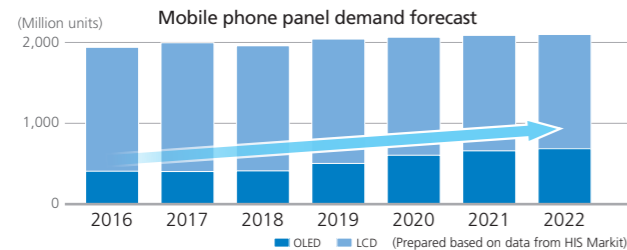
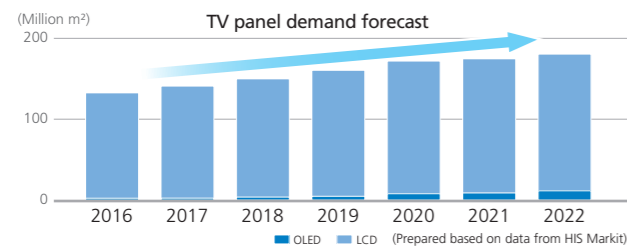


Overwhelming market share for G10.5 sputtering equipment for LCDs for large-screen TVs Ready for next-generation equipment other than FPDs

Regarding LCDs for large-screen TVs, device manufacturers rapidly expanded capital investment for G10.5 that is capable of producing multiple 65- or 75-inch panels from one substrate. Capitalizing on abundant experience accumulated in the TV market, ULVAC has secured an overwhelming share of this market segment by introducing sputtering equipment offering superior productivity ahead of competitors. We are also ready to enter the market for vacuum equipment for printed OLED TVs, which are promising next-generation large-screen TVs.

Although the market scale of the solar-cell field is not large business opportunities are emerging since a leading research institute in China demonstrated the performance of ULVAC's high-efficiency silicon heterojunction solar cell production equipment. Moreover, we secured orders for deposition roll coaters for high-performance capacitors required for electric vehicles (EVs), which constitute a promising growth market. In addition, with regard to large-capacity lithium-ion batteries, we have reached the trial manufacturing phase following vigorous basic R&D, a milestone pointing to business development from now on.

FPD-related investment expected to continue over the long term



Advanced development of successor products attuned to customer needs, leading to greater market share

Capital investment is in full swing in the FPD field. China has become the largest producer of LCDs for large-screen TVs and G10.5-compatible factories have come on stream. OLED TVs, which are gaining traction as premium large-screen TVs, promise to be a future growth engine in view of ongoing technological innovation. With regard to small and medium-sized displays, flexible displays adopting OLED are the key to further growth.

With differentiated proprietary technologies, such as low-particle large glass substrate transportation technology, ULVAC aims to expand its market share, including that in the OLED-TV market. Meanwhile, we are developing products for small and medium-sized displays with a view to reducing particles, which have a direct impact on yield.

Continued growth is expected for the solar-cell market until 2030, with high-efficiency solar cells showing particularly high growth. ULVAC is the only company with a track record in mass production of high-efficiency solar cells using silicon heterojunction solar cell production equipment. Aiming to set a de facto standard for high-efficiency solar cells, we will promote development of new products unmatched by competitors. We are also preparing our new deposition roll coater, which is capable of handling high functional films necessary for large-capacity lithium-ion batteries used in EVs, for market entry and business operation.

Key Measures

1. Further enhance quality and ensure reliable manufacturing
2. Strengthen systems responding to demand for next-generation displays and develop a global business structure
3. Cultivate high functional film and PV markets and develop successor products

Conceivable Risks

1. Rapid change in the trend of the FPD market (slowdown in the large-screen TV market in China, advent of alternative technology, etc.)
2. Delay in development of technically challenging technology

Strategic growth by expanding customers in memory and entering the logic/foundry market

Through vigorous investment in the memory market we received orders from both repeat customers, and newly acquired customers with new processes applications. Our progress is largely attributable to one of our key business strategies; cultivation of ever-stronger relationships with technology-initiative-partners. Additionally, we accomplished full-scale entry to the logic/foundry markets, a longstanding goal, and progressed in establishing these businesses as new growth drivers in accordance with our business strategy. Having started business with customers in China, one of the growing markets, we are poised for future growth of this business.

