

Our Business

Vacuum Equipment Business

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Semiconductor Production Equipment

Semiconductors are a critical technology supporting diverse industries and the development of society—including generative AI, smartphones, and EVs—and demand for semiconductors is expected to continue growing over the long term. The ULVAC Group supports customers’ product development and mass production by developing equipment tailored to customer needs and strengthening customer support, thereby contributing to the sustainable development of society.

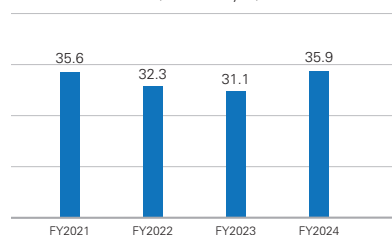
Strengths

- High-precision process control technology exemplified by stress control and low-particle film deposition
- Ability to expand into new process fields based on the reliability established in the hard mask process
- Technology development capabilities for new materials and structures, leveraging the Technology Center established in August 2024, together with a framework for co-creation with customers
- Extensive track record and high mass-production capability cultivated through metal film deposition

Review of FY2024

- Although robust investment in China’s mature logic market and in Japan’s memory sector offset declines in investment in other regions, orders received in FY2024 fell short of the plan.
- As a result of collaborative development initiatives with customers and expanded sales activities, the number of key PORs (Process of Record: customer-adopted and qualified processes) as well as the number of customers has increased, steadily strengthening the foundation for future growth.
- The acquisition of a new POR in the South Korean memory market is a milestone in the growth of ULVAC’s semiconductor business.

Orders received (Billions of yen)



Mid- to Long-Term Outlook of the Market Environment

- In addition to accelerated investment in advanced logic foundries, continued investment is expected in the DRAM field, including HBM, as well as in mature logic foundries in China.
- Although there are concerns about restrained investment in the U.S. logic market and delays in the expansion of investment in NAND-related fields, these factors have already been incorporated into the business plan.
- Although investment trends vary across markets, the semiconductor and production equipment market as a whole is expected to remain on a growth trajectory.

Recognized Business Opportunities	Conceivable Risks
<ol style="list-style-type: none"> Demand growth driven by continued investment in both advanced logic and mature logic Opportunities to apply new film deposition and materials technologies driven by increased investment in the DRAM field, including HBM Growing demand for new processes driven by the evolution of transistor architecture, acceleration 3D structures, and the expansion of back-side processes 	<ol style="list-style-type: none"> A slowdown in customer investment due to deteriorating customer performance, and demand volatility resulting from a correction following overinvestment in the Chinese market Supply chain risks arising from expanded export controls stemming from security concerns and supply constraints on critical minerals Rising cost pressures due to sharp exchange rate fluctuations and raw material price hikes
Measures for Maximizing Opportunities and Reducing Risks	
<ol style="list-style-type: none"> Identify next- and future-generation semiconductor technologies early; execute selection and concentration aligned with market needs Appropriately allocate development resources based on careful assessment of the feasibility and direction of new technologies Standardize specifications through expanded sales of ENTRON-EXX; reduce inventory risk by shortening lead times Build a stable business foundation by increasing the sales ratio of customer support (CS) Strengthen chemical process capabilities 	

Mid- to Long-Term Initiatives

Under its mid- to long-term management plan looking toward the fiscal year ending June 30, 2031 (FY2030), the ULVAC Group has positioned the strengthening of its semiconductor and electronics business as the core of its growth strategy. Based on this policy, the semiconductor production equipment business will pursue mid- to long-term initiatives focused on strengthening competitiveness in key markets and expanding the customer support business.

We will promote business development aligned with customer needs and development themes, focusing on securing key PORs through joint development with major customers. In particular, we will pursue challenges in new technology fields for next-generation devices, including adaptation to new materials and structures in wiring processes and optimization of film deposition processes. By strengthening equipment operation support and service systems, we also aim to deepen trust-based relationships with our customers and create new value. Furthermore, by expanding the adoption of our [latest platform, ENTRON-EXX](#), and addressing the diverse needs of our customers in both development and mass production, we aim to enhance competitiveness and achieve sustainable growth.

