

The DNA of Ushio: Guiding Us Into the Future

Since its founding, Ushio has believed in the potential of *light*. Guided by this belief, Ushio has contributed to the resolution of social issues and to technological innovation across the globe by utilizing light as a means to provide not only *illumination* but also *energy*.

1964

Ushio Inc. was established in 1964. In the following year, Ushio established four basic principles based on the desire to become an indispensable company for all by drawing on the collective wisdom of employees in order to grow. Since their establishment, these four principles have continued to be passed down as the guideposts determining the direction in which the Company should head. With the addition of certain wording to illustrate Ushio's corporate social responsibility, these four basic principles were enshrined in the Ushio Group Management Philosophy, which now serves as the foundation for all of Ushio's corporate activities.



Founder
Jiro Ushio

Four Basic Principles at the Time of Our Founding

1. Build both a prosperous Company and prosperous employees.
2. Deliver products and services that are competitive in the global market.
3. Contribute to society through superior products and innovative research and development.
4. Show the world the true value of a medium-sized enterprise and, in doing so, secure stable profits.

Culture and Strengths That Have Guided Us Since Our Founding

Conviction to Build Both a Prosperous Company and Prosperous Employees

Soon after our founding, we began to pursue various initiatives to build both a prosperous company and prosperous employees, including formulating long-term plans that adopted policies to raise employee salaries and increase their number of holidays. This management approach of valuing employees remains at the core of the Company to this day.

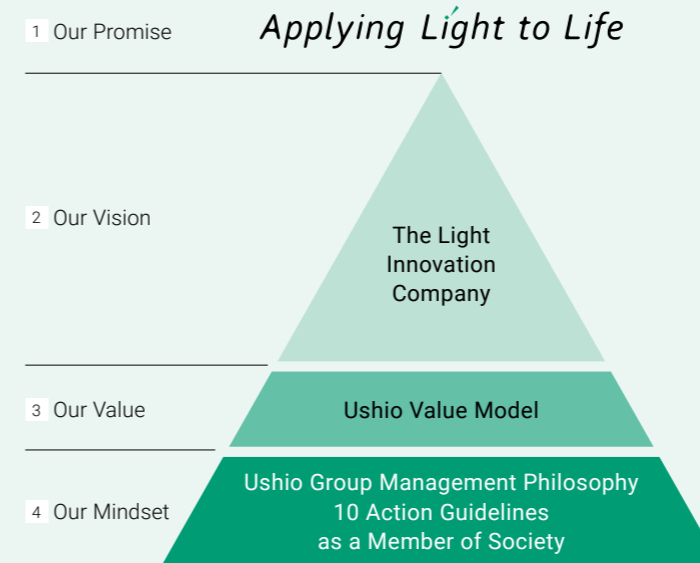
We began to build a business foundation in global markets directly after our establishment, upon which we built a global network. With a particular focus on specialized light sources, we fortified our brand power and carved out a unique position as a leading niche company globally. We also placed our focus on markets in which we could draw on the technological strengths of light based on an awareness of ourselves as a *global medium-sized enterprise* that emphasizes uniqueness over business scale. By doing so, we provided the world with numerous one-of-a-kind products with high added value.

Facing the impact of the rapid decline in overall demand that directly followed the 1973 oil crisis, we were forced to respond in ways such as narrowing the types of products we offered. Meanwhile, we prioritized our responsibility of supply to our customers over Company sales by providing customers with replacement products made by other companies. In this way, we adopted social contribution as the basis of our decision-making. This approach earned the trust of our customers, and has served as the foundation of the current Ushio brand and our sustainability initiatives.

Present

The corporate activities that we have consistently promoted in accordance with the four basic principles that reflect Ushio's views when we were first founded have helped us form our corporate culture and accumulate various strengths. This DNA, which we must continue to preserve, remains deeply embedded in our current philosophical framework, even as we add the perspective of what needs to change in order to realize sustainable corporate value enhancement into the future.

