58.4     | 62.3     | 62.0     | 61.6     | 62.3     | 62.5     | 62.4     | 62.8     | 63.9     |

Notes: The monetary amounts shown are rounded down to the nearest million yen.

1. HORIBA, Ltd. and its domestic consolidated subsidiaries had formerly recognized revenue mainly on a shipping basis. However, starting from fiscal 2016, HORIBA, Ltd. and its domestic consolidated subsidiaries changed their revenue recognition method to recognize revenue on a completion-date-of-installation or delivery-date basis under the terms and conditions of the relevant contracts. The amounts in or before fiscal 2015 are not retrospectively revised.

2. As of beginning of the fiscal 2019, HORIBA, Ltd. and its consolidated subsidiaries apply the Partial Amendments to Accounting Standards for Tax Effect Accounting (ASBJ Statement No. 28, February 16, 2018). The amounts in or before fiscal 2017 are not retrospectively revised.



↑  
Into Space

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**<https://www.horiba.com/int/>**

— Sky

— Our Living Area

— Sea

— Depths of The Earth  
↓