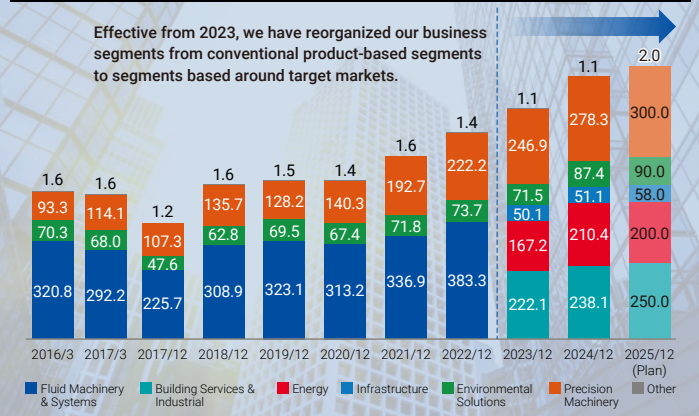
# Creating Value from Customers' Perspectives

— Ebara's Business —

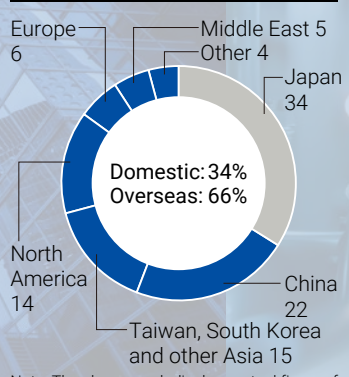




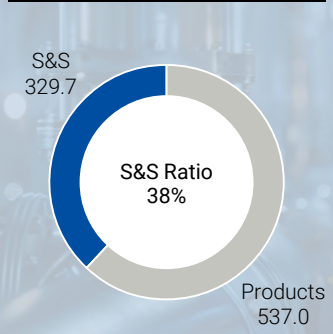
**Revenue Composition by Company** (Billions of yen)




**Revenue by Region** (%)




**S&S Revenue** (Billions of yen)




Note: The above graph displays actual figures for the fiscal year ended December 31, 2024.

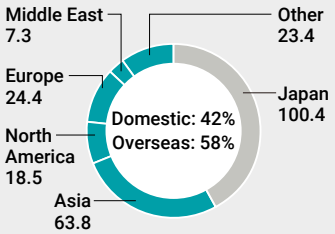
Business Strategies

# Building Service & Industrial Company

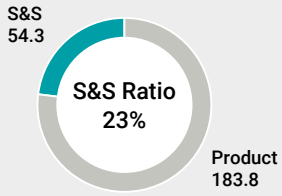
## Company Information

| | |
|---|---|
| Main Target Markets | Building equipment / Industrial equipment |
| Main Products | Standard pumps / Fans / Chillers / Cooling towers |
| Market Share and Main Achievements | ・Standard pumps: #1 domestic share<br>・Cooling towers: #1 domestic share<br>Note: Ebara survey |
| Competitors | ・Standard pumps: Grundfos, Xylem, Kawamoto Pump Mfg., Tsurumi Manufacturing, etc.<br>・Chillers/Cooling towers: Carrier (chillers), YORK (chillers), Kuken Industries (cooling towers), etc. |

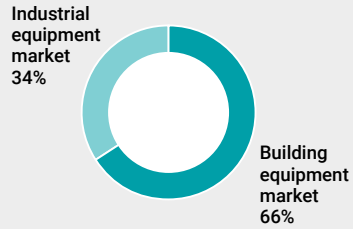
### Revenue by Region (Billions of yen)




### S&S Revenue (Billions of yen)




### Proportion of Revenue by Market (%)



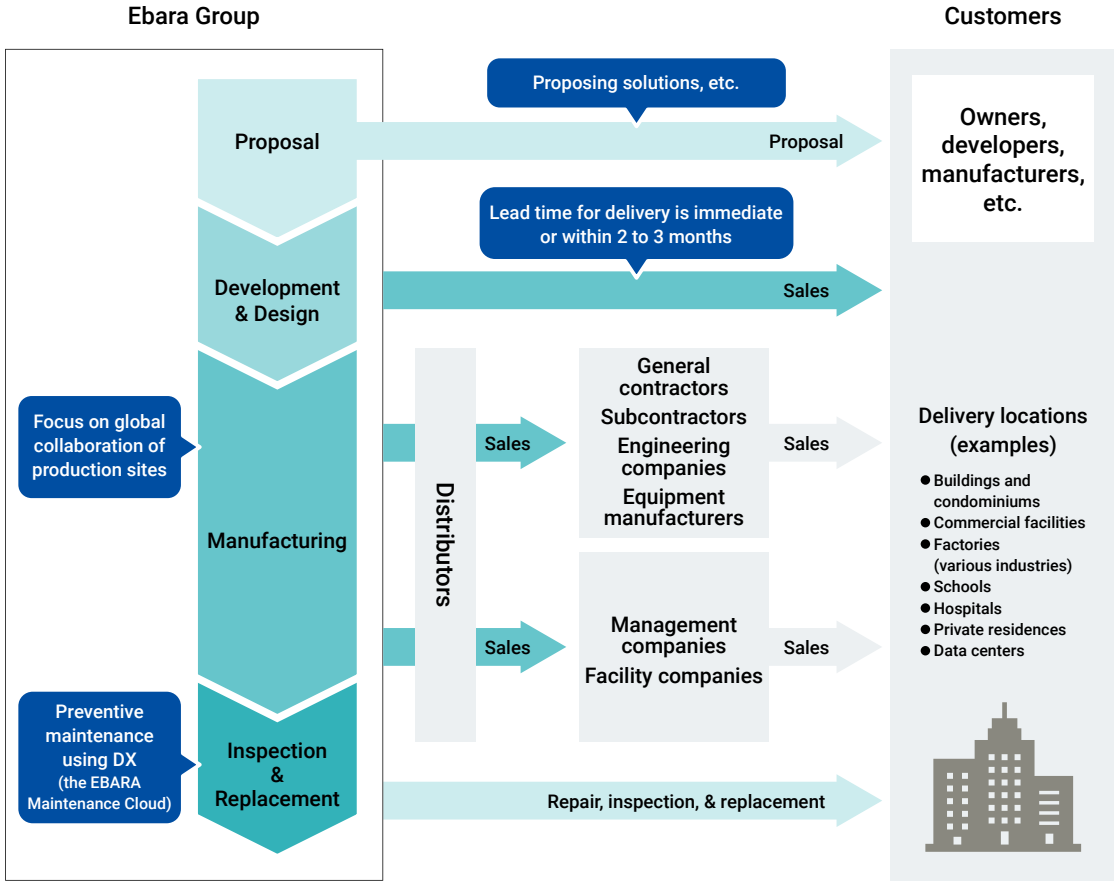

Note: The above graph displays actual figures for the fiscal year ended December 31, 2024.

## Business Vision (E-Vision 2030)

**To be a solution service provider that solves water supply and thermal energy issues in the building service and industrial markets**

## Company Characteristics and Business Flow

- Sell through construction companies, facility installation companies, and distributors/partners
- Relatively short lead time
- Focus on providing integrated hardware & software solutions using DX



Business Strategies

# Building Service & Industrial Company

## We will achieve further growth by combining high value-added solutions with global production and product capabilities.

Under E-Plan 2025, we have focused on the expansion of our solutions business and entry into the growing overseas and industrial markets. The number of customers for and sales of the EBARA Maintenance Cloud, which is one example of a total solution that transcends product boundaries, are steadily growing, and we continue to install new sensors and improve proposals for predictive detection and reduced man-hours for inspections through DX in services. To enhance our approach to overseas markets, we are promoting the optimization of global production and cross-selling by drawing on synergy at sites acquired through M&A.

In the final year of E-Plan 2025, which ends December 31, 2025, we will speedily reap the rewards of two years of efforts, which will lead to future growth. In addition to expanding sales of solutions using data and new products, we will ensure that we catch up with customer investment plans and strive to expand our market share of industrial chillers, for which we have secured orders from plants mass producing semiconductors. Moreover, we will further improve the ROIC by thoroughly collecting accounts receivable and streamlining operational processes while enhancing risk management amidst a global situation that remains uncertain.

**Shu Nagata**

Executive Officer
President, Building Service & Industrial Company

## Market Environment

**Opportunities**

- Increase in water demand attributable to population and economic growth in emerging countries
- Increase in collective housing and buildings due to population concentration in cities
- Increase in demand for irrigation and drainage equipment due to climate change
- Increase in demand due to growth in advanced industries such as semiconductors
- New opportunities arising from industrial structure changes occurring in conjunction with decarbonization and progress in 5G, IoT, and other technologies

**Threats**

- Intensification of price competition stemming from domestic market contraction
- Increased competition due to maturity of technologies and improvement of technological capabilities of emerging manufacturers
- Supply chain disruptions due to geopolitical risk

## Our Strengths

- Fluid, numerical analysis, material, analytical, and other fundamental technologies
- Capability for developing highly efficient, high-quality, and highly reliable products
- Diverse global employee base and network
- Strong presence in Japan and Asia
- Broad product lineup

## Basic Strategies of E-Plan 2025

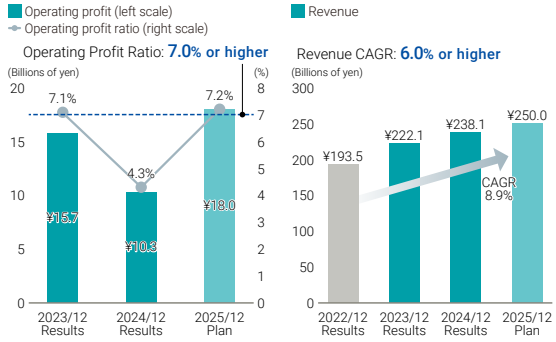
**1 Strengthen solution business**

**2 Capture (overseas) growth markets**

**3 Rebuild global business infrastructure**

We aim to grow our business further by providing new solutions combining pumps, chillers, and services from customers' perspectives in the building service and industrial equipment markets. We will continue to upgrade and streamline tasks and business management through DX.

## Financial Targets and Results




## Non-financial Goals, KPIs, and Targets

| Related Materiality | 2025 Outcome Goals | KPIs | 2025/12 Targets | 2024/12 Results | Measures & Future Initiatives |
|---|---|---|---|---|---|
| 1 Contribute to the creation of a sustainable society | Reduce GHG emissions | Unit sales of energy-saving, highly efficient products | 15% increase compared to 2022 | 4.7% increase | Launch and expand sales of products that reduce GHG emissions |
| | Deliver water to 500 million people | Unit sales of solar pumps | 50% increase compared to 2022 | 6.2% decrease | • Expand product lineup<br>• Focus on sales in South America and Africa |
| | | Unit sales in emerging countries | 40% increase compared to 2022 | 4.7% increase | • Launch and expand sales of products that meet the differing needs of each region<br>• Establish bases in Africa, South America, etc. |

Business Strategies

# Building Service & Industrial Company

## 2024 Results and Future Challenges

Basic Strategies 1

### Strengthen solution business

**Results**

- S&S revenue increased due to improved sales proposals centered on the EBARA Maintenance Cloud.
- Finished creating the production process for the PM motor with a built-in inverter (IVM).

**Future Challenges**

- Increasing S&S revenue through the use of data we collected from sensors in the EBARA Maintenance Cloud and analyzed.
- Enhancing the proposal-based marketing of products equipped with the IVM.
- Expanding sales of industrial chillers that are favored by customers for their reduced energy use and creating a system to increase production and provide support.

Basic Strategies 2

### Capture (overseas) growth markets

**Results**

- Sales of high value-added products in the US and European markets were strong.
- Sales at new sites in Mexico, Africa, etc. were strong.
- Completed the acquisition of a Uruguayan distributor (Asanvil S.A.) in October 2024.

**Future Challenges**

- Increasing cross-selling among M&A sites and Group companies.
- Capitalizing on rising demand for pumps in North America's data center industry.

Basic Strategies 3

### Rebuild global business infrastructure

**Results**

- Improved operating margin through improved productivity, reduced procurement costs, etc.
- Improved capital efficiency by limiting the inventory of raw materials and finished goods.

**Future Challenges**

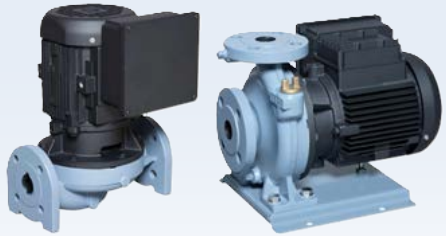
- Optimizing the inventory of raw materials and finished goods by improving the accuracy of supply and demand forecasting.
- Increasing value added per capita through reforms in operational process via DX, etc.