Philosophical Framework



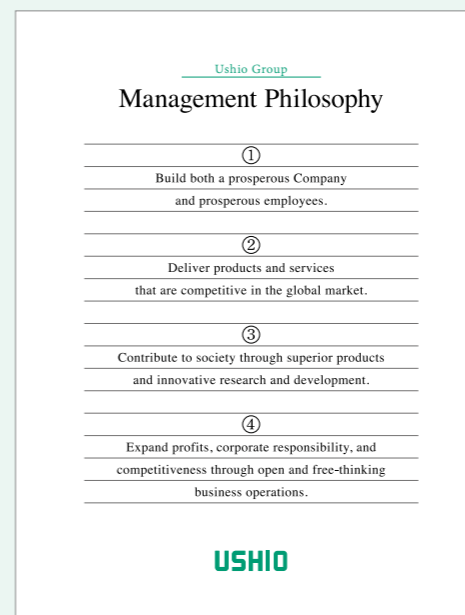
Applying Light to Life is **Our Promise** to our customers, to our community, and to ourselves at the very top of our philosophical framework.

1 To fulfill this promise, it is essential for each Ushio Group employee to believe in the possibilities of light, dream about the future, and spend each day with excitement.

To fulfill our promise, **Our Vision** of becoming the Light Innovation Company embodies our desire to solve problems faced by our partners and society through light innovation, as well as our desire to create new light markets that support human well-being and societal growth as light professionals.

3 To solve social issues, we take cutting-edge light technology seeds developed through R&D and turn them into reproducible technology, creating value for society and our customers and offering proposals to society with our partner companies. These are **Our Value**.

4 The Ushio Group Management Philosophy is the foundation of everything we do and represents **Our Mindset**. In 1965, the year after our founding, we established four basic principles. Our current Management Philosophy is centered on these four basic principles, with additional wording to illustrate Ushio's corporate social responsibility.



Please refer to our website for more details on our Management Philosophy.
<https://www.ushio.co.jp/en/company/outline.html>



Value Creation Through Implementation of Our Management Philosophy

Using light as *illumination and energy*:

Based on our founding philosophy, Ushio has evolved its core technologies in line with the changing times. As light professionals, Ushio uses *light* to solve issues impeding the progress of technological innovation around the world and create new value.

We continue to believe in the potential of *light*, contributing to the solving of social issues and striving to sustainably improve our corporate value.

Note: Non-consolidated sales are shown for the period between fiscal 1965 and fiscal 1980, with consolidated sales shown from fiscal 1981 onward.

Historical background by decade

- Transition from black and white to color
- Movement toward office automation

- Osaka Expo
- Japan's national space development plan

- Increasing popularity of laptops (1980s)
- Increasing popularity of LCD TVs (1990s)

- Digitization in movies

- Increasing popularity of smartphones and other new electronic devices

- Advancements in IoT and AI

Net Sales
¥177.6 billion

Future Possibilities

P.60-63



The Evolution of Core Ushio Technologies

Founding Philosophy

Light is more than just illumination. The future of light lies in its utilization as energy.

Halogen lamps (JCD)

The most advanced incandescent lamp, the halogen lamp, was first developed in Japan



Xenon short arc lamps

Active development of discharge lamps focusing on point light sources



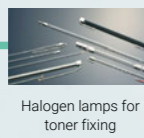
World's first xenon short arc lamps adopted for large-scale outdoor advertising lighting



Adopted in projector that used a horizontally-oriented xenon short-arc lamp for the cinema market (courtesy of Eiki Industrial Co., Ltd.)



Light sources for OA equipment



Halogen lamps for toner fixing

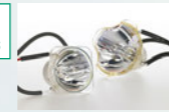
Water-cooled xenon short-arc lamp adopted for NASDA (National Space Development Agency of Japan, now JAXA) large-scale solar simulator



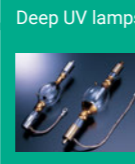
Lamps for cinema projectors



Lamps for data projectors



Light sources for lithography equipment



Creation of point light source (high intensity) high-pressure UV lamps for spinning lighting equipment



Cleaning lamps / units

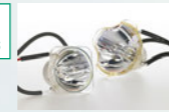
High-pressure UV lamps for lithography equipment



Excimer lamps



Lamps for data projectors



Lithography equipment



Excimer irradiation equipment



Step & repeat lithography tool



Latest stepper model



Thermal processing light sources



Flash lamp

UV curing equipment for bonding LCD panels



Phototherapy device



TeraBeam Series

Light sources for environmental hygiene



Far UV-C disinfection technology Care222® modules

i-line and g-line lithography equipment applications

Mask inspection, etc.

