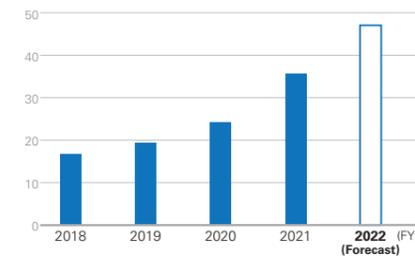


# Vacuum Equipment Business 1

## Semiconductor Production Equipment

The semiconductor production equipment market is expected to experience continued growth. We will focus development resources on fields where particularly strong growth is expected. We will aim to achieve sustainable growth by capturing market share through the introduction of equipment developed using our proprietary technologies.

Orders received (Billions of yen)



### Review of FY 2021

During the first half of FY 2021, orders received were favorable, supported by robust semiconductor capital investment. On the other hand, due to longer lead times and higher prices of parts and materials, we focused on ensuring on-time delivery to customers and cost control. In the second half of FY 2021, capital investment by major memory manufacturers slowed, but supported by capital investment by logic manufacturers and customers in China, we were able to achieve the plan for orders received. Viewing customers' requests for equipment evaluation as an opportunity for business expansion, we vigorously responded to such requests and gained a foothold for new business.

### Medium- to long-term outlook of the market environment

In the semiconductor production equipment market, in the short term, memory and logic inventory adjustments are expected to temporarily restrain capital investment, but investment in development by manufacturers of advanced devices and capital investment by customers in China are expected to continue. In the medium- to long-term, investment related to extreme ultraviolet (EUV) lithography is expected to expand in the logic field, and demand for Metal Hard Mask (MHM) process-ready equipment is expected to increase.

### Medium- to long-term initiatives

We are working to increase the number of different processes for which our equipment is adopted by our customers. With regard to logic, following entry to the advanced device market, we are aiming for the adoption of our equipment in a wide range of processes for customers' products extending from conventional devices to next-generation ones. In addition, by gaining a track record through the adoption of ULVAC equipment by major semiconductor manufacturers, we expect more potential new customers to take the opportunity to evaluate our equipment, which should lead to the winning of orders. With regard to memory, we aim to have our customers adopt ULVAC equipment in their processes when they transition to the next generation of products.

### Recognized Business Opportunities

1. Adoption of equipment when transitioning to next-generation products (change of customers' production processes to accommodate next-generation products) for advanced logic and memory products
2. Adoption of equipment by new customers in the advanced logic field
3. Gaining of market share by introducing equipment developed using proprietary technology

### Conceivable Risks

1. Postponement of semiconductor capital investment plan
2. Delay in next-generation device development and application to (investment in) mass production
3. Delay in delivery of equipment due to longer lead times in the supply chain

### Measures for Reducing Risks and Maximizing Opportunities

1. Strengthen marketing structure
2. Strengthen the response to development of leading-edge devices and competitiveness of existing products
3. Support development and launch of mass-production by new customers
4. Redevelop and strengthen structure of global supply chain

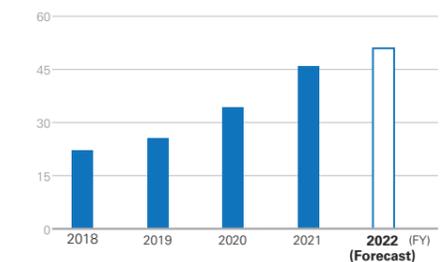
# Vacuum Equipment Business 2

## Electronic Device Production Equipment

The growth of the electronic device market, which supports progress toward carbon neutrality and digital transformation, is accelerating. In particular, investment in power devices, which are indispensable for the transition to green energy such as EVs and mega solar power generation, has been particularly active.

We aim to further expand business in such vibrant sectors of the electronic device market.

Orders received (Billions of yen)



### Review of FY 2021

Investment in power devices and optical devices in the electronic device market gained momentum mainly in Japan and China. In addition, owing to the reinforcement of the sales and technical support systems in China, orders received reached a record high and the sales plan was achieved.

### Medium- to long-term outlook of the market environment

Smart cities are attracting attention around the world. Therefore, the market demands the application of cutting-edge information technology and solutions to environmental problems. In order to provide equipment and services that meet customer needs, it is essential to improve the performance and productivity of electronic devices. As factory restructuring has begun around the world, particularly in China, where the shift to production within China is rapidly advancing, we aim to expand business by providing customers with equipment and services that meet market demands.