Value Creation

## Development of a PM Motor with a Built-in Inverter

**Contributing to decarbonization by reducing the power consumption of pumps**

Generally, pumps are selected with a margin of capacity for the planned flow rate and pressure, and this margin is adjusted during operation using valves, etc. For this reason, the energy consumed by the pumps included energy wasted by the valves, etc. To address this issue, Ebara developed a PM motor with built-in inverter that is equipped with an internal inverter which can adjust the rotation speed of the motor that drives the pump and optimizes performance on-site without using valves, etc. Pumps equipped with this motor were released in September 2024. By adjusting the rotation speed with an inverter, the pumps can be matched to the required performance, enabling easily a significant energy saving reduction of approximately 30–50% in annual electricity consumption. We will continue our efforts to reduce power consumption, starting with pumps, in order to help realize a decarbonized society.



Interview

## Fulfilling our duty to provide easy and hassle-free energy-saving solutions to our customers

**Kazuya Hiramoto**
Development Division
Motor Business Unit Department

**Yohei Oishi**
Development Division
Motor Business Unit Department
Development and Engineering Section

Our standard pumps account for approximately 30% of the domestic market share. As such, we feel we have a duty to make our pumps more energy efficient. Some of our customers have discounted investment in energy-saving pumps because of the return on investment while others are unfamiliar with ways to save energy, so we have focused on providing easy and hassle-free energy-saving solutions. Before a product is adopted, we have a panel verify the energy efficiency of a demonstration device, and after it is adopted we interview groups of customers regarding the effect of its introduction. These are some of the ways in which we constantly gather information on whether the product is providing its expected value and whether aspects need to be improved further. In the future, we will continue to install the motor in various existing products such as fans and chillers so that it can be used by even more customers, thereby contributing to a decarbonized society by reducing power consumption in Japan and around the world.

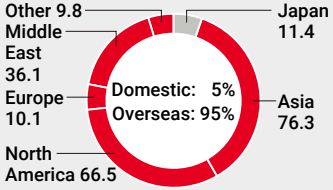
Business Strategies

# Energy Company

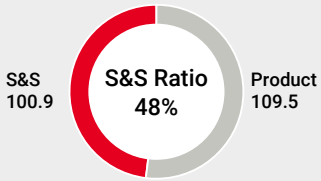
## Company Information

| | |
|---|---|
| Main Target Markets | • Oil and gas / Petrochemicals / Refining / Power generation / Fertilizer<br>• New energy (hydrogen, ammonia, CCUS, SAF, etc.) |
| Main Products | Custom pumps / Compressors & Turbines / Cryogenic Pumps / Expanders |
| Market Share and Main Achievements | • Top global share in Cryogenic Pumps & Expanders for LNG plants<br>• Top global share in Oil & Gas plant (downstream) compressors<br>• Top global share in pumps for fertilizer plants<br>Note: Ebara survey |
| Production Bases | • Japan: Sodegaura Plant, Futtsu Plant<br>• Overseas: Elliott Company (US), Elliott Ebara Turbomachinery India (India), EBARA GREAT PUMPS CO. (China), EBARA MACHINERY ZIBO CO. (China) |
| Competitors | • Japan: Nikkiso, Mitsubishi Heavy Industries Compressor<br>• Overseas: Baker Hughes (US), Flowserve (US), KSB (Germany), Siemens Energy (Germany), Sulzer (Switzerland) |

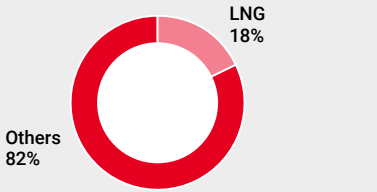
### Revenue by Region (Billions of yen)




### S&S Revenue (Billions of yen)




### Proportion of Revenue by Industry (%)




Note: The above graph displays actual figures for the fiscal year ended December 31, 2024.

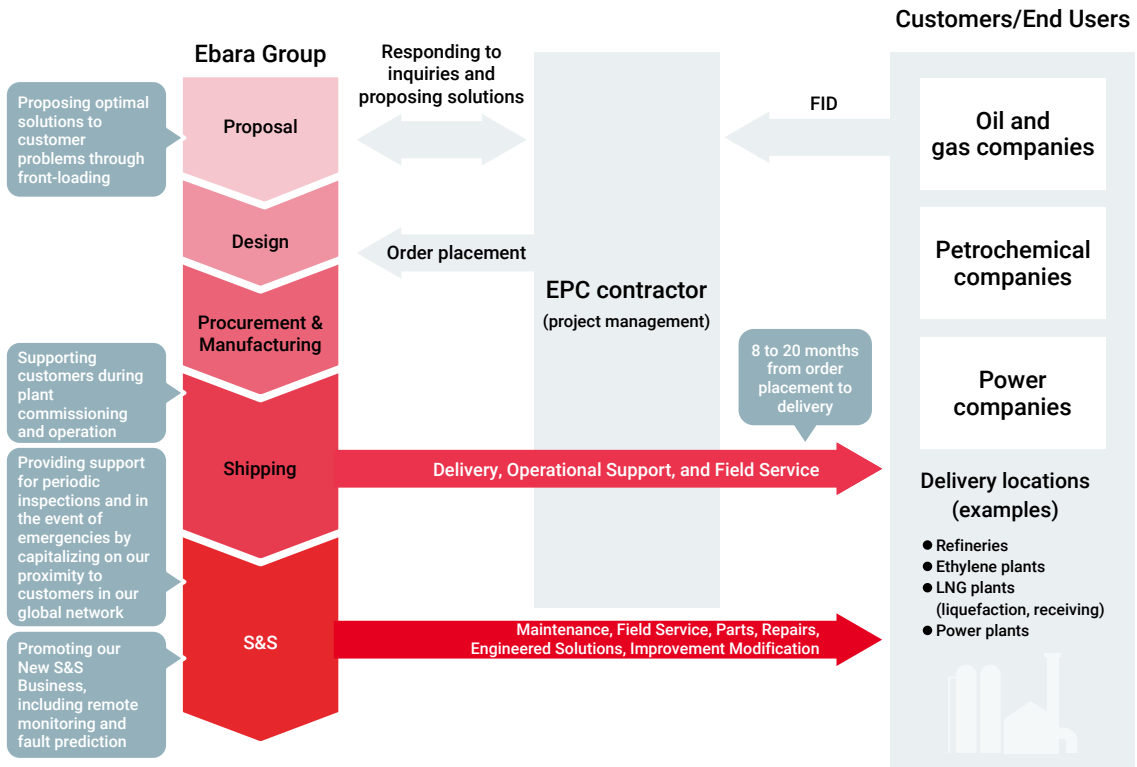
## Business Vision (E-Vision 2030)

**Be the best solution provider in the energy sector by providing premier equipment and service, while actively leading sustainability efforts worldwide.**

## Company Characteristics and Business Flow

- After the end user makes a final investment decision (FID), the project is awarded through an engineering, procurement and construction (EPC*) contractor (talks may take place directly with the end user)
- A wide range of support, from delivery of equipment, assistance with operation, inspections and maintenance after the start of operations, and modifications to increase capacity

* EPC : Engineering, procurement, construction



Business Strategies

# Energy Company

## Contributing to the energy transition as the best solution provider

The Company has the rare distinction of dealing in both compressors and turbines that handle gases as well as pumps that handle liquids and it has made the most of this strength by globally integrating every capability from sales to design, procurement, manufacturing, and after-sales service.

Amidst an increase in the global demand for energy, we are seeking the further growth of our energy business by making the most of our strengths globally. However, market trends differ by segment. As an example, the market for petroleum refining is expected to shrink in size while the areas of LNG and electric power are expected to continue growing. Moreover, new energy technologies such as CCUS*, hydrogen, and ammonia are right at the stage where the market is starting to develop.

In light of these market trends, we are enhancing selective order receiving and front-loaded design in existing market areas and we are undertaking structural reforms through improvements in productivity and optimization of service locations. We are focusing on technological, product, and business development in growth markets. We are also working on the area of next-generation energy technologies such as hydrogen and deep geothermal power generation by taking advantage of our strengths in rotating machinery technology and extreme temperature technologies, in addition to the new areas of ammonia and CCUS in particular, where the market is starting to develop. Moreover, we are working with customers to provide DX-based solutions such as remote monitoring and failure prediction.

We will continue to create new value as is required in the next-generation energy market, and we will play a leading role in the creation of a sustainable society.

* CCUS: Carbon capture, utilization, and storage

**Takanobu Miyaki**

Executive Officer
President, Energy Company

## Market Environment

**Opportunities**

- Increased demand for LNG in the short to medium term
- Increased demand for fossil fuels in line with population growth in emerging countries
- Growth in renewable and new energy markets such as CCUS, hydrogen, geothermal, and ammonia
- New S&S demand due to lack of personnel, aging population, and aging equipment at customer facilities and plants

**Threats**

- Uncertainty in the oil and gas market due to geopolitical risks
- Possibility of the oil and gas market shrinking over the medium to long term
- Increased costs for procurement and manufacturing due to geopolitical risks
- Intensifying price competition due to maturation of technology and improved technological capabilities of competitors

## Our Strengths

- Abundant track record and cultivated trust for use in important equipment such as compressors for LNG and ethylene, turbines, custom pumps
- Close proximity to end users; EPC*; and process licensors
- Providing comprehensive, quality services and support
- Excellent high-speed rotating machinery technology, very low-temperature technology, materials technology, and production technology
- A strong global network through the integration of our custom pumps business and compressors & turbines business

* EPC : Engineering, procurement, construction

## Basic Strategies of E-Plan 2025

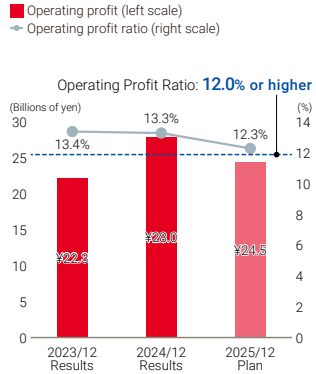
**1 Establish new business models in the areas of sustainability and services to lead the shift to renewable energy and contribute to decarbonization**

**2 Make structural reforms to further improve profitability in existing business areas**

**3 Integrate Compressors & Turbines and Custom Pumps to deliver new value to customers and markets**

In light of the megatrends of decarbonization and next-generation energy, we are promoting solutions that respond to changes in customers and society. We intend to provide solutions that highlight our strengths as a result of integrating compressors/turbines and custom pumps, and we intend for our business to become a new growth business that addresses changes in customers and society. In addition to further improving the profitability of our existing businesses, we are also working to create new business models in the areas of sustainability and services.

## Financial Targets and Results




## Non-Financial Goals, KPIs, and Targets

| Related Materiality | 2025 Outcome Goals | KPIs | 2025/12 Targets | 2024/12 Results | Measures & Future Initiatives |
|---|---|---|---|---|---|
| 1 Contribute to the creation of a sustainable society | Reduce GHG emissions | Promoting sales of expanders to save energy for the LNG market and decarbonization market | Achieve 100% of sales targets | Achieved 100% of sales targets | Promoting the enhancement of our sales structure |
| | | Development of new compressors for the decarbonization market | Achieve 100% commercialization | Continued product development | Promote R&D including resources |

Business Strategies

# Energy Company

## 2024 Results and Future Challenges

Basic Strategies 1

### Establish new business models in the areas of sustainability and services to lead the shift to renewable energy and contribute to decarbonization

**Results**
- Signed strategic agreements with several customers, including Saudi Aramco, promoted business development in the area of sustainability, and promoted improved relationships with an eye toward the medium and long term.
- Finished marketing a canned motor pump for liquid ammonia, delivered one of those pumps to a thermal power station in Japan in order to demonstrate that ammonia could be partially substituted for coal as fuel; the power station was successfully operated using actual liquid ammonia on-site.
- Hydrogen compressors were ordered for a blue hydrogen project in North America.
- As part of the New S&S Business that deals with remote monitoring and failure prediction, we began working with four customers on monitoring systems.

**Future Challenges**
- Continue to aggressively invest in new markets and work with customers in the early stages to increase orders for products and solutions for decarbonization.