[For details](#) Website >> News > ULVAC Launches New Deposition System for Semiconductor Applications: Model "ENTRON-EXX" Supporting Enhanced Productivity and Accelerated Development Speed with Advanced Data Collection, Analysis Capabilities, and Expandability

Semiconductor Logic Growth Roadmap

Proven track record

- Deployment of new materials and low-resistance film deposition technologies
 - Low-resistance new materials
- Acquisition of advanced logic metal wiring processes
 - Cu interconnect
 - AI/W processes
- Deployment of hard mask technology leveraging strengths in stress control and low-particle film deposition
 - Hard masks for BEOL wiring formation
 - Hard masks for GAA formation
 - Hard masks for backside wiring formation

Customer Technology Roadmap	2024	2025	2026	2027	2028	2029	2030	2031
Logic	2nm		A14		A10			A7

Semiconductor Memory Growth Roadmap

Proven track record

- CVD and ALD Integration
 - Under development with advanced memory manufacturers
- Deployment of new materials and low-resistance film deposition technologies; deployment of mid-process wiring
 - Cu bonding
 - New materials
- Deployment of cutting-edge memory processes such as metal film process and HM process; expansion of the customer bases
 - Cu, Al, W, and TiN wiring processes
 - Wiring process for HBM
 - Backside deposition (bonding, stress control)

Customer Technology Roadmap	2024	2025	2026	2027	2028	2029	2030	2031
DRAM	13nm	<12nm		<11nm		<10nm		
NAND	288L		3XX		4XX		4YY	

Our Business

Vacuum Equipment Business 2

Electronic Device Production Equipment

In the electronic device market, growing adoption of AI and the electrification of automobiles are driving increasing demand for higher performance and greater functionality. The electronic device production equipment business provides vacuum-based manufacturing equipment for a wide range of fields, including advanced packaging, power devices, MEMS, and optical devices, and contributes to improvements in the quality and productivity required across processes from development to mass production. We will continue to provide optimal process solutions that address our customers' technological challenges.

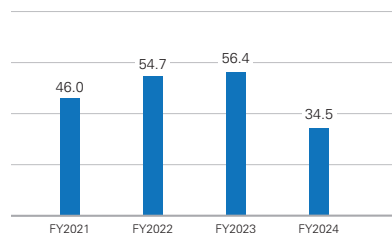
Strengths

- A proven track record of production equipment with high market share in key processes
- Ability to propose production equipment for next-generation devices by leveraging extensive knowledge of compound materials
- Extensive technology base supporting a wide range of devices, from packaging and power devices to optical devices

Review of FY2024

- Year-on-year decrease in orders received against the backdrop of a slowdown in investment in the power device field
- Curtailed demand for equipment due to more cautious investment decisions in some regions
- Continued development investment and progress in equipment adoption in the packaging field
- Launch of joint development for mass production in the optical device field

Orders received (Billions of yen)



