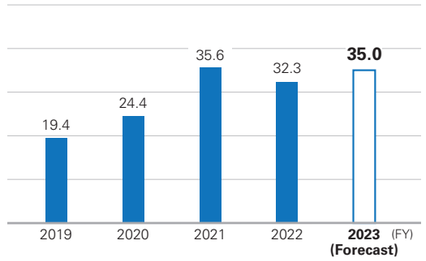
Vacuum Equipment Business 1
Semiconductor Production Equipment

Demand for semiconductors is expected to increase over the long term as they are the key foundation supporting an increasingly diverse society. Without semiconductors, everything from PCs and smartphones to EVs, industrial robots, and generative AI would be inconceivable. Through the vacuum technology we have cultivated as a semiconductor production equipment manufacturer, ULVAC wishes to contribute to social development and grow together with society.

ULVAC positions the semiconductor production equipment business as a growth driver and will continue to invest aggressively in development geared to customer needs.

Orders received (Billions of yen)



Review of FY 2022

Although slowing investment made the market environment challenging, ULVAC increased its investment in development, continued joint development with key customers, and was able to increase the number of customers adopting ULVAC equipment in advanced logic mass-production processes.

In February 2022, the decision was taken to construct Technology Center PYEONGTAEK in South Korea to accelerate product and technology development near customers while also strengthening collaboration and technological support.

Although market growth slowed temporarily owing to excess inventory and export restrictions, we implemented measures to spur development and improve productivity in preparation for the next round of growth.

Medium- to long-term outlook of the market environment

We expect the market will bottom out at the end of 2023 and recovery to start in the first half of 2024 for certain production equipment for memory products, with a recovery trend becoming apparent from the second half of 2024. While investment in production equipment for older generation logic products continues mainly in China and the U.S., we expect a recovery of investment in production equipment for advanced logic products to begin around 2025.

Medium- to long-term initiatives

We will concentrate management resources and continue our initiatives to increase the number of processes for which customers adopt ULVAC's semiconductor production equipment. At the same time, we will work to accumulate technologies whose application to production equipment for advanced logic products will strengthen manufacturing capabilities.

With regard to the development of production equipment for advanced logic products, the technologies we established when entering the field of advanced device processes will be applied to novel deposition materials and in technologies required for next-generation devices. We also expect to achieve positive results through horizontal deployment to the production equipment for older generation logic products of the technologies originally obtained through the development of production equipment for advanced logic products.

Moreover, we will further strengthen planned production with the aim of improving production efficiency.

Recognized Business Opportunities

1. Elimination of excess inventory in the memory market
2. Recovery of investment and growth in the advanced logic field
3. Continuing investment to expand production of older generation logic products
4. Redevelopment of the semiconductor supply chain (Japan and the U.S.)

Conceivable Risks

1. Delay in elimination of excess inventory in the memory market
2. Delay in recovery of investment in the advanced logic market
3. Greater security-related export restrictions, etc.
4. Curtailment of capital investment due to deterioration of China's domestic economy

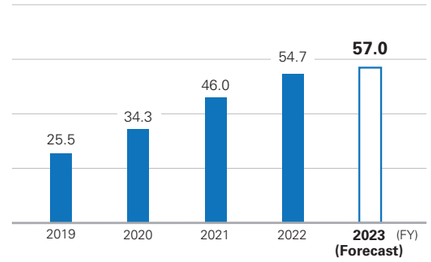
Measures for Reducing Risks and Maximizing Opportunities

1. Continue investment in development to increase the number of processes for which ULVAC equipment is adopted and promote selection & concentration in development geared to market needs
2. Strengthen technological capabilities to establish installation and customer support systems
3. Accumulate manufacturing technologies that can respond to cutting-edge technologies and promote manufacturing reforms to improve profit margins
4. Further strengthen planned production to improve production efficiency
5. Strengthen responses to the U.S. market

Vacuum Equipment Business 2
Electronic Device Production Equipment

The market for electronic devices, which are supporting the emerging smart society and the transition to clean energy, is expected to continue to see technological innovation and increased production. In particular, investment in power devices, which are indispensable for EVs and other applications, is becoming increasingly active in many countries. ULVAC aims to achieve business expansion that outperforms market growth.