Atop of these gratifying accomplishments and progress, we are promoting initiatives to further reinforce the foundation for growth by strengthening sales & marketing, production, and customer support systems.

Growing semiconductor equipment market share in the age of the smart society

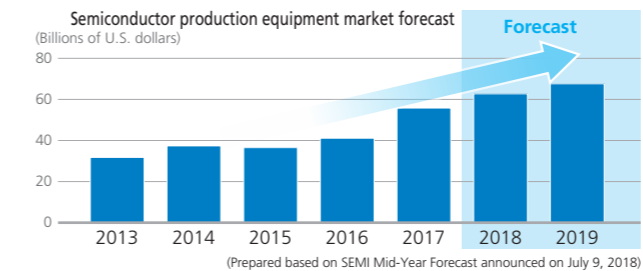
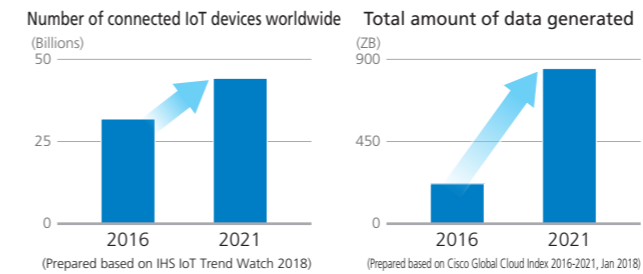
The requirements of semiconductor devices and related components are evolving to support the emergence of IoT's big data demand and servers for edge computing. Growth opportunities are increasing not only for traditional DRAM and NAND but also for storage-class memory. Miniaturization is fueling innovation in processor technology.

ULVAC intends to grow memory and logic/foundry business through these technical innovations.

We will focus on growth engine keywords: "Miniaturization Process Requirements", "Nonvolatile memory film formation", "Wafer level package deposition", and "Logic/Foundry miniaturization mass production support". Based on a business growth strategy unique to ULVAC, we will pursue business development different from other major competing equipment manufacturers.

As a medium-term strategic plan we are promoting the development of leading edge technologies that will leverage our strengths in native oxide removal and sputtering equipment.

Semiconductor equipment market expansion due to the rising tide of IoT related data and soaring server demand.



Key Measures

1. Achieve growth in memory and logic/foundry to double market share
2. Promote technology development and strengthen relationships with technology-initiative partners for strategic business development
3. Accelerate business development in the growing China market

Conceivable Risks

1. Delay in development of technically challenging technologies
2. Intensifying of competition
3. Growth speed of the China market
4. Growth rate of the leading-edge device market

Further growth by strengthening the global business structure

Yasuo Shimizu
General Manager of FPD:PV Division

The quality enhancement initiatives launched five years ago have yielded good results and we have set in motion a virtuous cycle capable of securing profit. While maintaining these initiatives throughout the business unit, including Group companies, we will not only provide customers with superior products and technologies but also promote development and sales of successor products, thus expanding ULVAC's share of the market for FPD, PV and high functional films.



For the semiconductor equipment operation to become the second pillar and achieve substantial global business expansion

Tomoyasu Kondo
Executive Officer, General Manager of Semiconductor Equipment Division