Mid- to Long-Term Outlook of the Market Environment

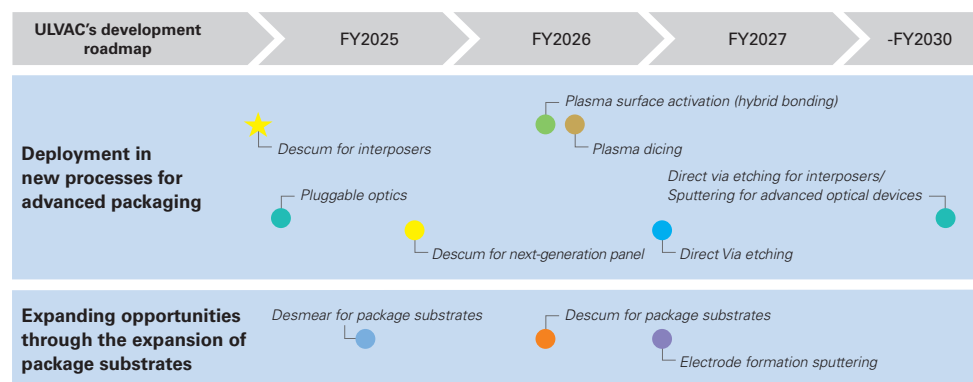
- Demand for advanced packaging technology is expected to grow over the medium to long term, driven by the spread of AI and the expansion of data centers.
- Investment in next-generation power devices such as SiC and GaN is expected to continue expanding, driven by the electrification of automobiles and advances in energy efficiency.
- Technological sophistication is expected to continue across diverse device fields supporting high-speed communications, including photonic-electronic convergence devices, optical devices, and MEMS.

Mid- to Long-Term Initiatives

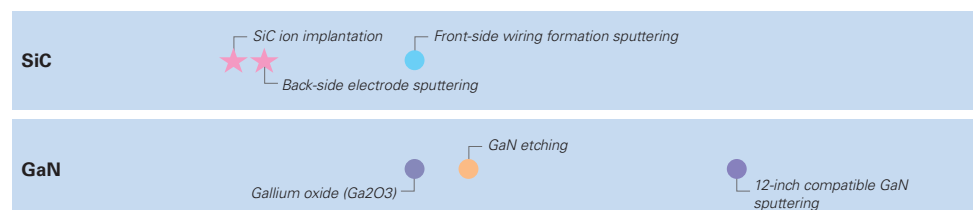
As the sophistication of electronic devices continues to advance, the electronic device production equipment business is strengthening the business foundation to address diverse fields such as advanced packaging, next-generation power devices, optical devices, and MEMS. Equipped with a process lineup that addresses increasingly diverse technological requirements, we swiftly identify future manufacturing needs and promote development with a focus on customers' production. We will seek to expand application fields through collaboration with external parties. In production, we will promote standardization and efficiency while establishing a supply system capable of flexibly responding to demand fluctuations. By responding to the ever-expanding electronic device market through these initiatives, we aim to achieve sustainable business growth.

Advanced Packaging Growth Roadmap

☆ Proven track record ○ Release schedule



Power Devices Growth Roadmap



Recognized Business Opportunities

- Expanding demand for electronic devices in response to societal changes, including the electrification of automobiles and the advance of high-speed communications
- Expanding demand for advanced packaging technologies and evolving device architectures
- Potential to expand the market by leveraging equipment evaluations and adoption by major customers

Conceivable Risks

- Delays in customers' capital investment decisions due to geopolitical factors and export restrictions
- Delay in recovery of the power device market amid a sluggish EV market
- Tight supply-demand balance for parts and materials due to global expansion of capital investment

Measures for Maximizing Opportunities and Reducing Risks

- Enhance equipment performance and achieve technological differentiation by strengthening development capabilities in line with market trends
- Create new technologies and strengthen development structure by leveraging collaboration with external research institutions
- Promote equipment standardization and modularization to enhance productivity and achieve stable supply
- Optimize production and procurement systems to respond to supply-demand fluctuations and enhance resilience
- Enhance customer support systems in key regions and expand market opportunities

Vacuum Equipment Business
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Display and Energy-Related Production Equipment

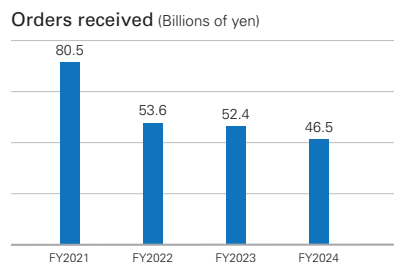
Demand for display devices, used as information infrastructure tools to facilitate smooth communication, is increasing year by year in terms of screen area. Moreover, demand is growing for highly efficient and safe energy devices that contribute to stable energy supply and reduced environmental impact. By providing production equipment and services that contribute to both social development and a sustainable global environment, the display and energy-related production equipment business seeks to enhance its business value and achieve further growth.