Orders received (Billions of yen)



Review of FY 2022

In the electronic device market, investment in power devices expanded worldwide due to rising EV-related demand. Investment was particularly active in China, where we worked to reinforce our local sales and technical support systems. As a result, orders received and net sales reached record highs.

Medium- to long-term outlook of the market environment

In line with the progress of the smart society and the trend toward clean energy, the demand for technological innovation and expanded production of electronic devices is further increasing.

This trend is particularly pronounced in the SiC power device field in line with the diffusion of EVs, and growth is expected to continue on a global scale owing to boosted investment in view of the increase in wafer sizes and other factors.

MicroLEDs are attracting attention because of their energy-saving, high-brightness, and high-definition attributes, and there are high expectations for further progress of packaging technology. Business opportunities for ULVAC are expected to continue to grow.

Medium- to long-term initiatives

To strengthen competitiveness of ULVAC product lines, we will enhance the provision of solutions to our customers, demonstrating our strengths as a comprehensive vacuum manufacturer. For this purpose, while promoting modularization and standardization of equipment modules, we will expand planned production to shorten lead times. At the same time, we will continue to propose new processes.

Moreover, we will pursue optimization of development and production structures for business development in China and worldwide.

To keep pace with development in the rapidly growing electronic device market, we will concentrate development investment and strengthen collaboration with key customers.

Recognized Business Opportunities

1. Diffusion of EVs in line with the trend toward clean energy
2. Expansion of demand in the electronic device market
3. Evolution of electronic devices for realization of a digital society
4. Acquisition of new customers by leveraging the track record of adoption of ULVAC equipment by major customers

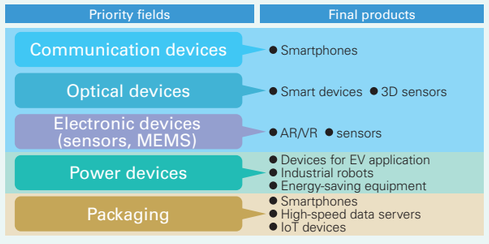
Conceivable Risks

1. Intensifying competition
2. Tight supply of parts and materials due to increasing capital investment
3. Greater security-related export restrictions, etc.

Measures for Reducing Risks and Maximizing Opportunities

1. Develop equipment meeting customer needs and achieve technological differentiation by strengthening marketing systems
2. Improve productivity by enhancing manufacturing capabilities
3. Redevelop and strengthen the structure of the global supply chain

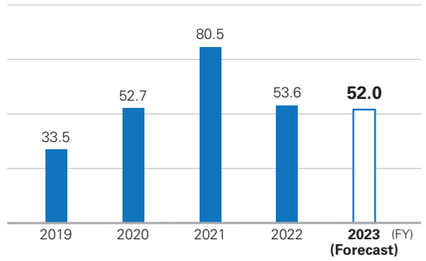
Priority fields



Vacuum Equipment Business 3
FPD Production Equipment

The FPD production equipment business comprises the display and energy fields. Considering that equipment for both of these fields tends to be large, ULVAC handles equipment for display devices and equipment for energy devices in the same business segment. There is increasing demand for display devices that are used as information infrastructure tools ensuring smooth communication. Moreover, there has been growing demand for highly efficient energy devices to realize stable energy supply and reduce environmental impacts. By providing "products and services that contribute to both the development of society and a sustainable global environment," we aim to enhance the value of our business and achieve further growth.

Orders received (Billions of yen)



Review of FY 2022
In the display field, capital investment was sluggish in line with the decline of panel prices due to the deterioration of the supply/demand balance. Affected by this trend, orders received by the Company fell short of the plan. In the IT panel market, which is expected to grow in the future, we invested in the development of sputtering equipment ready for the size increase from the conventional G6 to G8, aiming to gain the No. 1 share in the sputtering equipment market.

In the energy field, full-scale investment in double-sided evaporation roll-to-roll equipment began, which will realize larger-capacity, more compact, and safer EV batteries, and we began receiving orders from several customers. ULVAC developed this equipment to contribute to the mitigation of global warming and the resolution of energy issues.