### Medium- to long-term initiatives

To strengthen competitiveness of our product lines, we will enhance the provision of solutions to our customers. For this purpose, we will continue to standardize equipment modules.

In addition, for business development in China and elsewhere in the world, optimization of production is necessary and so we will review our manufacturing bases.

To keep pace with development in the rapidly growing electronic device market, we will strengthen collaboration with key customers and increase opportunities for such initiatives.

### Recognized Business Opportunities

1. Diffusion of EVs in pursuit of carbon neutrality
2. Expansion of demand for electronic devices in the China market
3. Evolution of devices for realization of a digital society
4. Acquisition of new customers by leveraging the track record with major customers

### Conceivable Risks

1. Delay in delivery of equipment due to longer lead times in the supply chain
2. Intensifying competition
3. Tight supply of parts and materials due to surging capital investment

### Measures for Reducing Risks and Maximizing Opportunities

1. Secure parts and materials through systematic arrangements made in advance
2. Develop equipment meeting customer needs and achieve technological differentiation by strengthening marketing systems
3. Improve production efficiency by enhancing manufacturing capabilities

### Priority fields

Priority fields	Final products
Communication devices	<ul style="list-style-type: none"> <li>Smartphones</li> </ul>
Optical devices	<ul style="list-style-type: none"> <li>Smart devices</li> <li>3D sensors</li> </ul>
Electronic devices (MEMS)	<ul style="list-style-type: none"> <li>In-vehicle displays</li> <li>5G-ready equipment</li> </ul>
Power devices	<ul style="list-style-type: none"> <li>Devices for EV application</li> <li>Industrial robots</li> <li>Energy-saving equipment</li> </ul>
Electronic packaging	<ul style="list-style-type: none"> <li>Smartphones</li> <li>High-speed data servers</li> <li>IoT devices</li> </ul>

# Vacuum Equipment Business 3

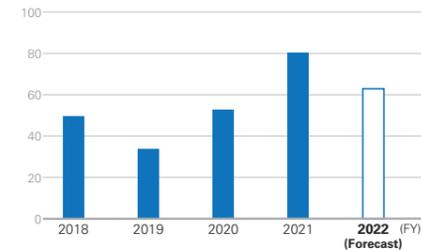


**Yasuo Shimizu**  
Executive Officer,  
General Manager of FPD  
Division

## FPD Production Equipment

Demand for display devices applied as communication tools is increasing. Moreover, in recent years, there has been growing demand for highly efficient energy devices to realize stable energy supply and reduce environmental impacts. By vigorously engaging in business that helps resolve these social issues, we aim to enhance the value of our business and achieve further growth.

Orders received (Billions of yen)



### Review of FY 2021

With the increase in stay-at-home demand due to the impact of the COVID-19 pandemic, capital investment for LCDs for high-definition IT panels gained momentum, and we were able to receive more orders than in FY 2020. Net sales were significantly higher than the previous year, partly due to an increase in orders received in the second half of FY 2020, and furthermore, the gross profit margin improved due to initiatives such as “manufacturing capability reform” and other factors. In addition, regarding products that can help mitigate global warming (reduction of CO<sub>2</sub> emissions) and resolve energy issues, which are global issues, we set our sights on the development of evaporation roll coaters that will realize larger-capacity, more compact, and safer EV batteries.

### Medium- to long-term outlook of the market environment

In FY 2022, orders are expected to temporarily decline as a natural reaction to strong LCD investment in FY 2021 and because FY 2022 is expected to be a transitional period before full-scale investment in mass production of large-substrate OLED for IT panels takes off. However, demand for flat panels is expected to continue to expand, especially in the IT panel market, as new lifestyles take root, typified by the normalization of remote work, the shift to EVs, and greater use of AI. In addition, the expanding EV battery market will be an attractive opportunity for ULVAC if vacuum technology is adopted to realize smaller size, larger capacity, and improved safety.

### Medium- to long-term initiatives

We will continue to invest in R&D of products for the IT OLED market, which is expected to grow. In promoting development of equipment for mass production of large-substrate OLEDs for IT panels, we will leverage our core technologies of large-substrate transportation and for higher-definition displays, and develop production equipment for G8.5-class OLED for IT panels. Moreover, we will continue to promote the shift to IoT of equipment in readiness for smart factories.

Furthermore, our metal lithium vacuum deposition technology has been 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) as a material

technology that will enable practical application of storage batteries with more than double the current battery pack capacity by 2030. By promoting this project and co-creation activities with related companies, we will accelerate commercialization of metal lithium vacuum deposition equipment for EV batteries.