Strengths

- High-precision process control technologies, exemplified by low-particle and low-damage film deposition
- High market share of sputtering system for 8th-generation IT OLEDs
- Mass-production technology for high-speed double-sided deposition for EV batteries

Review of FY2024

- Display field:** Capital investment in 8th-generation OLEDs for IT applications was at the center of the market. Top market share of sputtering system in the IT OLED market. New technology is under development to solve cost issues by offering longer life and higher brightness.
- Energy field:** Roll-to-Roll deposition system, which contributes to the miniaturization and increased capacity of EV batteries, began operation. Expectations are growing for new system next-generation anode materials to improve battery efficiency.



Mid- to Long-Term Outlook of the Market Environment

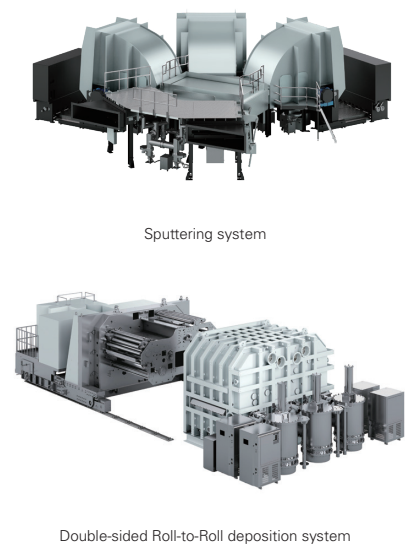
- Display field:** Investment is expected to increase for 8th-generation IT OLEDs, as well as for automotive applications and larger displays. Demand for IT panels is strong. We aim to expand our market share in 8th-generation-compatible sputtering system and transparent electrode equipment.
- Energy field:** Roll-to-Roll vacuum technology will be utilized for the miniaturization and higher capacity of EV batteries. Investment in next-generation batteries will be accelerated over the medium to long term despite delays in their adoption for EVs. The key to differentiation is the increased width of double-sided aluminum deposited films and development of equipment compatible with metal lithium anodes.

Mid- to Long-Term Initiatives

In the display field, we will continue order-taking activities centering on the flagship equipment (Model: SMD) for major customers in China and South Korea. We will consolidate production sites in China close to our customers, and strengthen the system that enables integrated operations from development of key technologies and components through equipment manufacturing to services, enabling rapid responses to customer needs and enhanced cost competitiveness. In addition, we will promote initiatives to expand adoption of OLEDs in related manufacturing processes, taking into account the increasingly sophisticated technological requirements driven by higher-definition, larger size, and lower cost of OLEDs.

In the EV battery field, we are working to establish mass-production technologies that enhance customer productivity, including double-sided and high-speed deposition. In particular, we are strengthening development of equipment compatible with wider film widths and copper deposition technology for anode current collectors. Furthermore, leveraging the metal lithium vacuum deposition technology for EV batteries—adopted under the Green Innovation Fund Project led by the Ministry of Economy, Trade and Industry and the New Energy and Industrial Technology Development Organization (NEDO)—we will advance the development of new material deposition technologies to expand applications and achieve differentiation. We will further accelerate technological development in anticipation of full-scale investment in all-solid-state batteries from around 2028 onward.