Medium- to long-term outlook of the market environment
The supply/demand balance in the display field is returning to normal, and opportunities for new capital investment are expected to grow to accommodate increasingly diverse display applications, including IT products and in-vehicle equipment. Demand for displays is expected to continue, especially in the IT panel market, as new lifestyles take root, typified by the growing sophistication of information infrastructure, the shift to EVs, and use of AI.

In addition, in the EV battery market in which full-scale investment has begun, greater application of vacuum technology is expected to realize smaller size, larger capacity, improved safety, and improved productivity.

Medium- to long-term initiatives
We will continue development of mass-production equipment featuring our core large-substrate transportation technologies and higher-definition displays with the aim of gaining the No. 1 market share for sputtering equipment for IT panels. Moreover, we will expand investment in development in the customer support field, such as for automated control of deposition processes using AI and big data.

With the aim of securing a share of the EV battery market by offering mass-production technology for double-sided and high-speed film deposition ahead of competitors, we will work on development of large equipment ready for increased film width, which will improve mass-production efficiency for customers.

Furthermore, in order to further expand the application of vacuum technology, we will promote differentiation with new material deposition technologies, such as the metal lithium vacuum deposition equipment for EV batteries, which was adopted for the Green Innovation Fund Project led by the Ministry of Economy, Trade and Industry and the New Energy and Industrial Technology Development Organization (NEDO) in FY 2022, with an eye to its application for other battery layers.

Recognized Business Opportunities
1. Larger display substrates supporting the use of OLED for IT products
2. Increased demand for lithium-ion batteries due to diffusion of EVs worldwide
3. Accelerating adoption of vacuum technology for improvement of EV battery performance, including improvement of safety

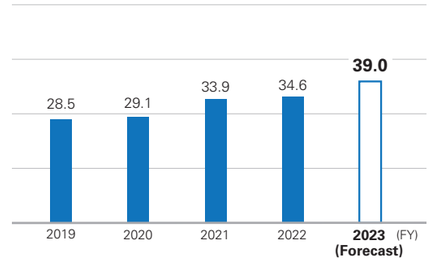
Conceivable Risks
1. Delay in recovery of supply/demand balance in the display field
2. No adoption of next-generation technology in the IT panel market
3. Market entry of competing manufacturers in the EV battery market
4. Restrictions on the handling of batteries if they are designated a strategic commodity in view of the international situation and supply chain fragmentation

Measures for Reducing Risks and Maximizing Opportunities
1. Strengthen marketing and product planning capabilities in view of post-FPD
2. Engage in co-creation of advanced technology with leading companies and research institutions
3. Switch to standardization and modularization of design to improve production efficiency through planned production
4. Redevelop and strengthen the structure of the global supply chain

Vacuum Equipment Business 4
Components

With the aim of becoming a global leader in vacuum and cryogenic technology solutions, we will contribute to the realization of the smart society by fulfilling our responsibilities to the environment and society. We will continue providing superior products and services to maximize customer satisfaction through vigorous investment in development and collaboration with external parties.

Orders received (Billions of yen)



Review of FY 2022
Special demand associated with the COVID-19 pandemic ended and investment in OLED panels for IT was postponed. However, the electronic device and EV battery markets remained firm. The effects of the measures we implemented to deal with longer delivery lead times for parts gradually began to appear in the second half of FY 2022. As a result, both orders received and net sales surpassed the results of the previous fiscal year and the plan.

In addition, as part of our efforts to improve production technology, we worked to optimize the production system and improve production efficiency, and we managed to improve the profit margin.

Medium- to long-term outlook of the market environment
We recognize that the semiconductor, electronic device, optical film, display, EV battery, and industrial equipment markets are expected to grow over the medium to long term.

Since our major customers in the semiconductor, electronic device, optical film, and display fields are manufacturers of vacuum deposition equipment, we expect that the growth of the above-mentioned markets will lead to a stable increase in demand for the DC power generators and dry pumps installed in such equipment.

In the EV battery and industrial equipment markets, we anticipate increased demand for helium leak detectors and leak testers as well as increased demand for cryocoolers for quantum computers and MRIs.