Basic Strategies 2

### Make structural reforms to further improve profitability in existing business areas

**Results**
- Improved productivity by automating and modernizing plants in the US and by upgrading production equipment at plants in Japan.
- Accelerated site selection and consolidation to improve the profitability of the S&S business. A new base in Indonesia started operating, the flagship base in Houston in the US was expanded, and a new base is under construction in Abu Dhabi.
- Improved profitability through selective ordering and expanded implementation of front-loaded and automated design.

**Future Challenges**
- Improving manufacturing processes to reduce delivery times.
- Further improving the profitability of existing businesses by promoting more efficient design and the automation of manufacturing via DX and use of AI.

Basic Strategies 3

### Integrate Compressors & Turbines and Custom Pumps to deliver new value to customers and markets

**Results**
- We have been recognized for our superiority in providing multiple products and solutions in one stop, and we received an order for compressors, steam turbines, and custom pumps for a large petrochemical complex in Saudi Arabia (the Amiral project).

**Future Challenges**
- Securing additional renovation projects through optimal use of our manufacturing and service locations.
- In order to further penetrate the market with the Ebara Elliott Energy brand, which embodies the integration of compressors & turbines with custom pumps, we will minimize costs and maximize added value through comprehensive solutions and the consolidation and appropriate allocation of human resources.

Value Creation

## Opening of new service center in Indonesia

**Contributing to Indonesia's rapidly growing energy market**

To better capture S&S demand in Indonesia, PT. Ebara Turbomachinery Services Indonesia (ETSI) opened a new service center in Indonesia in August 2024. Integrating state-of-the-art rotating machinery repair technology, we are a one-stop shop for the repair of our compressors, turbines, and custom pumps and rotating machinery from other manufacturers. ETSI was established in 2015 and became a joint venture between Ebara Corporation and Ebara Elliott Turbomachinery Corporation in 2022. ETSI handles S&S for rotating machinery overall and it provides new value to customers and the market. Indonesia, with the world's fourth largest population, is a resource-rich country with extremely high market potential in Southeast Asia, and it continues to grow rapidly. By providing comprehensive after-sales services that exceed customer expectations, we will further enhance the presence of ETSI and the Ebara Group.

Interview

## Solving customer issues with the combined strength of the Group, which has engendered deep trust

**Calvin Tan** President Director
PT. Ebara Turbomachinery Services Indonesia

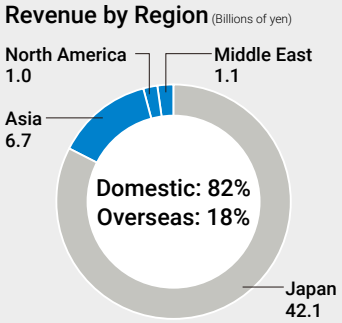
ETSI's business integration project seeks to create a combined synergy between custom pumps and compressors & turbines. As the leader of that project, I oversaw the construction of the new service center and the relocation of the existing plant. Initially, the project faced many difficulties, including employee concerns about continued employment. Therefore, after deliberations with local employees and project members, the PMI process was extended a year longer than planned to allow more time to proceed. As a result, mutual understanding between the local employees and the project team improved and better communication was facilitated by respecting the thoughts of both parties, resulting in a smooth reorganization. We will focus on creating new service solutions and enhancing ETSI's presence in the energy market by drawing on the Group's combined strength and on our global colleagues with diverse backgrounds, who will continue to help us solve our customers' issues.

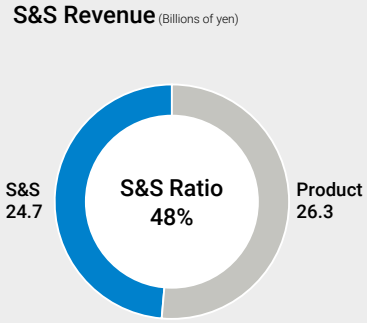
Business Strategies

# Infrastructure Company

## Company Information

| | |
|---|---|
| Main Target Markets | Water infrastructure / Ventilation |
| Main Products | Custom pumps / Fans |
| Market Share and Main Achievements | ・#1 domestic share in pumps for drainage pumping stations<br>・Ebara pumps installed at more than 1,000 drainage pumping stations in Japan Note: Ebara survey |
| Production Bases | ・EBARA CORPORATION, Futtsu Plant<br>・Ebara Vietnam Pump Company Limited: Hai Duong Plant (Vietnam)<br>・EBARA DENSAN: Yamaguchi Plant |
| Competitors | ・Japan: Kubota Corporation, DMW Corporation, Torishima Pump Mfg. Co., Hitachi Industrial Products, among others<br>・Overseas: Flowserve (US), KSB (Germany), Sulzer (Switzerland) |



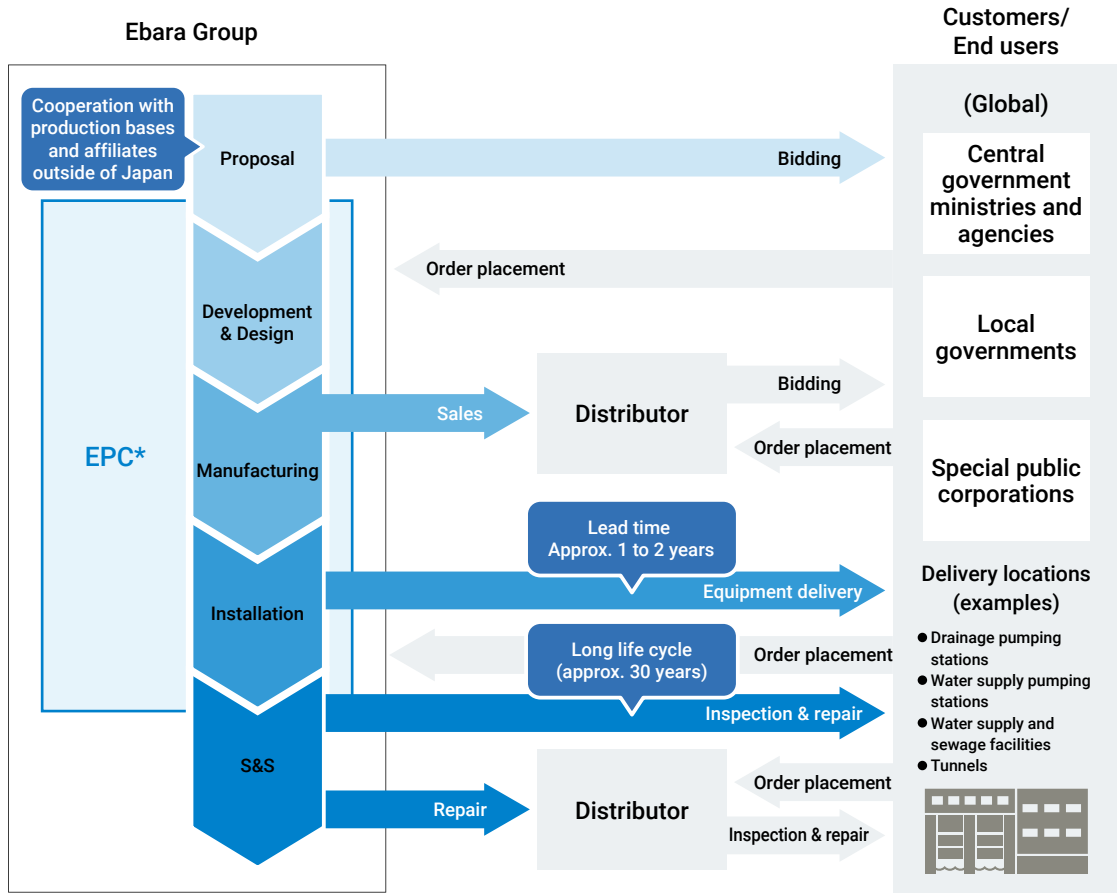

Note: The above graph displays actual figures for the fiscal year ended December 31, 2024.

## Business Vision (E-Vision 2030)

**In the areas of water, air, and the environment, we are striving to make social and industrial infrastructure more efficient and resilient by innovating our products and services, and to realize a sustainable society where people around the world can live comfortable and abundant lifestyles.**

## Company Characteristics and Business Flow

- Provide integrated support, from construction to inspection and repair, for infrastructure facilities such as drainage pumping stations, water supply and sewage facilities, and tunnels
- Relatively long product life cycle




* EPC: Engineering, procurement, and construction

Business Strategies

# Infrastructure Company

## Tackling issues with social infrastructure, we will create the future of infrastructure through technological innovation and global collaboration.

Currently, aging social infrastructure is a serious issue. An important mission for us is to rapidly and steadily respond to this.

In Japan, we are ensuring consistent revenue while maintaining a large share of the domestic market amidst increasing demand for the reconstruction and maintenance of infrastructure. Led by the Business Innovation Promotion Department, we are promoting more advanced construction and maintenance management using the IoT and more advanced production technology via DX and AI, and we are enhancing our competitiveness in the market through both improved productivity and minimized costs. Overseas, we will spread these innovations in production to our sites in Asia, and China and Vietnam in particular, and we will increase our competitiveness and expand the scale of our business globally.

We are also focusing on human resource development. While we value passing on Ebara's DNA to the next generation through the training of on-site engineers (qualified personnel) and human resources specializing in DX, we are also increasing our collaboration with stakeholders on a global level by accepting trainees from overseas and by promoting partnerships with distributors and interaction among human resources.

We will do our utmost to create a strong organization in which each and every employee, both in Japan and overseas, can continue to take on challenges in order to demonstrate our company identity: Engaging with water, we build a foundation for people and society to live in comfort.

**Teruyuki Ota**

Executive Officer
President, Infrastructure Company

## Market Environment

**Opportunities**

- Increased demand for reconstruction and maintenance of aging social infrastructure in Japan
- Increased infrastructure investment in conjunction with rising water demand attributable to population growth and urbanization in East and Southeast Asia
- Accelerated infrastructure investment in North America
- Increased demand for disaster prevention and mitigation equipment for water-related disasters due to extreme weather

**Threats**

- Changes in the competitive environment in the domestic market
- Intensifying price competition in overseas markets
- Supply chain disruption due to world affairs

## Our Strengths

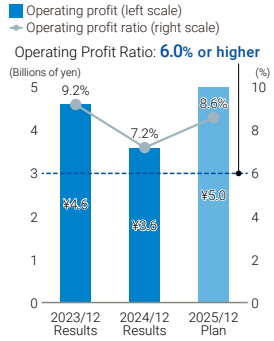
- Extensive delivery track record (#1 share in Japanese public infrastructure pumps)
- One of Japan's leading service networks (Ebara bases and distributor network)
- Experience in construction and delivery of large-scale projects in Japan and overseas
- Large pump factory and testing facilities with world-class production technology

## Basic Strategies of E-Plan 2025

**1 Expand market share in the domestic pump market**
**2 Deepen overseas pump market and secure profit**
**3 Improve productivity in and outside of Japan**

In Japan, we seek to increase our share of the steady infrastructure market and improve profitability through enhanced product development capabilities to solve social issues and improvements in productivity. Outside of Japan, we identify growth markets and create new value using pumps, related equipment, and engineering technologies.

## Financial Targets and Results




## Non-Financial Goals, KPIs, and Targets

| Related Materiality | 2025 Outcome Goals | KPIs | 2025/12 Targets | 2024/12 Results | Measures & Future Initiatives |
|---|---|---|---|---|---|
| 1 Contribute to the creation of a sustainable society | Protect people's safe and secure lives from disasters through stable operation of pump equipment | Total drainage capacity of pumps delivered in the disaster prevention field (drainage volume per second) | 145m³/s | Achieved 94% of 2024 target | • Expand share of pumps delivered in the domestic disaster prevention field<br>• Deliver pumps in the overseas disaster prevention field using engineering technologies cultivated in Japan |
| | Reduce GHG emissions | Unit sales of products with low environmental impact | Market launches | Continued product development | Developing and marketing high-efficiency pumps to reduce our customers' environmental impact and contribute to their increased profits |

Business Strategies

# Infrastructure Company

## 2024 Results and Future Challenges

Basic Strategies 1

### Expand market share in the domestic pump market

**Results**
- The orders received were increased by continuously working on major efforts, such as focusing on comprehensively evaluated projects* and enhancing the distributor network, and by receiving multiple orders for projects involving the remote monitoring and control of pump stations.
- Market launch of a system to detect signs of abnormalities at drainage pump stations, which are increasingly needed by society.

* A form of bidding in which the successful bidder is determined by comprehensively evaluating price and factors other than price (e.g., quality).

**Future Challenges**
- Being actively involved in basin flood control, DX in infrastructure, and decarbonization efforts led by the national government.
- Promoting the development of new technologies and new products that incorporate societal needs.