Recognized Business Opportunities	Conceivable Risks
<ol style="list-style-type: none"> Larger and higher-definition display substrates to accommodate the growing adoption of OLED panels for IT applications Increased demand for lithium-ion batteries due to diffusion of EVs worldwide Greater adoption of vacuum technology for higher density and improved safety of batteries 	<ol style="list-style-type: none"> Investment postponements and project cancellations due to a deteriorating supply-demand balance in the display field Intensifying competition due to the rise of Chinese domestic equipment manufacturers Restrictions on the handling of batteries if they are designated a strategic commodity in view of the international situation, and supply chain fragmentation
<p>Measures for Maximizing Opportunities and Reducing Risks</p> <ol style="list-style-type: none"> Strengthen marketing and product planning capabilities for the post-FPD era Engage in co-creation of advanced technology with leading companies and research institutions Redevelop and strengthen the structure of the global supply chain Enhance customer satisfaction by strengthening local production and service systems, centering on sites in China 	



As the demand for improved safety of lithium batteries grows, attention is increasingly focused on Al double-sided deposited films (Figure 1). By enhancing productivity through increased film width (from 1.6 m to 2.5 m), we aim to reduce production costs per unit area and accurately address evolving technical requirements, thereby maintaining our leading position. Development of Cu double-sided deposited film for ACC (2) and lithium double-sided deposited film for anodes (3) is ongoing, with the aim of early commercialization.

Lithium battery structure with double-sided deposited film

Our Business

Vacuum Equipment Business 4

Components

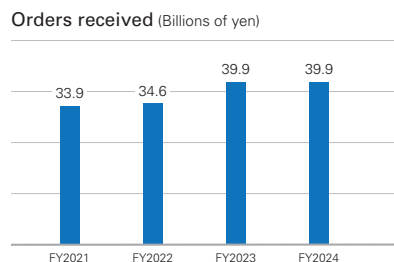
The components business provides diverse items leveraging vacuum and cryogenic technologies, and in collaboration with the equipment business, delivers value across a wide range of industrial sectors. We are strengthening the development structures for equipment components—including vacuum pumps (dry pumps, oil rotary pumps, turbo molecular pumps, etc.), measurement instruments (vacuum gauges, leak detectors, gas analyzers, etc.), power supplies (DC power generators, RF power supplies, etc.), and cryogenic equipment (cryopumps, refrigerators, etc.). Through alliances with external parties and optimization of production systems, we aim to enhance customer satisfaction and strengthen our competitiveness.

Strengths

- Extensive expertise gained through collaboration with the equipment business enables rapid development and commercialization.
- Our diverse product lineup allows us to cover product fields not addressed by competitors, facilitating collaboration with external partners.
- A diverse product portfolio that serves a wide range of markets, making us less vulnerable to fluctuations in any particular market.
- Ability to swiftly capture customer demand and deliver products, leveraging the geographical advantages of our production sites in Japan and overseas

Review of FY2024

- Released a new low-noise pump for the scientific and analytical market, reinforcing ULVAC's position as the market share leader in Japan
- Contributed to the fully domestic production of superconducting quantum computers by supplying a dilution refrigerator
- Improved efficiency and product quality through production technology improvement activities



* The classification of leak testers was changed from Components to Industrial Equipment from FY2025.

Mid- to Long-Term Initiatives

For future growth, the components business will shift its product portfolio from the display market to the semiconductor and electronic devices market, strengthen collaboration with the equipment business, and accelerate development of components for this field. We will also seek to expand our product share by leveraging our extensive product lineup and promoting alliances with external parties. Moreover, we will enter new high-growth markets, such as 4K refrigerators and dilution refrigerators. At the same time, we will expand sales channels through proposals of solutions that leverage our strengths as a comprehensive manufacturer of vacuum components. Furthermore, in production, we will streamline manufacturing processes, optimize production systems, and implement digital transformation of production processes, aiming to enhance quality and strengthen cost competitiveness.

Mid- to Long-Term Outlook of the Market Environment

- Due to slowing growth in the display market, our primary focus is shifting to the semiconductor and electronic devices market.
- The market for the components business is expected to remain generally firm, driven by investment in AI servers and progress in digitization, electrification, and reduction of power consumption.
- New demand is also expected for quantum computers and magnetic czochralski single-crystal pulling system (MCZ).