Medium- to long-term initiatives
Having set DC power generators, helium leak detectors, dry pumps, and cryocoolers as four strategic products, we will promote vigorous entry into the market and business expansion by developing fundamental technologies and new products. In particular, we will strengthen cooperation with external parties to accelerate market entry, enrich the product lineup for the semiconductor and electronic device markets, and expand business in Europe.

We are working on enhancement of product quality as the top priority. In order to enhance product quality and improve production efficiency for business growth, we will strive to improve production technology at all production bases and build an optimal production structure.

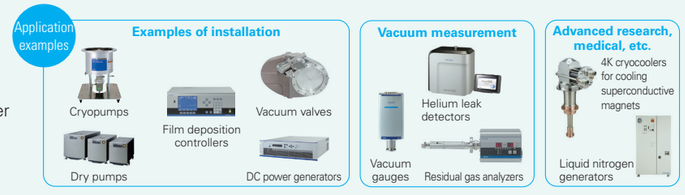
Recognized Business Opportunities
1. Business environment in which the components business can take advantage of synergy with the semiconductor, electronic device, and FPD production equipment businesses
2. Robust market environment for semiconductors, electronic devices, optical films, IT panels, EV batteries, etc.
3. Expansion of the measuring instrument market in line with the diffusion of EVs
4. Cultivation of European markets, the Chinese market, the consumer electronics market, etc.

Conceivable Risks
1. Emergence of latecomer, low-cost manufacturers due to quality improvements
2. Delay in development of strategic products
3. Delay in collaboration with external parties
4. Soaring raw material procurement prices

Measures for Reducing Risks and Maximizing Opportunities
1. Release differentiated products through collaboration with the equipment business and external parties
2. Concentrate development resources on strategic products
3. Improve production technology at all production bases
4. Establish sales and service networks for new markets

Components

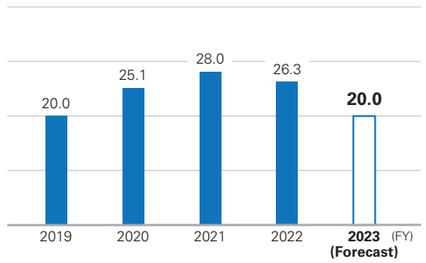
ULVAC supplies components essential for vacuum equipment, including vacuum pumps, vacuum gauges, vacuum valves, helium leak detectors, gas analyzers, power generators for deposition processes, etc., to vacuum equipment manufacturers, machinery manufacturers, etc.



Vacuum Equipment Business 5
Industrial Equipment

The industrial equipment business contributes to society by reducing environmental impacts and spreading health and happiness. We provide vacuum heat treatment furnaces for brazing used in the manufacture of heat exchangers and vacuum melting furnaces for magnet materials applied in motors mounted on EVs worldwide, centering on China. Moreover, we are promoting sales expansion of vacuum freeze-drying equipment used for pharmaceuticals and other applications mainly in Japan.

Orders received (Billions of yen)



Review of FY 2022
Having completed establishment of mass-production systems for vacuum heat treatment furnaces at our bases in China, we promoted global sales expansion. We also optimized production efficiency. In China, a growth market, we conducted customer-oriented sales expansion activities, which led to an increase in orders received.

Although we were unable to achieve the target for orders received for vacuum freeze-drying equipment due to postponement of investment and other factors, we continued product development with the aim of expanding sales when the market recovers in the future.

Medium- to long-term outlook of the market environment
In response to the global policies toward carbon neutrality, demand for EVs and renewable energy, such as wind power generation and power storage, is expected to continue to increase. Customers in China related to renewable energy are demanding vacuum heat treatment furnaces that will increase their production output.

In the medical field, we expect an increase in orders for vacuum freeze-drying equipment for biopharmaceuticals, such as injectable pharmaceuticals.

Medium- to long-term initiatives
Regarding vacuum heat treatment furnaces, we aim to expand orders globally. At the same time, we will further pursue safety and quality improvement.

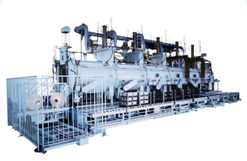
With regard to vacuum freeze-drying equipment, we will strive to make improvements to meet customer requirements and enhance quality to ensure compliance with strict industry standards.