Direct imaging lithography equipment

Digital lithography system

Cutting-edge semiconductor package substrates

TAB / COF

Electronic devices / power semiconductors, etc.

Semiconductor cleaning processes

Semiconductor thermal processes

Flat panel displays

Photo-alignment equipment

Office automation (OA) equipment

Imaging

Projectors for general imaging

Life sciences

New fields: PFAS decomposition, etc.

Ushio at a Glance

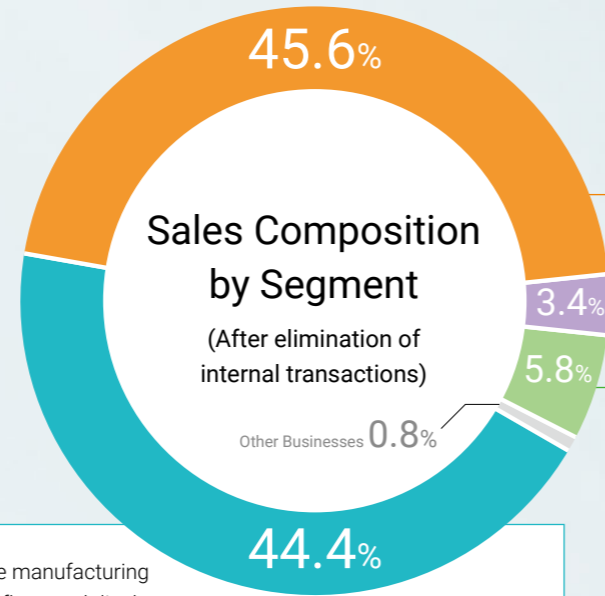
Ushio by the Numbers

FY2024 (Consolidated)

Net Sales ¥177.6 billion

Operating Profit ¥88 billion

Number of Employees 6,013



Industrial Processes

Net Sales ¥78.9 billion

Ushio light technology is used in the manufacturing processes for semiconductors and flat panel displays, which are essential for technological innovation in cutting-edge devices and equipment.

Market Share and Major Products (as of March 31, 2025 / internal data)

UV lamps (semiconductors, flat panel displays (FPD), electronic components)

UV lamps for semiconductor lithography



UV lamps for LCD lithography



OA Lamps

Halogen heaters for OA equipment



Optical equipment for LCD panel manufacturing

UV curing equipment for bonding LCD panels

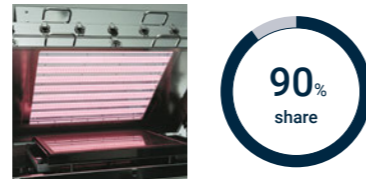


Photo-alignment equipment



Optical equipment lamps

Excimer lamps for photo cleaning and excimer irradiation units



Lithography equipment for semiconductor package substrates

Large field stepper for cutting-edge IC package substrates (UX-5)



Direct imaging (DI) lithography equipment for IC package substrates



*1 Cutting-edge IC package substrate market (stepper market)

*2 IC package substrate market (DI lithography equipment market)

Visual Imaging

Net Sales ¥80.8 billion

Ushio light technology is used for film and event production as well as other applications in the entertainment industry, delivering extraordinary experiences and excitement that enriches lives.

Market Share and Major Products (as of March 31, 2025 / internal data)

Imaging equipment

Digital cinema projector



Lamps for projectors

Lamps for cinema projectors



Life Sciences

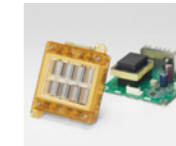
Net Sales ¥6.1 billion

Ushio light technology is used for hygienic environments and medical devices and equipment, helping to realize a sustainable society that offers safety and peace of mind.

Major Products

Environmental hygiene

Care222® far UV-C disinfection technology modules



Ultraviolet phototherapy devices

TheraBeam series of UV phototherapy devices



Photonics Solutions

Net Sales ¥10.3 billion

Ushio provides new value through our photonics technology in a wide range of fields, from semiconductors and other electronics, to entertainment and medical care.