### 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
3. Increased technological needs for smaller and higher definition displays in line with the trend toward wearable mobile devices

### Conceivable Risks

1. Prolonged adjustment of display supply/demand
2. Delay in the shift and adaptation to next-generation technology
3. Restrictions on exports for security reasons, and supply chain interruption

### Measures for Reducing Risks and Maximizing Opportunities

1. Strengthen marketing
2. Jointly develop advanced technology with leading companies
3. Redevelop and strengthen the structure of the global supply chain
4. Improve production efficiency by enhancing manufacturing capabilities

# Vacuum Equipment Business 4



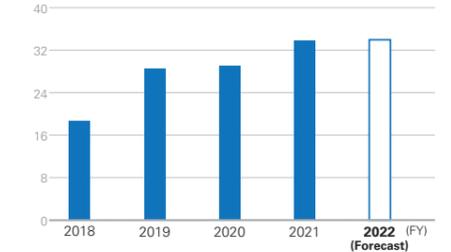
**Dr. Ju Hoon Shin**  
Executive Officer  
General Manager of Components  
Division

## Components

To accomplish the following two missions, we will strive for business growth.

1. Product development and production of components supporting the equipment businesses
2. Stable profitable business of the ULVAC Group

Orders received (Billions of yen)



### Review of FY 2021

Semiconductor, electronic device, and EV-related markets remained robust. Special demand in anticipation of longer lead times for parts and materials worldwide resulted in sales of the components business exceeding the sales plan.

Moreover, we pursued management reforms to improve profitability in the vacuum pump field, focusing on “optimization of production systems” and “efficiency improvement at production sites,” and achieved the targeted results.

### Medium- to long-term outlook of the market environment

We recognize that the semiconductor, electronic device, optical film, FPD, EV, 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 FPD fields are manufacturers of vacuum deposition equipment, we expect that the growth of the above-mentioned markets will increase demand for the DC power generators and dry pumps installed in such equipment.

In the EV and industrial equipment markets, in addition to helium leak detectors, we also anticipate increased demand for cryocoolers for quantum computers and MRIs.

### Medium- to long-term initiatives

Having set four product groups as strategic products—DC power generators, helium leak detectors, dry pumps, and cryocoolers, we will promote vigorous entry into the market and expansion of our market share by developing fundamental technologies and new products. “Quality” is the top priority of the components business. Specifically, we will make cross-organizational efforts at all production bases in Japan and overseas to improve product quality

and production efficiency. Based on these activities, we will build a system capable of providing optimal solutions.

### 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, displays, EVs, etc.
3. Expansion of the measuring instrument market in line with the diffusion of EVs
4. Cultivation of untapped markets (Europe, U.S., China)

### Conceivable Risks

1. Delay in delivery due to longer lead times in the supply chain
2. Emergence of latecomer, low-cost manufacturers due to quality improvements

### Measures for Reducing Risks and Maximizing Opportunities

1. Release differentiated products leveraging collaboration with customers and partners
2. Concentrate development resources on strategic products
3. Improve production efficiency through optimization of production and procurement
4. Establish sales network for new markets

## Components

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

**Application example**  
Examples of installation

**Vacuum measurement**

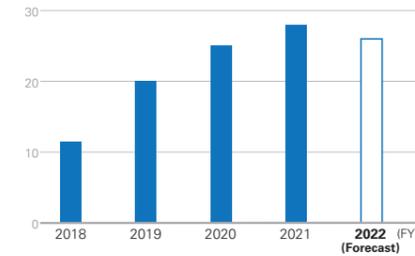
**Advanced research, medical, etc.**

# Vacuum Equipment Business 5

## Industrial Equipment

The industrial equipment business is engaged in global business development and expansion of sales of 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 mainly in China. Moreover, we are promoting sales expansion of vacuum freeze-drying equipment used for pharmaceuticals and other applications.

Orders received (Billions of yen)



### Review of FY 2021

Establishment of mass-production systems for vacuum furnaces at our bases in China was completed. In addition to export of these furnaces from China to other countries, improved production efficiency was achieved. Moreover, by developing equipment in parallel in China, we were able to realize timely development in the buoyant Chinese market, leading to a higher market share. For vacuum freeze-drying equipment, the Japanese government solicited applications for subsidies to ensure a stable supply of pharmaceutical products in Japan in response to the spread of COVID-19, but due to delay in the selection of companies to receive subsidies, we were unable to achieve the plan for orders received.