Recognized Business Opportunities	Conceivable Risks
<ol style="list-style-type: none"> Business environment conducive to synergies with the equipment business Expanding overseas demand in markets such as the U.S., Europe, and China Growth potential for cryogenic products in new fields such as quantum computers, MRI, and MCZ 	<ol style="list-style-type: none"> Intensifying price competition Risk of cost increases due to fluctuations in raw material prices, logistics costs, foreign exchange rates, etc. Concerns over procurement of rare earths, semiconductor devices, etc. amid deteriorating international conditions
<p>Measures for Maximizing Opportunities and Reducing Risks</p> <ol style="list-style-type: none"> Differentiate products through collaboration with the equipment business; develop high-value-added models Concentrate development resources on strategic products to accelerate time to market Reflect market needs and customer feedback in product development Expand sales channels and establish a service network Expand product share through external alliances Consider alternative parts and expand procurement channels 	



Our Business

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Industrial Equipment

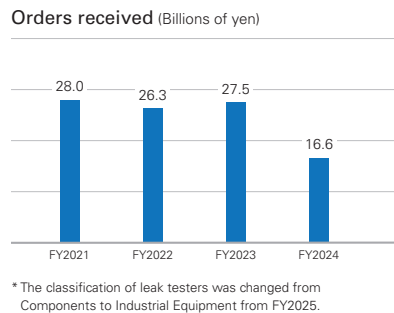
The ULVAC Group contributes to society in diverse ways as a partner shaping the future through vacuum technology. The industrial equipment business offers production equipment for magnets and heat exchangers used in EVs and data centers worldwide. In the pharmaceutical field, we support safety and quality through the supply of lyophilizers. We contribute globally with the aim of reducing environmental impacts and achieving a sustainable society.

Strengths

- Vacuum heat treatment technology for high precision and mass production
- Provision of integrated vacuum freeze-drying technology from equipment production to after-sales service
- Ability to customize leak testers suited for multiple applications such as air conditioning, EVs, and data centers

Review of FY2024

- Vacuum heat treatment furnaces:** Promoted global sales expansion based on mass-production systems at our sites in China. Orders increased due to optimized production efficiency and the ULVAC Group's region-based marketing.
- Lyophilizers:** Orders remained sluggish as investment continued to be postponed due to construction delays attributable to labor shortages and reassessment of project profitability amid sharply rising costs.
- Leak testers:** Maintained high market share. In particular, orders for leak testers for AI data center cooling systems were strong.

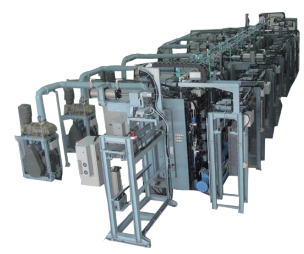


Mid- to Long-Term Outlook of the Market Environment

- Renewable energy field:** Demand for EV, wind power, and energy storage-related equipment is expected to continue to increase against the backdrop of carbon-neutral policies.
- Pharmaceutical field:** Capital investment is expected due to measures to strengthen the supply system in Japan in light of economic security considerations. Production systems are also expected to be strengthened as pharmaceutical companies expand overseas sales.

Mid- to Long-Term Initiatives

For vacuum heat treatment furnaces, we will aim to increase orders received in the global market while further enhancing safety and quality. For lyophilizers, we will work to enhance quality to meet strict industry standards while making improvements to satisfy diverse customer needs. We are also focusing on technological development through industry-academia collaboration and are developing freeze-drying storage technology for red blood cells with the University of Osaka. Furthermore, we are participating in the development of a powder inhaler in collaboration with Meijo University. We will continue our efforts to realize innovative technologies in the medical field. For leak testers, we will further expand the market by leveraging their wide range of applications and high customizability.