Basic Strategies 2

### Deepen overseas pump market and secure profit

**Results**
- Further efforts were made to secure projects in markets where Ebara's (Head Office) technological advantage can be demonstrated, and an order was received for a large project in North America.
- Enhanced cooperation with subsidiaries and affiliated companies overseas, primarily with regard to providing support for improved system technology.

**Future Challenges**
- In cooperation with subsidiaries and affiliated companies, we will enhance our approaches to markets overseas such as South America in addition to the regions we had prioritized, i.e., North America, Southeast Asia, and the Middle East.

Basic Strategies 3

### Improve productivity in and outside of Japan

**Results**
- Reduced procurement costs by utilizing castings produced by our bases overseas (primarily our Group company in Vietnam).
- Reconfigured the operations system at the Futtsu Plant to improve productivity.

**Future Challenges**
- Raising awareness of cost planning based on the ExValuE* project and expanding business while increasing profits.
- Streamlining plant production lines and reducing delivery times by restructuring production lines and further promoting DX in design and operational processes in order to produce highly competitive products.

* This project is to promote a shift to pursuing maximizing customer value and profits for Ebara starting in the product planning stage (functional improvements, reduced costs, and timely market launches) in order to provide more value to our customers, as set forth in E-Vision 2030.

熱い談

Value Creation

## 30th anniversary of the founding of the Group company in Vietnam

**Continuing to contribute to water infrastructure in Vietnam and around the world as a major overseas base**

Ebara Vietnam Pump Company Ltd. (EVPC) was founded in 1995 and will celebrate its 30th anniversary in 2025. As the Infrastructure Company's main base overseas, EVPC manufactures and sells custom pumps and imports and sells standard pumps in Vietnam. EVPC has delivered more than 1,000 pumps for agriculture, water supply, sewage, and flood control in Vietnam and more than 2,000 pumps for other countries and regions. When Hanoi was hit by heavy floods in 2008, our pumps that had been delivered to a pumping station in South Hanoi operated continuously for a week, preventing the damage from spreading.

Left: The old plant (as of 1995)
Right: The new plant (completed in 2016)

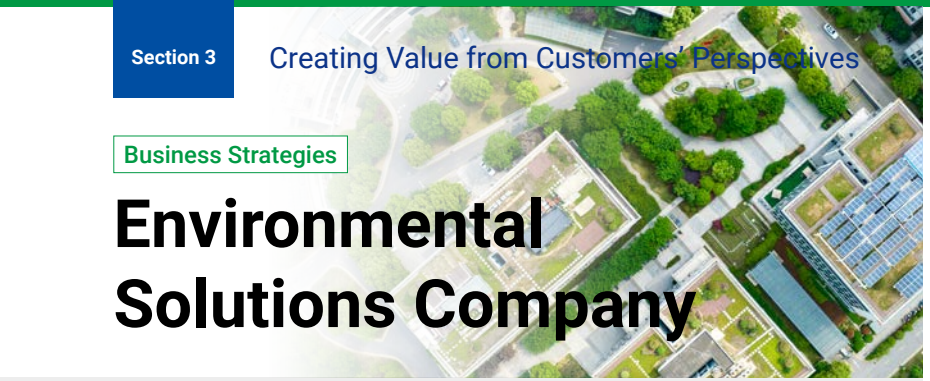
Interview

## Further enhancing the technological capabilities we have fostered in Vietnam and Japan

**Yuka Ishihara**
Marketing,
Ebara Vietnam
Pump Company Ltd.

**Hironobu Nakajima**
General Director,
Ebara Vietnam
Pump Company Ltd.

When EVPC was first established, there was a large gap between it and Japan in terms of technology, and engineers had to be trained. For a number of years, the Japanese staff in each department of the Fluid Machinery & Systems Business at the time endeavored to train them, and the Vietnamese staff responded by honing their technical skills. By sincerely addressing the infrastructure needs of Vietnam and the broader Southeast Asian market, EVPC has contributed to strengthening the Ebara brand in the region. Although order volumes were initially sluggish, the company has since grown to provide services for high-pressure pumps and blowers for industrial use, and has expanded into the sales of standard pumps, resulting in a substantial increase in profitability. Today, EVPC plays a role not only within Vietnam but also as part of the global supply chain for custom pumps, with exports expanding throughout Southeast Asia and other regions worldwide. Looking ahead, EVPC aims to become a leading hub in Asia by further enhancing the technical capabilities it has steadily built and strengthening its competitiveness to expand into untapped markets.



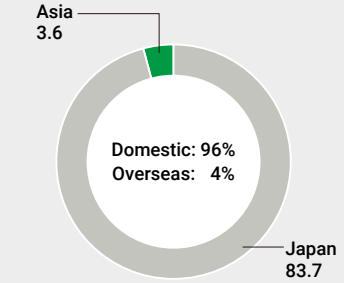
Business Strategies

# Environmental Solutions Company

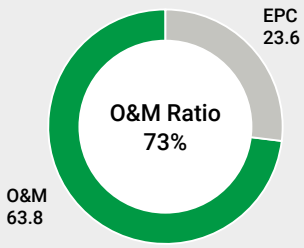
## Company Information

| | |
|---|---|
| Main Target Markets | Solid waste treatment |
| Main Products | ・Municipal waste incineration plants<br>・Industrial waste incineration plants |
| Market Share and Main Achievements | ・Over 500 domestic and overseas waste treatment facilities delivered cumulatively<br>・Over 80 waste treatment plants under contracted operation & maintenance cumulatively<br>Note: Ebara survey |
| Production Bases | ・EBARA Environmental Engineering (China) Co., Ltd: Design, manufacture and sales of incinerators, waste heat boilers, sludge dryers, auxiliary equipment, gas treatment facilities, etc. |
| Competitors | Kanadevia (Japan), JFE Engineering (Japan), Takuma (Japan), Nippon Steel Engineering (Japan) |

**Revenue by Region** (Billions of yen)




**S&S Revenue** (Billions of yen)




Note: The above graph displays actual figures for the fiscal year ended December 31, 2024.

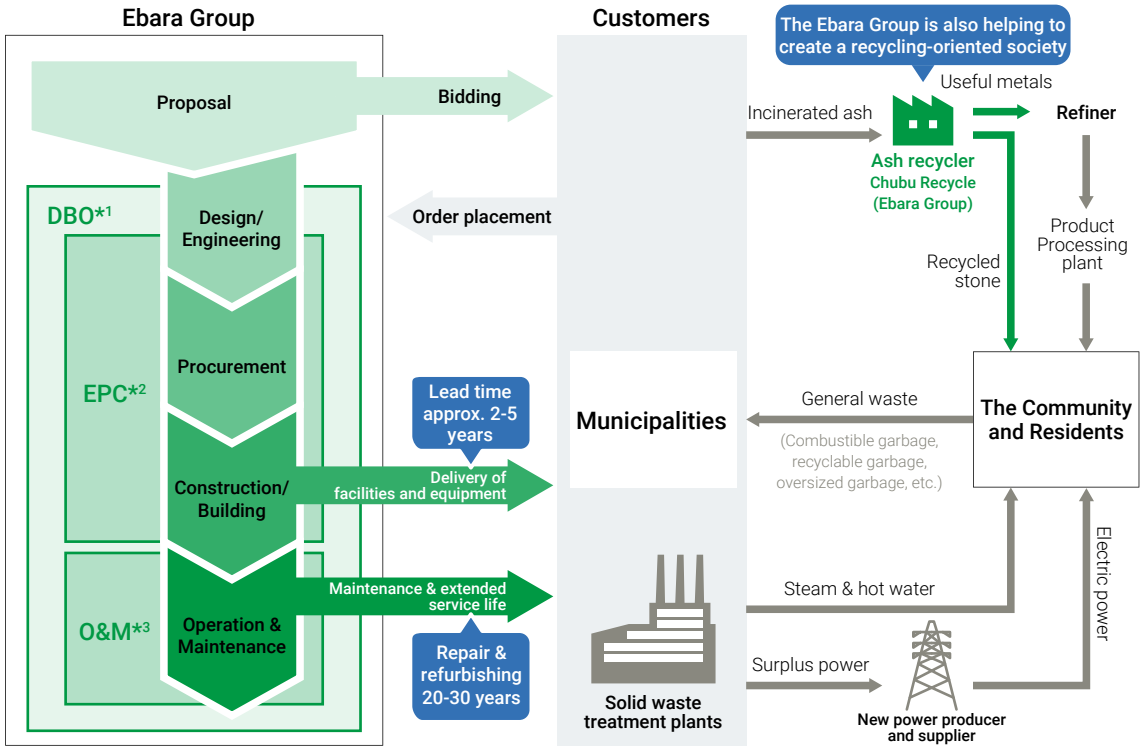
## Business Vision (E-Vision 2030)

**Expand business to become a resource circulation solutions provider with operations centered on waste treatment plant construction and operation that provides integrated EPC services primarily to local government.**

## Company Characteristics and Business Flow

- Three business models: DBO*1, EPC*2, and O&M*3
- DBO and O&M involve repair and refurbishing for 20 to 30 years
- Having businesses that contribute to a circular economy, including local production and local consumption of electricity through power generated by incinerating waste and reuse of incinerator ash (valuable metals, stone, etc.)

*1. DBO: An approach whereby a public entity procures financing and owns a facility while contracting a private operator to design, build, and operate the facility
*2. EPC: Engineering, procurement, and construction of a facility
*3. O&M: Services to operate and maintain a facility



Business Strategies

# Environmental Solutions Company

## The Environmental Solutions Company will strengthen the basis for trust in it with its core business and grow into a recycling solution provider.

The slogan for the Environmental Solutions Company is "Change the thinking on disposal. Change the future." The Environmental Solutions Company is focused on becoming a recycling solution provider. Its core business is the construction and operation of solid waste treatment plants, and it is also involved in chemical and waste recycling. In order to achieve that vision, the earnings base for its core business has to be strengthened first. In anticipation of future labor shortages, the Environmental Solutions Company will improve the quality and increase the value of asset management by proactively introducing AI/ICT and accelerating automation. The market is expected to shrink due to the progress of recycling and a decreasing population. In that market, we will strive to continue consistently receiving orders and ensure the volume of assets by focusing on preparatory efforts in the basic concept stage of projects and by further enhancing its ability to accurately discern customer needs and make proposals.

Recycling, decarbonization, and adoption of a nature-positive approach have become global issues. Over the past few years, society as a whole, including individuals, companies, and municipalities, has united to accelerate various efforts to address those issues. Our mission is to take the lead in helping to create a world where people can live in comfort with nature.

**Hideki Yamada**

Executive Officer
President, Environmental Solutions Company

### Market Environment

**Opportunities**

- Reconstruction and upgrade demand from aging waste treatment plants
- Increased outsourcing of plant operation to the private sector
- Increased demand for renewable energy
- Need for waste plastic processing (enforcement of the Act on Promotion of Resource Circulation for Plastics)
- Trends to improve chemical recycling rate of waste plastic

**Threats**

- Consolidation of waste treatment plants in response to domestic population decrease
- Workforce contraction
- Intensification of price competition

### Our Strengths

- Integrated system for providing services ranging from engineering and construction to O&M
- Track record of constructing more than 500 plants in Japan and overseas utilizing a wide range of incinerator technologies
- O&M expertise founded on industry-leading operation contracting track record
- Cutting-edge plant operation initiatives employing AI and ICT
- Gasification technologies related to chemical recycling

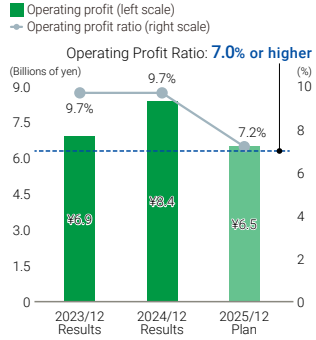
### Basic Strategies of E-Plan 2025

**1 Strengthen the foundation of our core business**

**2 Strengthen initiatives as a solution provider based on life cycle assessments (LCA) by appropriately grasping changes in the market, such as decarbonization and resource recycling**

The Environmental Solutions Company is striving to improve the price competitiveness and non-price-related elements of proposals for new DBO projects and to prevent additional EPC costs while working to further strengthen the revenue base for O&M projects. We are also strengthening relations with communities and municipalities and enhancing our forays into the market as a provider of decarbonization and recycling solutions revolving around LCA.