### 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 where related resources are abundant are demanding equipment that will increase their production output. By incorporating customer needs in equipment development, we aim to increase orders. In the medical field, we expect an increase in orders for vacuum freeze-drying equipment due to rising demand for injectable pharmaceuticals.

### Medium- to long-term initiatives

Regarding vacuum furnaces, we will further strengthen production systems at our bases in China. At the same time, we will further pursue product safety and quality improvement, aiming to receive orders globally.

With regard to vacuum freeze-drying equipment, our intention is to expand orders by developing models that meet customer requirements and by complying with strict standards and audits required by the industry.

### Recognized Business Opportunities

1. Large-scale investment in the magnet industry in response to mass production for EVs by Chinese and Japanese manufacturers
2. Heightened demand for the energy business such as wind power generation and power storage
3. Renewal of customers' facilities to improve equipment functions and productivity in response to increasingly sophisticated quality control of pharmaceutical products

### Conceivable Risks

1. Greater security-related export restrictions, etc.
2. Delay in delivery of equipment due to longer lead times in the supply chain
3. Shift of production overseas by domestic pharmaceutical companies

### Measures for Reducing Risks and Maximizing Opportunities

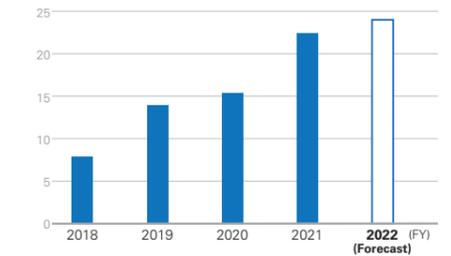
1. Improve performance of melting furnaces for ferromagnetic magnets and promote joint development with key customers
2. Secure the necessary parts and materials through systematic arrangements made in advance
3. Promote overseas business development for vacuum freeze-drying equipment

# Vacuum Application Business

## Materials

The semiconductor and FPD markets where sputtering target products, the mainstay of the materials business, are used are expected to grow over the long term in line with progress toward a digital society. In collaboration with ULVAC's equipment businesses and by exploiting the material technologies such as powder metallurgy and metallurgy technologies we have cultivated over the years, we aim to expand our business through the global promotion of advanced materials attuned to the progress of devices.

Orders received (Billions of yen)



### Review of FY 2021

In the fast-growing semiconductor market, we strengthened sales activities for products for leading-edge semiconductors, especially those used for logic and memory, resulting in brisk orders received. Regarding products for FPDs, orders received increased centering on those for IGZO targets for oxide film semiconductors, which are strategic products, reflecting the buoyant OLED field, and we maintained a high market share in this business field.

Despite the impact of soaring raw material prices, we were able to improve the profit margin compared to FY 2020 by establishing production systems for more efficient manufacturing and improving manufacturing methods.

### Medium- to long-term outlook of the market environment

In line with progress toward a digital society, medium- to long-term market growth is expected in the semiconductor, electronic device, and FPD fields. In the semiconductor market, demand is expected to expand not only for consumer applications but also for industrial applications such as data centers. In the FPD market, for home and automotive applications, demand for FPDs to serve as interfaces for smart devices is expected to grow. Demand for thin-film materials such as wiring and semiconductor layers to be incorporated in these devices and new materials to achieve higher device performance is also expected to increase.

### Medium- to long-term initiatives

In the FPD market, through joint development with customers and strengthening sales support at bases, we aim to maintain the high share by supplying sputtering target products that respond to technological changes in a timely manner.

In order to increase orders for products for semiconductors, for which high market growth rates are expected, we will endeavor to increase production volumes by improving high-quality and stable

manufacturing technologies to meet customers' quality requirements, optimizing production bases including the semiconductor production lines introduced at manufacturing bases in China, and improving productivity.

### Recognized Business Opportunities

1. Increased demand for thin-film materials (sputtering targets) associated with the ongoing diffusion of smart devices
2. Investment in mass-production lines by leading-edge semiconductor device manufacturers
3. Switching to new materials in line with the trend toward higher definition and diversification of FPD panels
4. Rapid growth of the semiconductor market in China

### Conceivable Risks

1. Intensifying price competition
2. Delay in next-generation device development and application to mass production (capital investment)
3. Restrictions on exports for security reasons, and supply chain interruption

### Measures for Reducing Risks and Maximizing Opportunities

1. Create competitive new products by working with the equipment businesses
2. Strengthen networks through marketing at each base
3. Improve production technology and production efficiency and reinforce production systems at bases in China
4. Promote joint development with leading companies

## 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.