Major Products

Solid-state light sources (LD / LED)

Red multi-beam laser diodes for printers



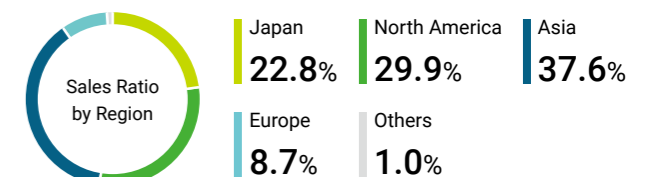
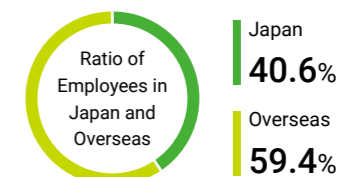
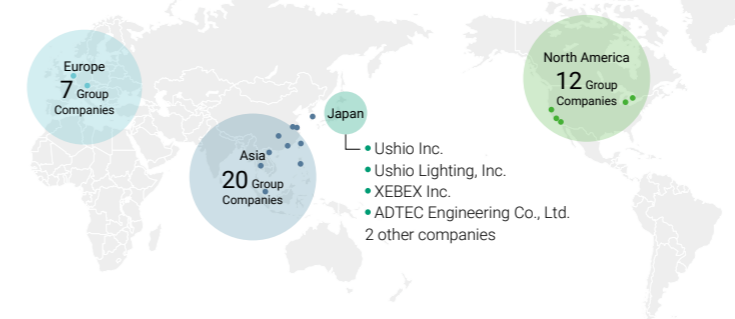
Laser modules

Wavelength-stabilized laser modules



Global Business Foundation

In the same manner as light, our business fields transcend national borders and span across the world. Our mission is to provide the necessary types of light sources to each country and region at the necessary times. Our global business foundation enables us to fulfill this mission.



Unlocking the Potential of *Light*

—Ushio Takes on the Challenge of Achieving Sustainable Growth

Ushio believes in the potential of *light*, utilizing it as a means to provide not only *illumination* but also *energy*, to create the future of light—this has been our founding policy, which we continue to pursue as a *light* innovation company.

We have achieved sustainable growth thus far by actively investing in businesses that need to grow, and making resolute decisions about those that need to be scaled back, all in response to changes in the social environment and market over time. We liken this approach to caring for a bonsai tree. We prune it into the optimal shape for the times, identify where it needs to be cultivated further and carefully tend to it.

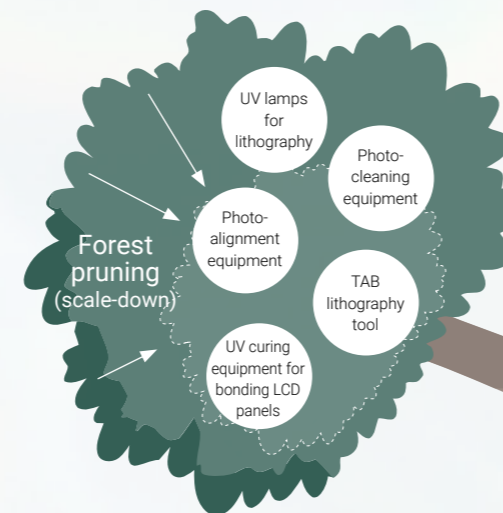
Leveraging the core and fundamental technologies we have built so far, we will continue to flexibly and swiftly create a business portfolio suited to the times, aiming to achieve sustainable growth and increase our corporate value as we pursue our optimal form.

Ushio Technology: Giving Shape to Light

Functions	Inorganic materials (film forming technology, glass processing, phosphors) Shape control (nanostructures, microstructures) Light modulating technology Video signal processing technology
Core technologies	Optical design (lenses, phosphors, glass) Mechanical design (control, vibration control, conveyance)
Structures	Electrical design (power supply, circuits) Software design (operational performance, blackout functionality, signal control)
Fundamental technology	Analysis and evaluation, molding and encapsulation, discharge technology, laser technology, vacuum technology, simulation, cutting and precision machining (metal, glass)

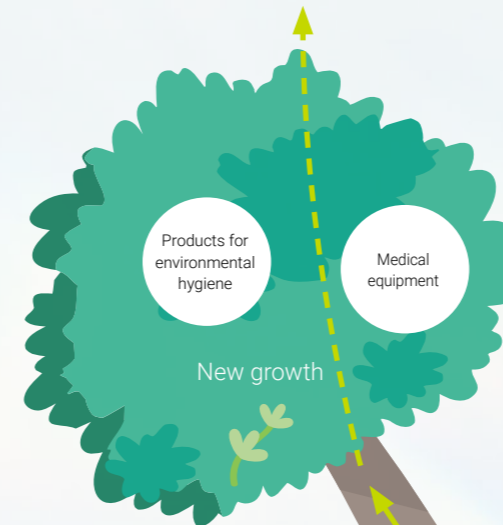
Flat Panel Display Market

Popularity of LCD TVs and smartphones
Higher resolution and larger panels



Life Sciences Market

Social issues: medical care, health, environment, food, etc.