### Financial Targets and Results




### Non-Financial Goals, KPIs, and Targets

| Related Materiality | 2025 Outcome Goals | KPIs | 2025/12 Targets | 2024/12 Results | Measures and Future Initiatives |
|---|---|---|---|---|---|
| 3 Conduct comprehensive environmental management | Greenification of the Ebara Group's energy supply | $CO_2$ emission factor of electricity supplied to the Ebara Group from the New Power business | 0.313 kg-$CO_2$/kWh | 0.312kg-$CO_2$/kWh | Procurement of renewable energy through off-site PPAs and purchase of non-fossil fuel certificates |
| 1 Contribute to the creation of a sustainable society | Develop technologies that reduce $CO_2$ emissions and enable carbon resource circulation | Development of practical applications of technology (ICFG®*) for reusing chemical raw materials derived from waste plastics (implementation in 2030) | Implementation of pilot testing | Construction of a pilot test facility was almost finished | 2025: Trial operation of a pilot plant to be completed, trial conversion of waste plastic into oil to be performed and evaluated<br>2030: Full Implementation |

* ICFG® is a registered trademark of Ebara Environmental Plant in Japan

Business Strategies

# Environmental Solutions Company

## 2024 Results and Future Challenges

Basic Strategies 1

### Strengthen the foundation of our core business

**Results**

- Increased profits were driven by factors such as life extension and maintenance in O&M, growth in long-term comprehensive contracts, and temporary factors, resulting in operating profit exceeding the targets set in E-Plan 2025.
- Achieved 122 consecutive days of unmanned operation in waste incinerators through the advanced automatic combustion control system.

**Future Challenges**

- To strengthen proposal capabilities for public sector EPC projects, we are prioritizing initiatives such as regional contribution and power generation/$CO_2$ reduction. While visualizing the progress of long-term projects, we focus on proposing value-added solutions that enable optimal facility operations.
- Proposing fire prevention solutions using both hardware and software to detect fires caused by lithium-ion batteries in garbage and to prevent the spread of fire, thus enhancing safety at customer facilities.
- In order to eliminate occupational accidents, we will promote thorough measures to prevent accidents from recurring and use DX, we will improve employee engagement, and we will seek to create a comfortable and rewarding work environment.

Basic Strategies 2

### Strengthen initiatives as a solution provider based on life cycle assessments (LCA) by appropriately grasping changes in the market, such as decarbonization and resource recycling

**Results**

- To respond to changes toward a circular economy and decarbonized society beyond 2030, construction of a pilot plant for chemical recycling technology using ICFG®* has been largely completed.
- The New Power Business has achieved stable revenue through linkage with market prices.

* ICFG® is a registered trademark of Ebara Environmental Plant in Japan.

**Future Challenges**

- From 2025, we will begin trial operations and various evaluations of chemical recycling technology using ICFG®, aiming for commercial operation by 2030.
- The company intends to respond to the declining workforce in the operation of maintenance and management facilities by actively investing in automation and reduced labor requirements and it intends to reduce occupational accidents by reducing hazardous work.
- To combat global warming, we intend to actively propose carbon-neutral projects to extend service life. We also aim to reduce $CO_2$ emissions and create a sustainable society by promoting locally distributed power sources that supply electricity generated from the heat produced by burning waste at a waste incineration plant to public facilities in the surrounding area, local companies, and our Group's offices.

熱い談

Value Creation

## Restoring operations at the Nanaka Recycling Center in the City of Nanao

**Helping to maintain the functioning of local social infrastructure through a rapid post-earthquake response**

The Nanaka Recycling Center, a waste treatment facility in the city of Nanao, Ishikawa Prefecture that has been operated by Ebara Environmental Plant since 2023, accepts and incinerates general waste from the city of Nanao and the town of Nakanoto. The center is also responsible for treating waste from households affected by the Noto Peninsula earthquake that occurred on January 1, 2024.

At the time, the facility was damaged and the incinerator was immediately shut down. The next day, a disaster response headquarters was set up, and on the 4th, an assistance team from the head office was on-site. With the support of our Group companies and partnering companies, we quickly restored the Center, which resumed normal operations 10 days after the earthquake. We were able to help maintain the functioning of local social infrastructure. In addition, immediately after the disaster, this facility was used as a temporary shelter for nearby residents and served as a link to disaster evacuation centers.

Interview

## When a disaster strikes, that's the time to make sure everything is done right, ensuring the sanitation, safety, and peace of mind of the community.

**Jun Okabe**
Marketing & Sales Division
Marketing & Sales Department 1
Sales Section 2
EBARA Environmental Plant Co., Ltd.

**Fumiaki Kodato**
Operation & Maintenance Business Division
Maintenance Engineering Department
Maintenance Section (Comprehensive O&M)
EBARA Environmental Plant Co., Ltd.

With the incinerator shut down, the facility could not accept waste, and the concern was that waste would accumulate in the city. We resumed incineration 10 days after the earthquake and are relieved that we were able to protect a sanitary environment for the community. Communication was difficult for some time after the earthquake, so we visited our customers every day to report on the current status of the facility and recovery plans, in an effort to provide them with peace of mind. Customers appreciate that Ebara's local office and the head office in Tokyo collaborated with each other and quickly rushed to the site to assess the damage and implement a repair plan in the shortest possible time. We have currently received an order to repair the disaster-related damage to the facility, and work to fully restore it is underway. As a company responsible for social infrastructure, we will continue to strive to consistently operate facilities safely and reliably.

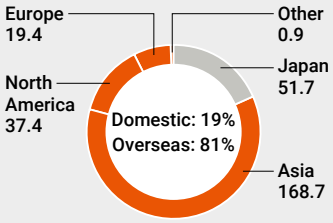
Business Strategies

# Precision Machinery Company

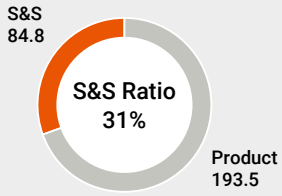
## Company Information

| | |
|---|---|
| Main Target Markets | Semiconductor manufacturing |
| Main Products | Dry vacuum pumps / CMP systems / Gas abatement systems |
| Market Share and Main Achievements | ・#2 global share in CMP systems<br>・#2 global share in dry vacuum pumps Note: Ebara survey |
| Production Bases | Fujisawa Plant, Kumamoto Plant |
| Competitors | ・Dry vacuum pumps: Atlas Copco (Edwards Vacuum) (UK), Kashiyama Industries (Japan)<br>・CMP systems: Applied Materials (US) |

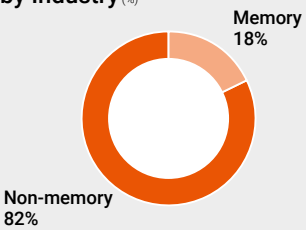
### Revenue by Region (Billions of yen)



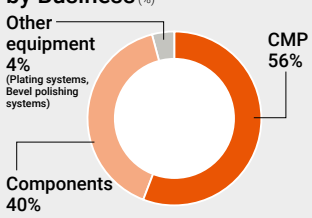

### S&S Revenue (Billions of yen)




### Proportion of Revenue by Industry (%)




### Proportion of Revenue by Business (%)



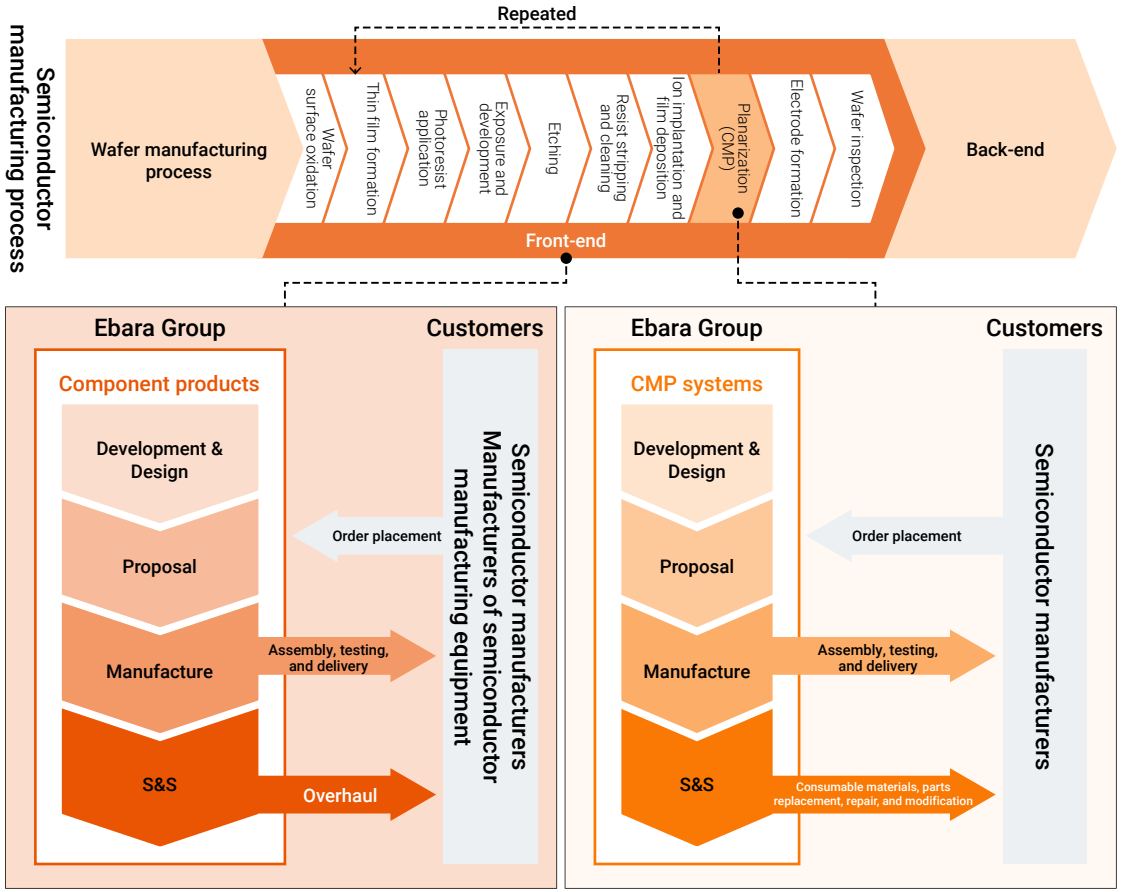

Note: The above graph displays actual figures for the fiscal year ended December 31, 2024.

## Business Vision (E-Vision 2030)

**Contribute to the development of society through partnerships and distinctive technologies centered on the semiconductor field while helping create a more enriched world through endeavors in new fields.**

## Company Characteristics and Business Flow

- Component products such as dry vacuum pumps and gas abatement systems used in the entire front-end process of semiconductor manufacturing are supplied to semiconductor manufacturers and manufacturers of semiconductor production equipment
- Chemical mechanical polishing (CMP) systems used in the planarization process (a front-end process) are delivered to semiconductor manufacturers



Business Strategies

# Precision Machinery Company

## We help to enhance our customers' quality and operational efficiency while facilitating advances in semiconductor technologies and the creation of a decarbonized society.

The semiconductor industry has made unprecedented advances since 2020. In addition to the trends of the IoT, digital transformation (DX), and green transformation (GX), recent advances in semiconductor performance have made artificial intelligence (AI) more of a part of our daily lives, gradually transforming the way we live. Our mission is to work with our customers, semiconductor device manufacturers, to shape the development of semiconductors in the semiconductor industry. Moreover, we believe that an important duty for us is to help improve our customers' production quality and efficiency while supporting the semiconductor supply chain, which is a key element of economic security.

The fiscal year ending December 31, 2025 will be a year to look back on E-Plan 2025. The strategies cited in E-Plan 2025 are to strengthen product and solution development capabilities, increase production capacity, and rebuild global business infrastructure to accommodate expansion of business scale, and the plan has sought to enhance our business structure in anticipation of upcoming market growth. A new production building at the Kumamoto Plant, our main plant for CMP systems, was completed at the end of 2024 and is now operational. A new building to develop semiconductor manufacturing equipment was completed at the Fujisawa Plant and a new plant to overhaul dry vacuum pumps in the Tohoku region was completed. The foundation for the next stage of growth is steadily being laid. Building on these strengthened capabilities, we aim to become a unique and indispensable partner in the semiconductor industry, which is poised for continued rapid growth. We are committed to providing solutions that address challenges in our customers' semiconductor manufacturing processes while also helping to advance decarbonization.