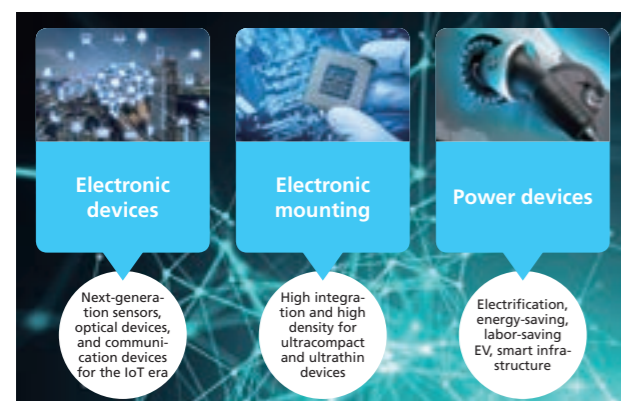
Our aim is to expand the semiconductor equipment operation as ULVAC's second pillar and achieve substantial global business development by continuing to ride a robust investment trend in the semiconductor market. To accomplish this, we will endeavor to seize business opportunities based on our growth strategy emphasizing responsiveness to customer needs and by earning customer confidence in ULVAC.



Brisk business supported by the buoyant equipment market for electronic devices

IoT-related demand is vigorous, such as equipment for communication devices, equipment for MEMS and other sensors, optical films for electronic devices, and microdisplays. The equipment market is booming, with the emergence of the supersmart society providing a tailwind. ULVAC began actively pursuing R&D in these fields several years ago and we are now receiving numerous inquiries. Viewing further growth of the electronic devices market fueled by the progress of IoT as a huge business opportunity, we aim to expand our business by following a cycle from development and installation of equipment through to identification of new needs. Amid brisk order-taking for equipment, responding to customers' requested delivery dates is an issue. We are working to establish a mechanism enabling us to seize opportunities without fail by flexibly responding to customers' requests, for example, by reviewing our approach to procurement.

Priority fields



Expand equipment sales worldwide while further strengthening our presence in China, as well as in Europe and North America, to become a truly global enterprise

With the advent of the supersmart society, needs for electronic devices that support IoT, such as communication,

sensing, and optical devices, are bound to further increase. Development of these devices is progressing concurrently around the world. The ongoing evolution of production equipment for them is predicated on the development of innovative new technologies and improvement of existing technologies.

In Europe and North America, where many new devices are developed, ULVAC is strengthening the customer support system and technical proposal capabilities through collaboration among Group companies with the aim of vigorously cultivating new customers.

Furthermore, we are cultivating collaborative relationships with customers to develop new equipment that promises a strong presence in the market.

On the other hand, in Asia where many of our customers have production bases, we will focus on enhancing customer satisfaction by leveraging the Group's well-established production and service bases in addition to our delivery track record so far. Through these initiatives, we aim to expand business globally in order to increase the presence of ULVAC in the electronic device field which supports the supersmart society.

Key Measures
1. Further expand global business development in Asia as well as in Europe and North America
2. Continue development of cutting-edge technologies for the supersmart society
3. Build partnerships with customers by leveraging Group capabilities
4. Win more orders by vigorously tackling new projects (related to optical films and microdisplays)
Conceivable Risks
1. Delay in the takeoff of fields that are expected to be sources of new demand
2. Delay in business development in China, Europe and North America
3. Slowdown in the Japanese market
4. Longer manufacturing lead times for equipment attributable to difficulties in parts procurement

Offering solutions for higher-value-added products of superior quality based on a sure grasp of customer needs across the full spectrum of industries

Industrial equipment constitutes the infrastructure of high-tech industry. ULVAC supports customers' innovation by combining vacuum technology with fundamental technologies, such as heat treatment of parts to increase hardness and luster, melting for development and production of high-performance materials, brazing for bonding different kinds of materials, and drying and distillation to increase purity and preservability.

In order to respond to customers' global business development, we are implementing measures to maximize synergy among our bases, thereby capitalizing on ULVAC's comprehensive capabilities. In fiscal 2017, both orders received and net sales of industrial equipment exceeded those for the previous fiscal year, led by vacuum heat treatment furnaces for the production of automotive components and leak testers.

Contributing to the full spectrum of industries

The industrial equipment business is contributing to the full spectrum of industries.