Giving Form to Light

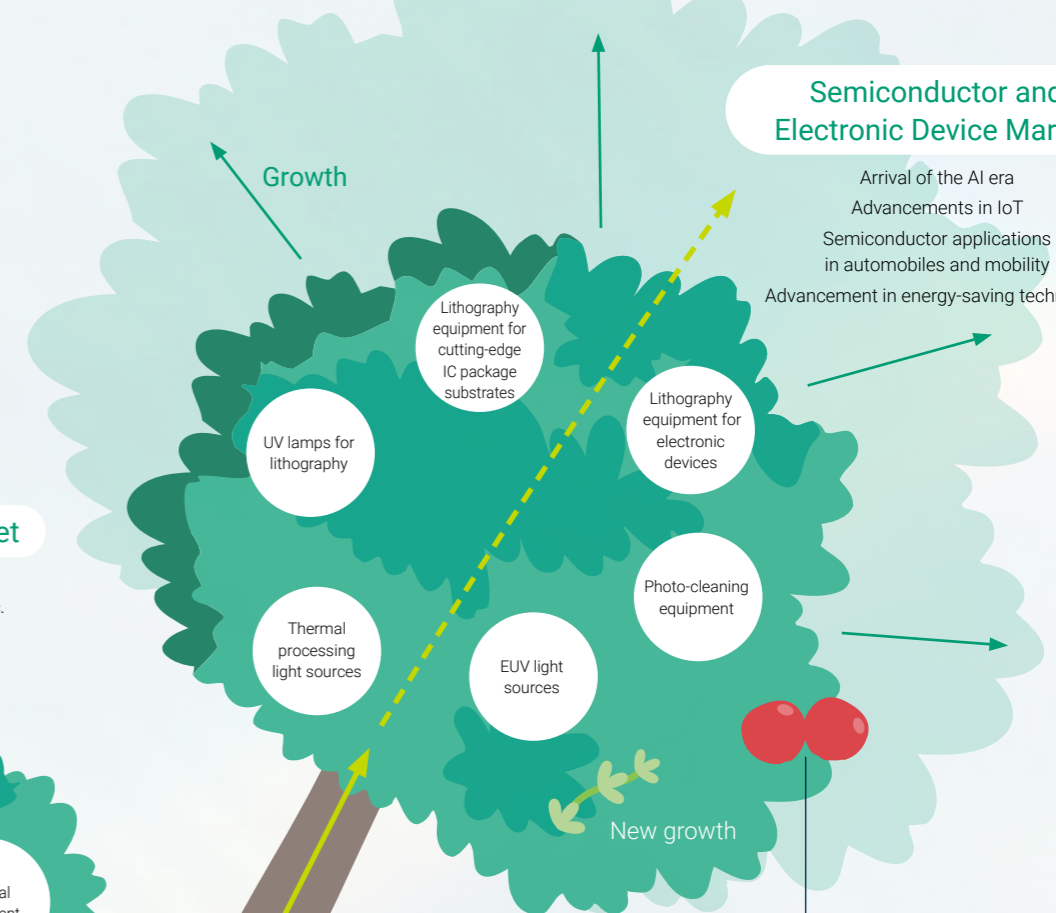


Founding Philosophy to Present Day

Creating a new light market by utilizing *light* as a means to provide not only *illumination* but also *energy*

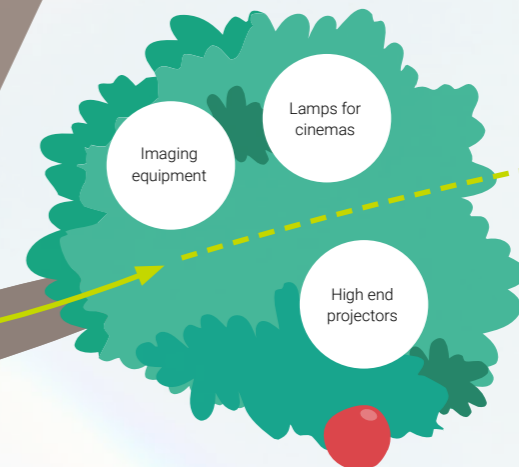
Semiconductor and Electronic Device Market