**Isao Nambu**

Executive Officer
President,
Precision Machinery Company

## Market Environment

**Opportunities**

- Increased demand for semiconductors due to the spread of the IoT, AI, and self-driving cars, the diversification of working patterns using cloud computing and communications, the spread of DX and the Metaverse, and expanded investment in GX
- International strategic management of semiconductor resources and attendant active investment in the area of semiconductors in China, Europe, the US, and other regions
- Demand for new equipment due to the creation of new semiconductor manufacturing techniques as a result of the advancement of semiconductors

**Threats**

- A wave of capital investment due to fluctuations in semiconductor demand
- Changes in market trends due to geopolitical risks and their impact on production systems and customer support
- Rising energy costs leading to price increases
- The impact of strengthened environmental regulations, including restrictions on PFAS, on semiconductor manufacturing
- Attracting human resources in a rapidly expanding semiconductor market

## Our Strengths

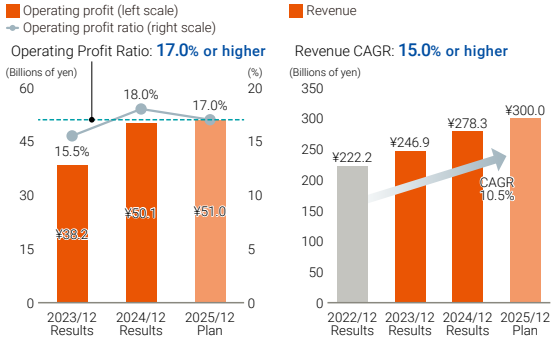
- Technologies such as those for rotating machinery, fluid equipment, mechanical control, magnetic control, electron beam control, manufacturing equipment, wet processes, gas decomposition and abatement, and energy conservation
- Advanced production technology capabilities such as automated production with robots
- Bases positioned near customers worldwide
- Flexible, high-quality customer support capabilities
- Amassing and passing on technology by retaining human resources

## Basic Strategies of E-Plan 2025

**1 Strengthen product and solution development capabilities**
**2 Increase production capacity**
**3 Reconstruct global business infrastructure to accommodate expansion of business scale**

We intend to move away from a product-oriented model of providing products and services to a model of providing new value that only Ebara can offer, starting with the customer's problems. In addition, we will rapidly strengthen our structures in anticipation of our customers' production expansion and global development, and support the rapid growth of the semiconductor market to drive our own business expansion.

## Financial Targets and Results




## Non-Financial Goals, KPIs, and Targets

| Related Materiality | 2025 Outcome Goals | KPIs | 2025/12 Targets | 2024/12 Results | Measures & Future Initiatives |
|---|---|---|---|---|---|
| 1 | Reduce GHG emissions | Amount of GHG emissions that can be reduced by gas abatement systems in semiconductor manufacturing processes that use GHGs | 20% increase from 2022 | 1.9% increase | Developing gas abatement systems that do not use fossil fuels |
| 1 | | Reduction of GHG emissions from dry vacuum pump manufacturing | 10% reduction from 2022 | 0.5% increase | Reducing environmental impact through a lighter weight |
| 2 | Reduce water usage and discharge | Reduction of pure water use by CMP systems | 30% reduction from 2022 | 20% reduction | Continuing to develop cleaning methods that consume less pure water |
| 2 | Develop foundational technologies for semiconductor miniaturization | Rate of the development of foundational technology for 14Å semiconductor manufacturing | 100% | 70% | Promoting the development of constituent technologies for CMP to support technology for the manufacture of the 14Å generation of semiconductors |

Business Strategies

# Precision Machinery Company

## 2024 Results and Future Challenges

Basic Strategies 1

### Strengthen product and solution development capabilities

**Results**
- Commenced sales of new gas abatement systems.
- Started sales of electrolytic plating equipment for advanced packaging applications.
- Constructed a new building to develop new semiconductor manufacturing equipment (completed in June 2025).

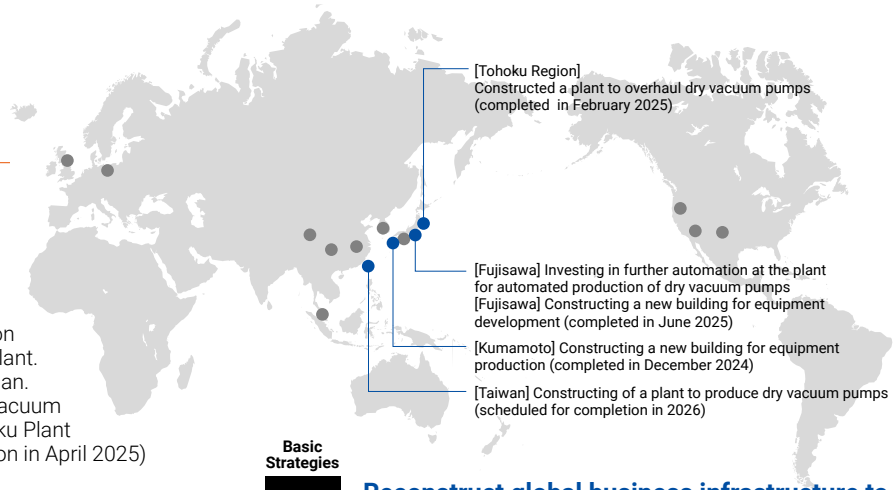
**Future Challenges**
- Focusing on accelerating technological development and delving into technology to meet more varied customer needs and to reduce environmental impact.
- In addition to developing individual products, we will promote the development of comprehensive solutions, including peripheral technologies related to processes, to create irreplaceable value for our customers.
- Accelerating development efforts by using the new building for development of semiconductor manufacturing equipment.

Basic Strategies 2

### Increase production capacity

**Results**
- Completed construction of the new production building (the K3 building) at the Kumamoto Plant.
- Construction of a second plant in Taiwan began.
- Construction of a new plant to overhaul dry vacuum pumps: Ebara Field Tech. Corporation's Tohoku Plant (completed in February 2025, started operation in April 2025)

**Future Challenges**
- Putting the new production building (the K3 building) at the Kumamoto Plant on track to go into operation.
- Promoting the construction of production buildings and overhaul bases and the introduction of equipment to increase production capacity in response to market growth and increasing demand.




Basic Strategies 3

### Reconstruct global business infrastructure to accommodate expansion of business scale

**Results and Future Challenges**
- ERP is being introduced at our domestic and foreign sites. By introducing this system at all of our sites, linking our organizational structures, and strengthening our foundation, we will provide reliable support to our customers who are expanding globally and we will grow together with them.
- Accelerating the attraction and training of human resources and growing further.

熱と誠

Value Creation

## Development of the LPCMN model of a combustion-based exhaust abatement system

**Helping to improve the operating rate and reduce the environmental impact of semiconductor production facilities**

A gas abatement system needs to be highly durable so a production line can continuously operate without stopping and have a high level of performance in treating persistent gases. To meet these needs, we have developed the LPCMN model, a new gas abatement system, and we commenced sales in January 2025. This product extends continuous operating time by minimizing adhesion of by-products with a newly developed two-stage combustion burner, thereby contributing to an improved operating rate for semiconductor production facilities. In addition, its level of performance in treating persistent gases such as CF4 (carbon tetrafluoride), which has a very high global warming potential, is higher than that of conventional models, and it can be installed directly under a dry vacuum pump with short piping, thereby reducing power consumption and substantially reducing the footprint of the system. It can use hydrogen fuel as well as fossil fuels and help to reduce environmental impact.

Interview

## Seeking to be the best partner as an exhaust solutions provider

**Kazumasa Hosotani**

Development Section 1,
Environmental Products Engineering Department,
Components Division

In order to elevate standards of living and support abundant lifestyles for all, high-performance semiconductors need to be manufactured at a low cost and a limited minimal environmental impact. As a total solutions provider of exhaust systems that deals in both vacuum pumps and gas abatement systems, our mission is to reduce the footprint and energy consumption of our customers' semiconductor manufacturing plants. The LPCMN model we developed is smaller and has improved performance in terms of gas abatement and durability, resulting in a higher operating rate for production facilities. To be the best partner for our customers, we will continue to work on reducing semiconductor manufacturing costs and reducing environmental impact by developing high-volume gas abatement models that treat 4 times the volume of gas in a single unit, models that can burn hydrogen fuel, and more compact and less costly models that feature the LPCMN model under a dry vacuum pump.

New Businesses

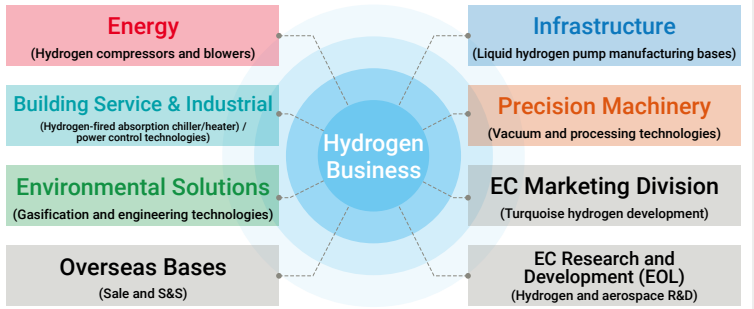
# Hydrogen-related Business

(Hydrogen and Aerospace businesses)

## Business Vision (E-Vision 2030)

**We will boldly challenge the new areas of hydrogen production, transport, and end-use and aerospace in order to solve the problems facing the world in 2050 and improve the lives of people in the future. We will continue to develop new technologies and solutions quickly and grow them into new businesses that support Ebara.**

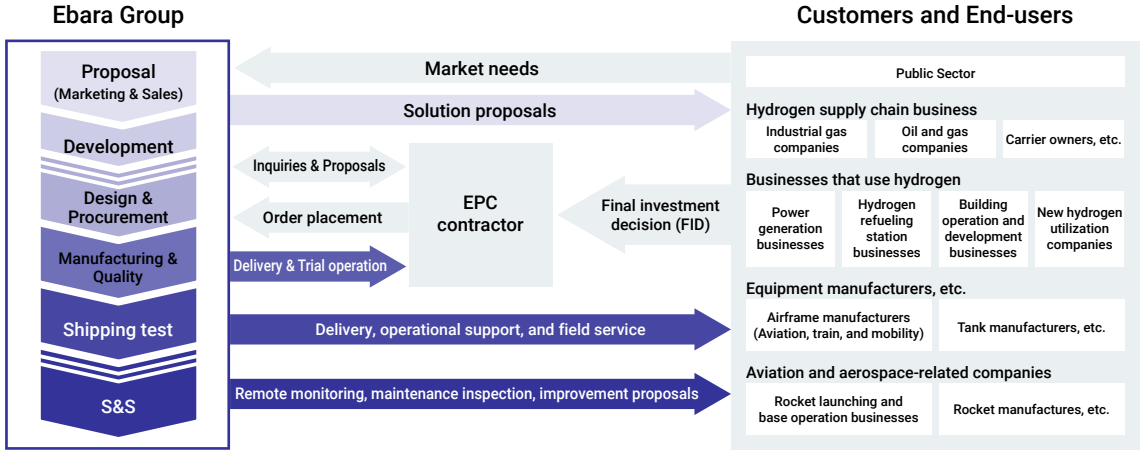
**Contributing to the new hydrogen market through technological synergies that have been linked since our founding**



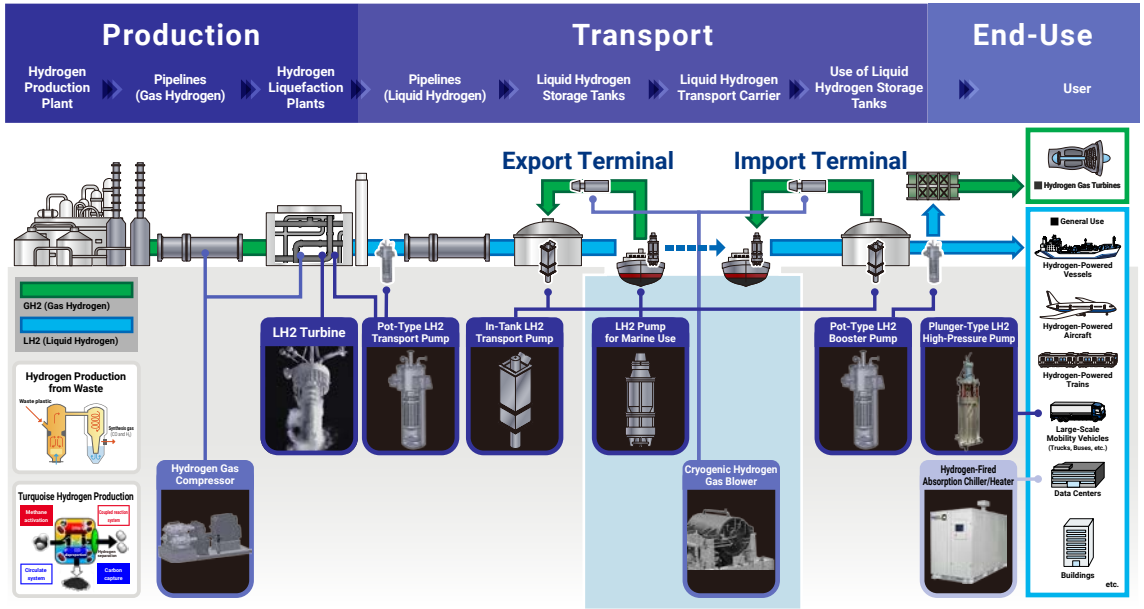

Ebara leverages our over 100 years of history and the technology and experience of the entire Group to engage in the hydrogen-related businesses (hydrogen and aerospace). We leverage the strengths of each in-house company and corporate headquarters to create world-first technologies and solutions for building a global hydrogen supply chain. This development technology is also utilized in the development of electric turbo pump systems for rocket engines, such as cryogenic fuel and ultra-high speed rotation technology for aerospace. The hydrogen and aerospace fields are forecast to grow rapidly worldwide from 2030 onward. Anticipating the needs of the market, the entire Group will work together to realize Ebara's unique social contribution.