Application of existing technologies to cultivate growth markets and pioneer new markets

Regarding systems employed in the manufacture of the rare-earth magnets widely used in wind turbines, electric vehicles, and mobile phones, we will meet customer needs for higher performance by optimizing hydrogen furnaces, pulverizers, and SC melting furnaces.

In the automotive components field, we anticipate growing demand associated with the development of heat exchangers for exhaust gas recirculation (EGR) coolers used in internal combustion engines and heat exchangers for electronic parts cooling in EVs. We intend to secure our market share for vacuum brazing furnaces, which are ULVAC's forte.

In the pharmaceuticals field, investment in generic drugs is booming. This is creating opportunities for ULVAC to display its strengths in freeze-drying equipment and high-precision transportation mechanisms.

New applications of ULVAC's unique Micro Powder Dry technology for producing porous powder include blood plasma preparation, ceramic capacitors, and new materials.

In the food field, distinctive drying technologies, such as superheated steam drying and puffed freeze drying, have made it possible to preserve and commercialize foodstuffs that were previously disposed of as waste. We aim to offer solutions to alleviate food shortages and food losses worldwide.

Key Measures
1. Swiftly identify customer needs and market needs and develop new processes
2. Resolve social issues through business
3. Further strengthen supply chains
4. Strengthen collaboration among production bases and Group companies to achieve integrated operation
Conceivable Risks
1. Progress of commoditization and intensifying price competition
2. Delay in the takeoff of projects for products to be introduced in new markets

Advent of the supersmart society
Further expand global business development of equipment for electronic devices

Tetsuya Shimada
Executive Officer, General Manager of Advanced Electronics Equipment Division

Sensors are the key electronic devices for the IoT era and trillions of them will eventually be required. Furthermore, electronic devices are indispensable for next-generation communication technology, including 5G.

ULVAC will vigorously promote substantial global business development with the aim of achieving further growth in the globally expanding electronic devices market.



Contributing to industries and society with vacuum technology involving thermal application

Hisanao Kusaba
General Manager of Industrial Equipment Division

The Industrial Equipment Division offers vacuum technology solutions involving thermal application. We are developing the equipment customers require in order to create higher-value-added products of superior quality. Our solutions contribute to the full spectrum of industries and cover such processes as vacuum heat treatment and brazing of internal combustion engine parts, vacuum melting of magnetic materials, vacuum freeze drying of pharmaceuticals, high-purity refining of vitamin E, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA) using vacuum distillation, and special vacuum drying of food without spoiling the taste.



Achieve further growth through Group synergy

Vacuum components (vacuum pumps, vacuum gauges, vacuum valves, vacuum leak testers, gas analyzers, power generators for deposition processes, etc.) are used in many industries. In fiscal 2017, supported by robust markets for FPD panels, semiconductors, electronic devices, and automobiles, we achieved sales targets in all categories (pumps, measurement equipment, mechatronics, and power generators for deposition processes). In particular, centering on Asia, we expanded the scale of business of power generators for deposition processes by enriching the product lineup.

The vacuum pump business is conducted by ULVAC CRYOGENICS, which is a manufacturer specializing in cryopumps and cryocoolers, and ULVAC KIKO, which handles compact vacuum pumps, as well as ULVAC, Inc. In order to achieve growth in the global market, we aim to enhance the efficiency of production and sales through synergy among ULVAC Group companies in Japan and overseas involved in the components business and expand collaboration with business partners.

Components

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

Application examples

<p>Applications for OLED production equipment</p> <p>Dry pumps Cryopumps Film deposition controllers Vacuum valves</p>	<p>Vacuum measurement</p> <p>Helium leak detectors Vacuum gauges Gas analyzers</p>	<p>Advanced research, medical, etc.</p> <p>4K cryocoolers for cooling superconductive magnets Liquid nitrogen generators</p>
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Regarding product development, we released products attuned to market needs that offer both superior productivity and energy saving, including the new LS series of dry pumps (for details, please refer to Page 47). We will step up development of products offering higher productivity and environmental friendliness.