Arrival of the AI era
Advancements in IoT
Semiconductor applications in automobiles and mobility
Advancement in energy-saving technology



Imaging Market

Digitalization of movie theaters
Expansion and diversification of video presentations



Reinvestment

Management capital

Application of the Foundational Technologies Supporting Ushio's Revamping

–UV Lamps and Excimer Lamps

As we work to expand our growth with a focus on the semiconductor market, our UV lamps and excimer lamps are playing a central role as foundational, globally competitive technologies supporting our growth businesses.

▶ UV Lamps

–Contributing to the evolution of semiconductors by enabling more advanced technology

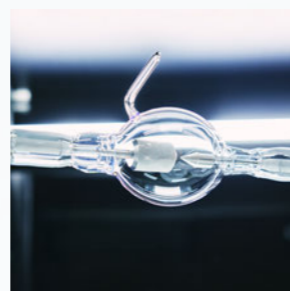
The history of Ushio's UV lamps began in 1965 with the development of a high intensity point light source filled with mercury. In the 1970s, we entered the semiconductor manufacturing equipment market with the development of a super high-pressure UV lamp. In the years that followed, we continued to reliably meet customer demands, such as longer lamp life and higher output, that accompanied the increase in semiconductor integration. Today, we hold the overwhelming majority of the global market share for UV lamps in the semiconductor lithography industry, 75%.

UV lamps play a crucial role in the semiconductor manufacturing process by irradiating light to facilitate photoresist reactions, enabling the creation of fine patterns. We have developed three foundational strengths that have solidified Ushio's position in this market. The first is the high quality we achieve through methods such as high-precision processing technology and variance reduction. This is a crucial differentiating element as the quality of lamps prevents their breakage during the semiconductor manufacturing process, significantly impacting customer productivity. The second strength is performance. By leveraging Ushio's

technological expertise, we have been able to vastly extend the lamp life of our UV lamps since we first entered the market in the 1970s. Some of our lamps now have a lamp life of more than 10 times longer than before. This improvement has helped us stabilize production and reduce

costs for customers, earning their trust and creating a high barrier to entry for competitors. The third strength is delivery. We have developed such a flexible production system that we were able to maintain steady supplies to customers even during the COVID-19 pandemic and natural disasters. We have built strong relationships with major lithography equipment manufacturers and have created robust support and sales channels that have contributed to the stability of our customers' production.

In future, we anticipate increasing adoption of digital technology in society and irreversible advances in AI. With the development of a digital society in mind, we are gathering information from production equipment manufacturers and end users to update our development roadmap and continue lamp development. In particular, recognizing the need for greater light output as miniaturization progresses, we focus on developing technology to prevent the wear of electrodes associated with higher output. This will enable increased output without reducing lamp life. Through these efforts, we aim to achieve both high output and long lamp life, supporting the ongoing evolution of semiconductors.



Ryosuke Ikeno

Manager, Section 2,
Light Source Technology & Engineering Department,
Light Source GBU, Photon Process Division