## Company Characteristics and Business Flow

- New and existing companies are entering the market, and new distribution channels are being formed on a global scale.
- We discern the future needs of end-users and develop technologies and solutions from a long-term and Groupwide perspective.
- We will provide products and reliable solutions that are essential to markets and customers.




## Global Large-scale Hydrogen Supply Chain



Business Strategies

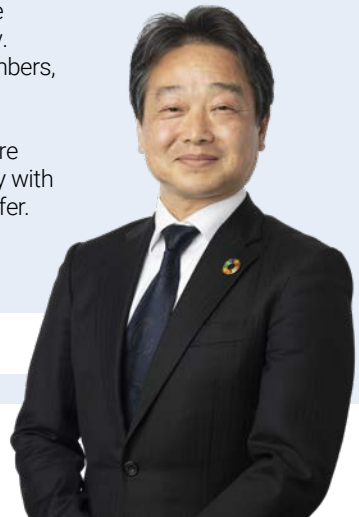
# Hydrogen-related Business
(Hydrogen and Aerospace businesses)

## Leveraging Ebara's 100 years of technology for the next 100 years of social contribution

Countries and regions around the world have issued carbon neutral declarations and are working toward decarbonization. In Europe, the public and private sectors have encouraged approximately 140 trillion yen in investment plans, and in Japan, the revision of the Basic Energy Plan and promotion of the National Strategy for a Green Transformation have been accelerated. The global demand for resources like hydrogen is expected to increase more than fivefold by 2050. In light of this, technologies are being developed and businesses are being created to contribute to various areas, including mobility, power generation, and industry.

The Ebara Group is contributing to implementing technologies related to clean hydrogen in every area of production, transport, and end-use of hydrogen to help create a hydrogen energy-based society for the future. In terms of hydrogen production, we are developing technologies for producing hydrogen by gasifying waste plastics and separating hydrogen and carbon from methane gas using a catalyst. Regarding the transport of hydrogen, we are developing various liquid hydrogen pumps, cryogenic hydrogen gas blowers, and hydrogen gas compressors essential for global large-scale supply chains. In the end-use area, we will also contribute to the decarbonization of building air conditioning and plants by developing hydrogen-powered absorption chiller-heaters. In the space industry, liquid hydrogen is used as a key rocket fuel. By taking advantage of cryogenic and high-speed rotation technologies, we are applying them to the development of electric turbo pump systems for rocket engines and for hydrogen aircraft.

Hydrogen and the aerospace market are essential for the next generation of society. With the addition of new, experienced members, further progress has been made in the development of technologies, distribution channels, and manufacturing bases. We are confident that we can contribute to society with solutions that only the Ebara Group can offer.



**Teruaki Tsukamoto**

Division Executive,
CP Hydrogen Strategic Business Unit

### Market Environment

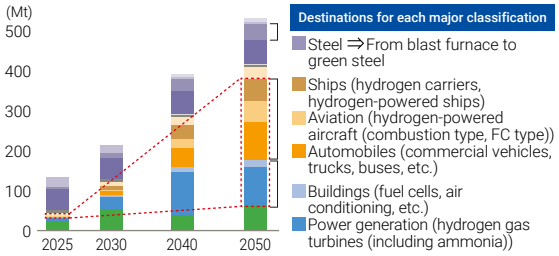
**Opportunities**

- The global, irreversible shift toward decarbonization and the expansion of the hydrogen market
- Early entry into both the hydrogen and aerospace markets and formation of new distribution channels
- Expansion of space business development led by the private sector and government support

**Threats**

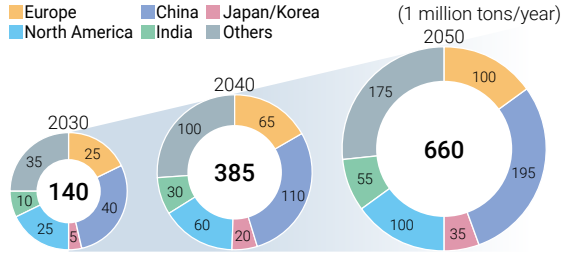
- Changes in government policies and plateauing of clean energy policies
- Delays in projects or changes in plans due to review of government funding contributions
- Intensification of competition for development by new entrants

### Growth in Hydrogen Utilization




Source: Hydrogen Council data

### Growth in Hydrogen Utilization and Forecast of Demand Trends for Hydrogen and Derivative Products (By Region)




Source: Hydrogen Council data

### Our Strengths

- An execution system that leads the world in product development and high competitiveness that leverages the assets of the entire Ebara Group
- A world-first product range using cryogenic fluids and high-speed rotary equipment technology, etc.
- "Highly reliable products and ability to provide solutions" backed up by product shipment tests using liquid hydrogen (actual liquid)

### Strategies

**1 Build a global, large-scale hydrogen supply chain**
**2 Develop new technologies to promote Production and End-Use of hydrogen**
**3 Create new value in the aerospace sector**

We anticipate market and customer challenges and develop and provide leading-edge, highly-reliable solutions. We will enhance our thorough market-in perspective and speed of development to become a leader in new growth markets.

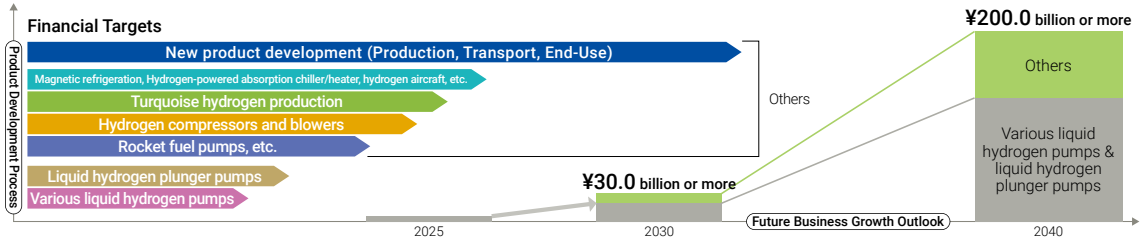
### Future Business Growth Outlook

**Financial Targets**

- To grow into a 30 billion yen business in 2030 and a 200 billion yen business in 2040
- Anticipate future market needs and provide high-value-added products

**Non-Financial Targets**

- Hydrogen technology is estimated to contribute to approximately 10% of GHG reductions (IEA announcement)
- By developing and providing new products in all areas of Production, Transport, End-Use, we will contribute to the world's targets for decarbonization



Business Strategies

# Hydrogen-related Business (Hydrogen and Aerospace businesses)

## 2024 Results and Future Challenges

Basic Strategies 1

### Build a global large-scale hydrogen supply chain: connect

**We will develop cryogenic technology essential for the supply chain of liquid hydrogen (−253°C), which is expected to replace LNG as the next-generation energy source, and establish our position as a leading manufacturer.**

**Results**

**Three world firsts to realize the supply chain**

- Launched the world's first liquid hydrogen booster pumps (centrifugal type; developed in 2022) with even higher capacity and high-pressure pumps
- Promoted development of the world's first cryogenic hydrogen gas blower (under development)
- Built the world's first liquid hydrogen actual-scale commercial product testing and development center (Futtsu city, Chiba Prefecture) (under construction)

**Future Challenges**

- Secure orders for liquid hydrogen pumps and cryogenic return gas blowers
- Create alliances with key players in the supply chain
- Further contribute to the construction of the supply chain, including liquid hydrogen carriers
- Develop liquid hydrogen booster pumps (centrifugal type) with even higher capacity and pressure
- Establish overseas S&S bases

Basic Strategies 2

### Develop new technologies to promote "Production and End-Use" of hydrogen "Expansion"

**We will develop new products that contribute to the global expansion of hydrogen utilization, such as in mobility and air conditioning.**
**We will actively take on the challenge of developing new products in promising future areas of use.**

**Results**

- Developed ultra-high pressure (90 MPa) liquid hydrogen plunger pumps for hydrogen fueling stations (under development)
- Performed demonstration tests of the world's first hydrogen-powered absorption chiller-heater and brought it to market
- Ebara and Tohoku University established the Co-Creation Research Institute, creating the future with "flow"

**Future Challenges**

- Take on the challenge of next-generation mobility, such as hydrogen-powered aircraft
- Expand into areas where demand is expected to grow in the future, such as hydrogen reduction steelmaking and power generation, etc.
- Develop clean hydrogen manufacturing equipment to manufacture inexpensive, clean hydrogen and use it in the community

熱い談

Value Creation

Interview

## A passionate challenge for -253°C – Create new markets to support our globe in the future

### Liquid hydrogen booster pumps (centrifugal type) for a global large-scale hydrogen supply chain

CP Hydrogen Strategic Business Unit
**Takayuki Shio** (Left)
Marketing Strategy & Sales Department
**Mao Itazawa** (Right)
Hydrogen Rotating Equipment Technologies Department

Liquid hydrogen that has been brought to Japan by sea is stored in domestic storage tanks and dispensed from the tanks to supply hydrogen gas turbines or to transfer it to hydrogen gas consumers nearby, which requires booster pumps. Drawing on our expertise in high-pressure centrifugal pumps and cryogenic technology, we developed the world's first booster pump to supply liquid hydrogen as fuel in 2022. The product has already launched and will be marketed to meet future rising demand.

### Ultra high-pressure liquid hydrogen plunger pumps for hydrogen fueling stations

CP Hydrogen Strategic Business Unit
**Yuzo Miyazaki** (Left)
Marketing Strategy & Sales Department
**Shun Nishimura** (Right)
Hydrogen Process & Component Development Department

In the mobility sector, the market for plunger pumps used in hydrogen fueling stations is starting to emerge in North America, Europe, and South Korea, particularly for large commercial vehicles. The pressure and capacity of plunger pumps vary depending on mobility requirements. Currently, we are focusing on developing pumps with ultra-high supply pressure specifications of 90 MPa. Although there are leading manufacturers around the world, they are still in the development stage. We will continue to monitor the market and develop the product accordingly.