Reaching out from Japan to China, Europe and North America in pursuit of global business development

The vacuum components business is already borderless. The rapidly expanding semiconductor and display production equipment market in China is a huge business opportunity for components manufacturers. Tackling this market inevitably involves competing against powerful European and American manufacturers. In order to prevail, we are strengthening our global marketing structure and establishing systems for developing products attuned to market needs. Moreover, we seek to enhance the value of the ULVAC brand by pursuing business development, including enrichment of the lineup through alliances.

By offering the optimum products for various fields, including analysis, medicine, and food, we will cultivate vacuum applications and promote expansion of the cryocooler business.

Key Measures

1. Establish an R&D structure attuned to market needs
2. Reform the operational system of the components business
3. Expand vacuum applications (general industries) and the refrigerator business (advanced technology, etc.)

Conceivable Risks

1. Stronger competitors expanding business through M&A
2. Intensifying price competition, market entry by low-cost manufacturers

Become a pillar of ULVAC's global business with an extensive product lineup

Vacuum technology is essential for diverse industries. As a comprehensive manufacturer of vacuum components supporting the industrial infrastructure, we offer an extensive lineup of vacuum pumps, measurement equipment, and power generators for deposition processes. Whereas previously expectations of the components business were largely limited to ensuring the reliability of components so as to enhance the competitiveness of equipment businesses, from now on, through the enhancement of our global competitiveness, we aim to become a pillar of ULVAC's global business.

Ju Hoon Shin
General Manager of Components Division



Steady business expansion

In fiscal 2017, sales of LCD materials in China greatly increased and sales of semiconductor materials were also robust. Moreover, for high-performance superconductive materials, we were able to establish a track record overseas and are laying the foundation for future business expansion.

Materials business

The materials business centers on target materials used in sputtering, which is the mainstream method of vacuum deposition, and also includes development and manufacturing of functional materials.

<p>Sputtering equipment for large-screen TV manufacturing</p> <p>Sputtering target</p>	<p>Sputtering equipment for semiconductor manufacturing</p> <p>Sputtering target</p>	<p>Acceleration cavity for high-performance accelerators (use of high-purity Nb materials)</p>
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Such a great opportunity comes only once in decades

Technological innovation, with IoT, 5G communication, and AI to the fore, has brought us to the threshold of the smart society. One consequence of this trend is that new high-performance materials are coming into their own in the semiconductor, cutting-edge electronic device, and the display field. They are destined to eventually supersede traditional materials. With a view to facilitating the emergence of the smart society, we are developing new materials required in this expanding application field in cooperation with ULVAC's equipment divisions and research institutes and together with our customers.

Key Measures

1. Capture the demand from increasing equipment operation in China
2. Meet the increasingly sophisticated demand associated with FPD and semiconductor production processes
3. Provide support for high-tech applications besides the deposition process (develop high-performance materials)
4. Enhance production capacity in Japan and overseas

Conceivable Risks

1. Stably securing raw materials suppliers in view of increasing demand
2. Price competition in the promising China market
3. Investment for growth and recoupment

Be a pioneer in offering excellent materials to the market

Sputtering equipment, ULVAC's mainstay products, requires target materials as a source for deposition substances. We are endeavoring to develop products such as target materials endowed with functions required in the emerging smart society, power-generation markets, and corrosion-resistant, superconductive high-performance materials, in cooperation with the equipment divisions and research institutes. Moreover, we aim to be first-to-market so that our customers can be the first to enjoy their benefits.

Seigou Kinugawa
General Manager of Materials Division



Others

Semiconductor mask blanks market

We will respond effectively to increasing needs for miniaturization and higher definition in line with the expansion of the application field and the proliferation of types, reflecting the improved performance of smartphones, development of self-driving vehicles, and the ramp-up of demand related to IoT and artificial intelligence (AI).

Surface analyzer market

Whereas university and company laboratories were previously the principal users of surface analyzers, this equipment is 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 with functions attuned to customer needs.