Sintering and heat treatment furnaces



Leak testers for EV batteries

Recognized Business Opportunities	Conceivable Risks
<ol style="list-style-type: none"> Growing demand for heat exchangers for cooling EVs, data centers, etc. Increasing demand for magnets for drones, generators, and other applications amid rapid electrification. New investment arising from changes in the industrial structure due to geopolitical factors 	<ol style="list-style-type: none"> Revisions to companies' investment plans due to falling retail prices of final products Shift of domestic pharmaceutical companies to overseas production and sales Expansion of regulations driven by changes in the industrial structure due to geopolitical factors
<p>Measures for Maximizing Opportunities and Reducing Risks</p> <ol style="list-style-type: none"> Improve productivity of investment in vacuum heat treatment furnaces and promote joint development with key customers Achieve compliance with overseas standards and enhance quality of lyophilizers Mitigate regional risks by diversifying production sites 	

Our Business

Vacuum Application Business 6

Surface Analysis Instruments

In the ULVAC Group, ULVAC-PHI, Inc. manufactures and sells surface analysis instruments using state-of-the-art technology. These instruments support our customers' research and development and production by enabling high-resolution analysis of minute areas of semiconductors, electronic devices, etc., as well as facilitating basic research on materials.

Through analytical technologies that "transform the invisible into data and information," we support new discoveries, innovation, quality control, and failure analysis, contributing to the realization of an affluent society.

Strengths

- Track record in the field of surface analysis
- Integrated system from research and development through after-sales service
- Providing value through both software (science) and hardware (physical and optical design, manufacturing)

Review of FY2024

- Year-on-year increase in net sales continued in FY2024.
- As one facet of the semiconductor and electronics-related business under the Value-Up Plan, aim to create synergies between the production equipment and analytical and inspection equipment businesses.
- Plans to launch semiconductor inspection equipment as a new business in FY2026.

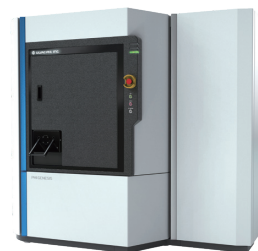
Mid- to Long-Term Outlook of the Market Environment

- Applications of surface analysis instruments will expand in research and development of semiconductors, electronic devices, batteries, etc.
- Increasing demand for inspection equipment as cutting-edge semiconductor devices become increasingly miniaturized and complex

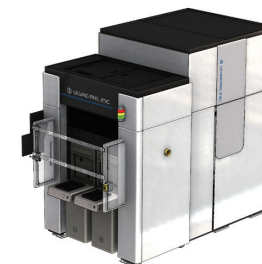


Mid- to Long-Term Initiatives

ULVAC-PHI is the sole company in the world that possesses surface analysis technologies (hardware and software) for three methods: Auger Electron Spectroscopy (AES), X-ray Photoelectron Spectroscopy (XPS), and Secondary Ion Mass Spectrometry (SIMS: TOF-SIMS, Q-pole-SIMS). Leveraging this strength and utilizing XPS technology cultivated through analyzers for research and development, ULVAC-PHI is taking on the challenge of commercializing XPS semiconductor inspection equipment by FY2026, aiming to become the world's foremost company in the fields of surface analysis instruments and inspection equipment.



Multi-technique scanning X-ray Photoelectron Spectroscopy instrument



XPS inspection equipment for semiconductor production lines

Our Business

Vacuum Application Business 7

Materials

Strengths

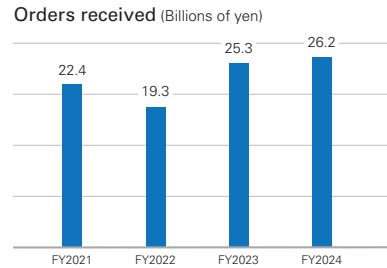
Product development capabilities centering on powder metallurgy technology cultivated over many years

Capabilities for stable supply of high-quality, high-value-added materials such as targets for semiconductors and high-definition masks

The products of the materials business are indispensable for the manufacture of semiconductors, electronic devices, displays, and various other applications that are essential in the smart society. As a partner to our customers, we are striving to ensure stable supply of highly functional, high-quality materials such as sputtering targets and functional materials globally.