▶ Excimer Lamps

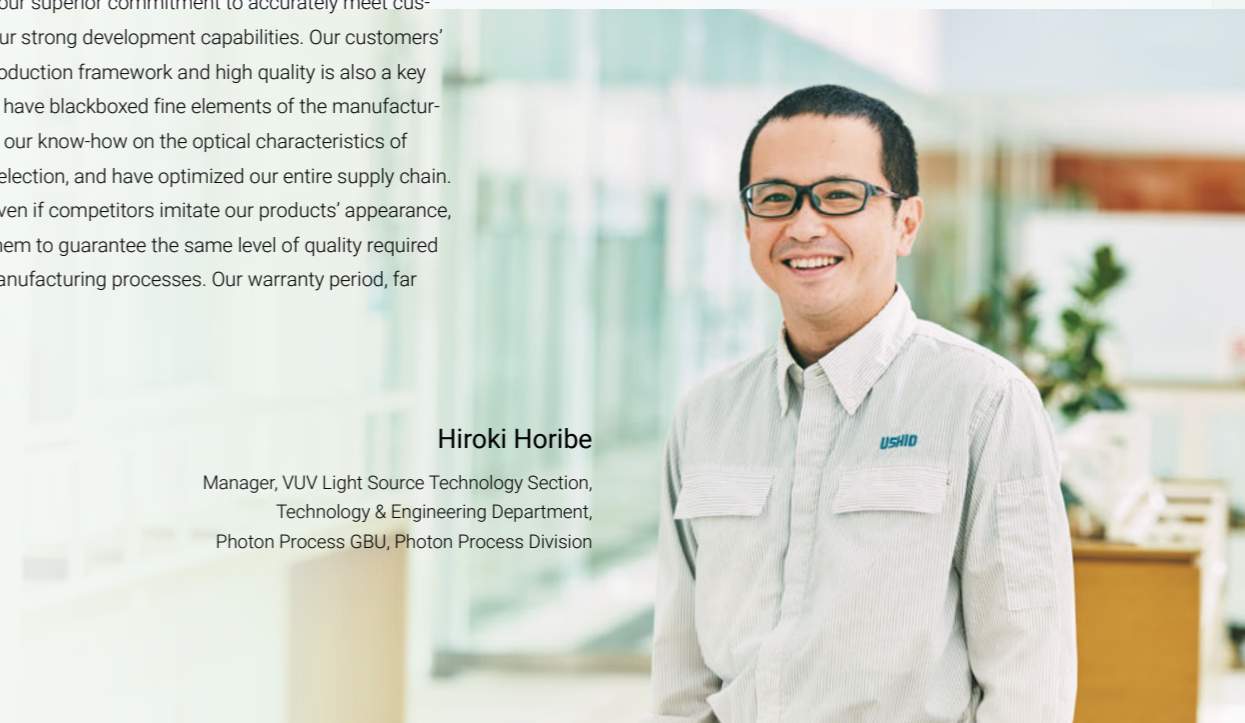
–Further refining our technology and exploring new applications

Excimer lamps are lamps that efficiently generate vacuum ultraviolet light, a particularly high-energy form of ultraviolet rays. They have a wide range of applications, including surface modification to improve antibacterial, water-repellent, and adhesive properties, as well as cleaning organic matter. Ushio was the first company in the world to productize this technology in 1993. During research on faster UV ozone cleaning using low-pressure mercury lamps, Ushio's researchers examined technology developed by overseas researchers to extract 308nm light and discovered 172nm light as valuable light. Proprietary development followed, and the lamps were productized at an astonishing speed, just one month after the discovery was made. Their superior performance in the production process for flat panel displays (FPD) led to widespread adoption in the market. Excimer lamps are also used at various stages of the semiconductor manufacturing process, such as substance cleaning and modification, that require a high level of light energy. Another useful characteristic is the ability to select the wavelength, enabling flexible adaptation to suit the different needs of each customer.

Ushio has captured a whopping 90% market share with these lamps, a success driven by our superior commitment to accurately meet customers' needs and our strong development capabilities. Our customers' trust in our stable production framework and high quality is also a key strength of ours. We have blackboxed fine elements of the manufacturing process, such as our know-how on the optical characteristics of glass and material selection, and have optimized our entire supply chain. For these reasons, even if competitors imitate our products' appearance, it is impossible for them to guarantee the same level of quality required in semiconductor manufacturing processes. Our warranty period, far

longer than that of our competitors, is a testament to Ushio's confidence in this product.

Ushio's New Growth Strategy explicitly names the semiconductor field as our area of focus. We will continue working to strengthen our differentiating elements that elevate us to new heights. At the same time, we are actively working on the development of environmental technologies, such as methods to decompose and detoxify PFAS (per- and poly-fluoroalkyl substances), currently being researched and developed by our Corporate Technology Division. We aim to contribute to solutions to a wide variety of social issues through development across a wide range of applications.