Business Strategies

# Hydrogen-related Business
(Hydrogen and Aerospace businesses)

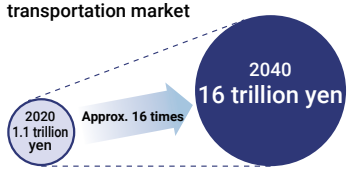
## 2024 Results and Future Challenges

Basic Strategies **3**

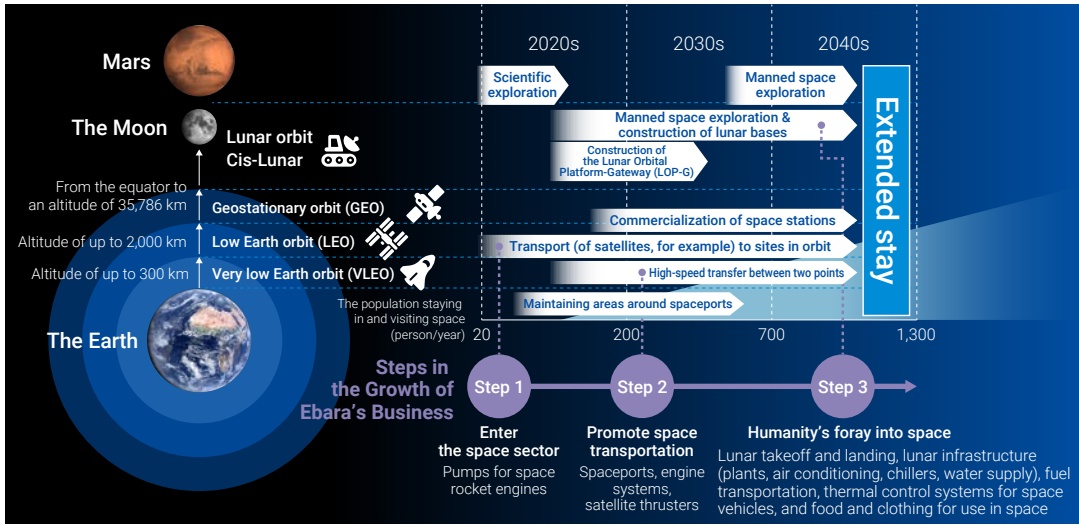
### Creating technologies that provide new value and providing essential assistance for human activities in space

With more than 280 rocket launches planned in Japan over the next 10 years, the space transportation market has shown rapid growth in recent years. Ebara, aiming to keep pace with this growth, is actively working to make a contribution to the coming space exploration era by utilizing the rotary machinery technology it has cultivated over the years.

**Progress in the scale of the space transportation market**




The challenge of the extremely high reliability and performance standards required in the aerospace sector will lead to the advancement of technology in existing businesses, the creation of new application fields, and the diversification of the revenue base, leading to Ebara's sustainable growth and increased corporate value.




### Results

- Electric turbo pumps for rocket engines: Performance tests conducted
- Electric pumps for thrusters: Basic research and performance tests conducted
- Spaceport: Held inter-company exchange for market entry

### Future Challenges

- Electric turbo pumps for rocket engines: Conduct verification tests
- Electric pumps for thrusters: Conduct detailed development and acquire customers
- Spaceport: Develop pumps and infrastructure for spaceports

熱い談

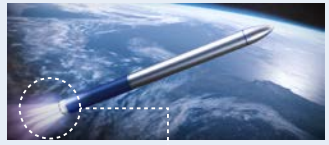
Value Creation

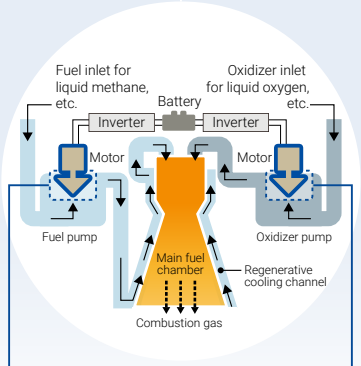
## Development of an electric turbo pump for rocket engines

The electric turbo pump we are developing for a rocket engine uses an electric motor to boost the pressure of liquid methane and liquid oxygen. It is being developed for use on a two-stage rocket system with an assumed maximum payload capacity of 100 kg.

In September 2024, following the water tests conducted in 2023, a performance test was carried out at the Japan Aerospace Exploration Agency's (JAXA) Kakuda Space Center using liquid nitrogen (−196°C), which has a temperature close to that of liquid methane (−161°C), achieving the performance assumed in the design. Currently, building on this success, we are accelerating the development of pumps for liquid oxygen as an oxidizer, and are preparing for the actual liquid tests (liquid methane and liquid oxygen) in the summer of 2025*. Through the success of the test, we aim to open up new possibilities in the space transportation business with Ebara's technological capabilities and contribute to Japan's space development.

*As of May 2025






Electric turbo pump for rocket engines being developed by Ebara

Interview

## Create new markets to support our globe in the future

**Wataru Yamashita** (Left)
CP Hydrogen Strategic Business Unit
Space Business Promotion Section

**Naoki Tanaka** (Right)
CP Hydrogen Strategic Business Unit
Aerospace Technologies Development Department

In recent years, with private companies all over the world, such as SpaceX in the U.S., venturing into space, Ebara has been accelerating its research and development to enter the space industry, utilizing the cryogenic fluid technology it has cultivated over the years. In the space transportation sector, which is our current focus, weight reduction, is a critical factor in reducing launch costs and improving fuel efficiency. The electric turbo pumps we are developing can reduce complex piping and turbine mechanisms compared to traditional turbine-driven pumps, thus making a significant contribution to cost reductions through system simplification and weight reduction of the entire rocket. Through these innovative technological capabilities, Ebara will support next-generation space transportation and contribute to humanity's space development.

New Businesses **Marine**

- Land-based Aquaculture

## Providing a one-stop shop for Production, Cultivation, and Delivery as required to engage in land-based aquaculture on an industrial basis

We are leading land-based aquaculture on an industrial basis by providing functions across the entire value chain, starting with the manufacture of aquaculture facilities and breeding assistance. With high value-added land-farmed fish with a thorough commitment to taste and quality, we will help to solve issues in the fisheries industry.

### Progress in 2024

#### 1 Started a business partnership with NTT Green & Food, Inc. for verification testing on a commercial scale

Commercial-scale whiteleg shrimp farming plant

We have entered into a business alliance with NTT Green & Food, Inc. with the aim of developing a recirculating aquaculture system (RAS) and establishing services such as breeding operations. This is part of NTT Green & Food Inc.'s Iwata Plant, one of the largest land-based aquaculture facilities for whiteleg shrimp in Japan, where the Company is conducting verification testing on a commercial scale, operation, and productivity evaluation of aquaculture production using its RAS. We will continue to collaborate with companies in various fields to advance manufacturing technologies for land-based aquaculture.

#### 2 Development of differentiation technologies

We are developing remote monitoring, AI analysis, automation, and other technologies as differentiators to achieve labor saving, efficiency, and energy cost reduction, which are issues faced by land-based aquaculture business operators. We will implement these in RAS and promote the provision of optimal equipment maintenance and breeding support services.

**Future Actions**

- Commercial demonstrations and launch of newly developed technologies and services
- Expansion of support functions for customer and business operator entry through collaboration with existing businesses

New Businesses **Bio**

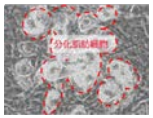
- Cultured cell meat
- Structural protein materials
- Regenerative medicine

## Helping to create a sustainable society by developing systems that improve energy efficiency and productivity in cultivation processes

With the industrialization of biotechnology, culturing is expected to become more widespread in the future. With Ebara's engineering expertise, developed since the Company's founding, we will realize high-efficiency, high-quality culturing.

### Progress in 2024

#### 1 Equipment order received from IntegriCulture Inc. Development of technology enabling high-efficiency cultivation



Proliferated and differentiated cells

We have received an order for equipment manufacturing from IntegriCulture Inc., which has a proprietary culture technology called the CulNet® System for the inexpensive manufacture of culture media necessary for cell proliferation. Additionally, in a joint research project with Nihon University aimed at the practical application of dedifferentiated adipose tissue (DFAT) with pluripotency, we have developed a technology for high-efficiency culture of DFAT cells and have begun developing equipment for large-scale cell culture. We will utilize our flow control technology and equipment design know-how to reduce the cost of culture media and enable large-scale cell culture.

#### 2 Deepening collaboration with Spiber Inc.

We have devised equipment that improves the energy efficiency and productivity of Spiber Inc.'s culturing process, and have confirmed its effectiveness using test equipment. Going forward, we will conduct demonstrations using scale-up equipment, contribute to the mass production of protein materials, and solidify the sales of development equipment. In addition, we held an internal lecture by Mr. Sekiyama, representative of the company, to deepen collaboration and foster an entrepreneurial mindset.

**Future Actions**

- Commercial production and launch of development results
- Verification on scaled-up equipment


## New business creation program E-Start held for the first time in four years

The Ebara Group held E-Start 2024, a program to solicit ideas for new businesses from within the Company. Since 2020, this will be the second time in four years that it is being held. The purpose of this program is not only to gather ideas, but also to formulate commercialization plans based on ideas with potential for development and create new businesses. Through this, we aim to put into practice the E-Plan 2025 theme of "Business Creation: Creating value from customers' perspectives" and foster a corporate culture within the Ebara Group that encourages people to take on new challenges. In fact, business ideas that passed the final screening at E-Start 2020 held in 2020 are now making progress toward commercialization in fields such as space, medical care, and the environment.

## Soliciting ideas from Group employees worldwide

This time, we solicited business ideas not only from employees in Japan but also from Ebara Group employees around the world, and received nearly 100 submissions. As a result of the comprehensive screening by management, seven business ideas in the fields of environment, biotechnology, and agriculture were selected. After the presentation conference attended by the management team, we are currently advancing the examination and planning for new business development.

New Businesses **GX**

- Next-generation energy

## Establishing processes for turquoise hydrogen and achieving efficient CCUS

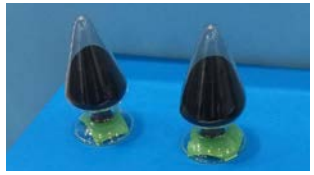
We are promoting the development of a hydrogen and carbon production system utilizing reaction field separation (turquoise hydrogen production technology). This technology is contributing to efficient carbon capture, utilization, and storage (CCUS) by using a cyclical process to convert a hydrocarbon with high global warming potential (methane) into solid carbon for effective use. This process continuously carries out methane dry reforming, hydrogen separation, and carbon capture enabling hydrogen production without generating carbon dioxide.

### Progress in 2024

#### NEDO's innovative hydrogen project passes stage-gate screening

In February 2025, the NEDO-commissioned project on innovative hydrogen production technology being jointly conducted by the Company, the National Institute for Materials Science (NIMS), Kochi University of Technology, and Institute of Science Tokyo passed the stage-gate screening and will continue until March 2026. This decision was made in recognition of the Company's technology, which uses a proprietary catalyst to break down more than 94% of methane and produce high-purity hydrogen. Through this project, we will promote the implementation of these processes in society and commercialization of these processes while realizing collaboration and partnerships with our partners.

Testing facilities



Carbon generated in this process

### Future Actions

- Expanding the scale of those processes and promoting verification and feasibility studies with companies

New Businesses **Life**

- Water Supply in Africa
- Smart farms

## Ebara's specific contribution to society by delivering water to Africa, where population growth is accelerating

Water shortages are a global problem due to population growth and climate change. Ebara will continue to promote the realization and establishment of a water supply business model.

### Progress in 2024

#### Commercialization of the solar drip irrigation system leasing business

Solar irrigation system


Together with local agricultural operators in Africa

In Kenya, although farmers are eager to transition from rain-fed agriculture to more productive irrigated agriculture, they face challenges in terms of funding. To solve this problem, Ebara Pumps East Africa is developing a business to lease solar drip irrigation* systems to farmers, and the first commercialization project has been launched. Moving forward, in order to both solve the social issue of stable water supply in Africa and create business opportunities, we will continue to explore and examine ways to solve our customers' problems that we have observed through our local sales activities and collaborate with partners and promote business development.

* A method of transporting irrigation water through tubes to crops and dripping it onto the roots for watering.

### Future Actions

- Allocating investments and resources to regions with growth potential in order to create a business that will provide a consistent water supply to 600 million people
- Expanding partnerships with government agencies and local partners, etc.

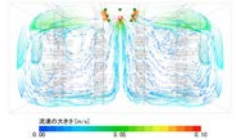
## Creating secondary industries from primary industries at innovative plant factories

We are working to mitigate climate change risks, food shortages caused by population growth, and solve challenges faced by farmers by repurposing our existing technologies for use in new areas and working with external partners.

### Progress in 2024

#### Business creation with Oishii Farm Corporation

Oishii Farm Corporation, which we invested in during 2023, is an innovative venture company that has succeeded in consistently producing strawberries for the first time ever in a completely closed plant factory. To accelerate innovation in plant factories, we are dispatching our engineers to the United States to jointly conduct computational fluid dynamics (CFD) analysis within plant factories. We are contributing to the evaluation of energy-saving effects and the reproducibility of airflow, temperature, and humidity. In the field of water circulation, we are preparing demonstrations of our high-performance pumps for water conservation and space-saving in plant factories. We will combine the technological capabilities of both companies to create new businesses and contribute to the establishment of a sustainable food production system.



CFD analysis

Strawberries being grown

### Future Actions

- Combining Oishii Farm's expertise in operating plant factories and Ebara's strengths in water circulation, air conditioning, reduced energy consumption, and heat management technologies and manufacturing capabilities
- Aiming to create and expand secondary industries from primary industries (indoor plant factories that are less susceptible to the surrounding environment)