Recognized Business Opportunities
1. Large-scale investment for mass production of magnets for EV motors
2. Increasing demand for the energy business such as wind power generation and power storage

Conceivable Risks
1. Greater security-related export restrictions, etc.
2. Shift of production and sales overseas by Japanese pharmaceutical companies

Measures for Reducing Risks and Maximizing Opportunities
1. Improve performance of vacuum heat treatment furnaces for magnets and promote joint development with key customers
2. Achieve compliance with overseas standards and enhance quality of vacuum freeze-drying equipment


Batch-type vacuum heat treatment furnace

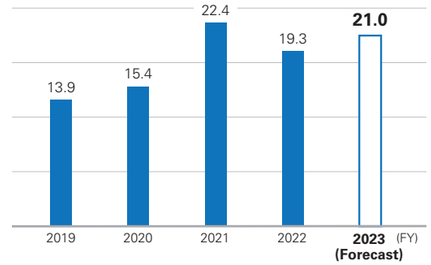

Hot roller-type vacuum heat treatment furnace


Vacuum freeze-drying equipment

Vacuum Application Business
Materials

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.

Orders received (Billions of yen)



Review of FY 2022
In the semiconductor market, a growth field, demand for sputtering targets for advanced semiconductors, especially those used for logic and memory, decreased, reflecting a decline in customers' facility utilization rates in the first half of 2023. However, we were able to increase orders for the products that use powder metallurgy technology, whose technological superiority over those of competitors is recognized.

As for sputtering targets for displays, the environment remained severe throughout the year because demand decreased as a result of deteriorating market conditions. However, we were able to improve the profit margin compared to FY 2021 through manufacturing reforms, including improvements in production efficiency and manufacturing methods.

Medium- to long-term outlook of the market environment
Regarding the semiconductor field, investment in the market temporarily declined due to production adjustments, but is expected to resume growth starting in 2024. Also technically speaking, in line with further miniaturization of advanced semiconductor devices, demand for sputtering targets for wiring and semiconductor layers to be incorporated in these devices is expected to increase.

The display market where facility utilization rates were declining has also begun to recover. In particular, the shift to OLEDs for IT panels is progressing, and demand for IGZO targets, a product category in which ULVAC has strengths, is expected to grow.

Medium- to long-term initiatives
As a partner to our customers, we will supply sputtering targets, functional materials, and other high-added-value materials.

Regarding products for advanced semiconductors, which are expected to generate high profit, we aim to further expand the adoption of our mainstay products, W/WSi, by manufacturers of advanced semiconductor devices.

Moreover, we will strengthen the development structure so that we can develop and prepare materials necessary for ULVAC's equipment business in advance and grow together with the equipment business. In particular, we will accelerate differentiation of high-melting-point metals and alloys in terms of technology, cost, and quality to maximize customer satisfaction.

Furthermore, by reviewing the functions of our bases, we will promote optimization of plants, equipment, products, and human resources, and strive to improve manufacturing capabilities through investment in equipment, replacement of old equipment, computerization, and semi-automated production.

Recognized Business Opportunities
1. Recovery of semiconductor investment and facility utilization rates at customers' factories
2. Continued investment in electronic devices related
3. Expanding demand for IGZO displays

Conceivable Risks
1. Intensifying competition
2. Delay in development and adoption for mass production
3. Unstable supply of raw materials and soaring prices

Measures for Reducing Risks and Maximizing Opportunities
1. Expand sales of sputtering target products for semiconductors using core powder metallurgy technologies
2. Improve production technology and production efficiency, optimize production bases, and enhance quality to secure profit
3. Achieve stable procurement of raw materials and promote recycling

Other

Surface analyzer business

Whereas university and company laboratories were previously the principal users of surface analyzers, they are increasingly used nowadays for routine purposes such as product inspection. Surface analyzers are being applied to more materials in more regions and markets throughout the world. ULVAC will continue offering surface analyzers and services from customers' perspectives around the world.

Production and sales of semiconductor/FPD mask blanks

Mask blanks are indispensable in the fabrication of electronic circuits for semiconductors and FPDs, which are essential for smartphones, IT panels, IoT, automobiles, communications, and other fields. Demand for mask blanks is trending upward, especially as devices evolve. We will respond to customer requirements to ensure that we ride the wave of market growth.