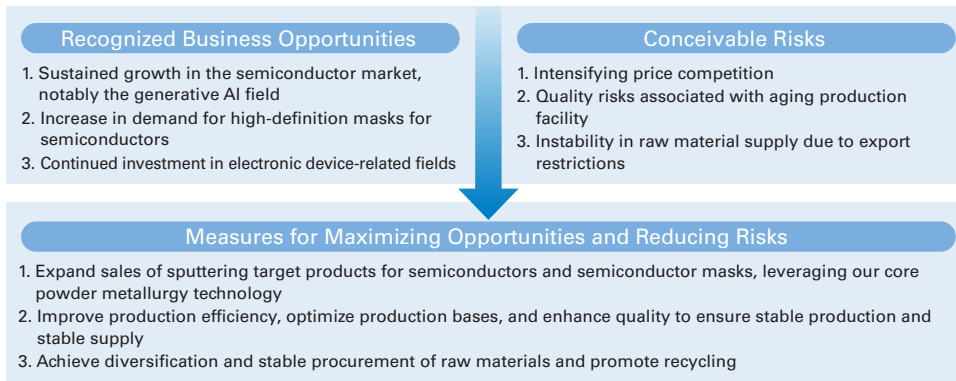
Review of FY2024

- Utilization rates in the growing semiconductor market, particularly in the logic and memory fields, recovered, leading to increased orders received for products for semiconductors.
- Orders for sputtering targets utilizing ULVAC's powder metallurgy technology were particularly strong.
- Product evaluations for major memory manufacturers are progressing smoothly, and further increases in orders received are expected going forward.
- We started development of heat-resistant materials to create a business beyond sputtering targets.



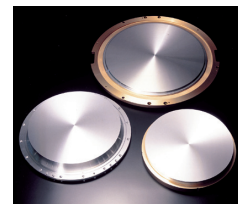
Mid- to Long-Term Outlook of the Market Environment

- In the semiconductor field, medium- to long-term market growth is expected for memory due to increased demand for generative AI-related products.
- Demand for high-definition mask targets for cutting-edge processes is also expected to continue to increase in tandem with the expansion of the semiconductor market.



Mid- to Long-Term Initiatives

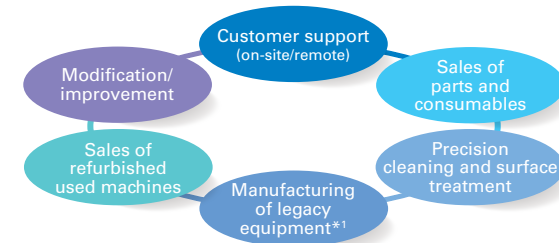
The materials business will continue to offer customers high-value-added products centering on powder metallurgy technology, including sputtering targets for semiconductors and targets for high-definition masks essential for cutting-edge processes. Partnerships with external parties will also be strengthened to achieve sustainable growth in the semiconductor field. Besides sputtering targets, we will strengthen development of heat-resistant materials in cooperation with the equipment business and expand into the non-sputtering target business. Other initiatives include enhancing quality, consolidating sites, and vigorously investing in production facilities to achieve efficient manufacturing.



Sputtering targets for semiconductor production equipment

Customer Support Underpinning Our Business

We view covering the entire product lifecycle as a business opportunity and are strengthening support systems in the regions where the ULVAC Group focuses its efforts. We are also working to strengthen proposal-based support through proposals for modification/improvement of customers' existing equipment.



*1 Legacy equipment: Equipment manufactured by the ULVAC Group that is no longer manufactured.

Effective utilization of resources throughout the product life cycle and addressing environmental issues