Hiroki Horibe

Manager, VUV Light Source Technology Section,
Technology & Engineering Department,
Photon Process GBU, Photon Process Division

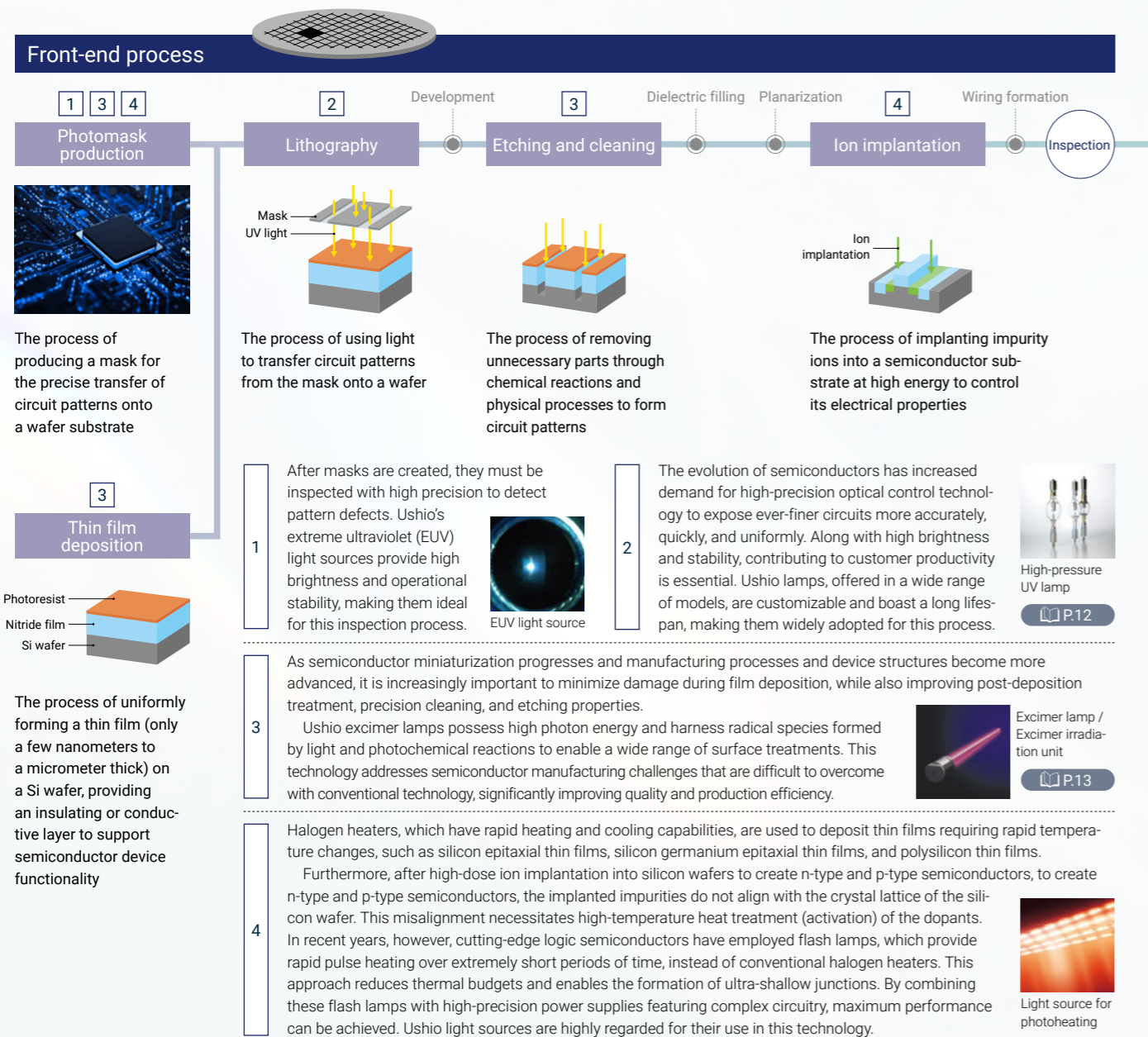
Positioning and Differentiation in the Semiconductor Market

–Lithography Equipment as a Growth Driver

► How Is the Rise of Generative AI Affecting Semiconductors?

The spread of generative AI is driving higher demand for advanced semiconductor features such as high-performance computing, low power consumption, high-speed memory, and high integration. Until now, the evolution of semiconductors has been primarily driven by front-end miniaturization technology in line with Moore's Law, which states that the number of transistors doubles approximately every two years to improve performance. However, as miniaturization approaches its physical and economic limits, further performance improvements have become increasingly difficult to achieve. This has shifted the focus toward advances in back-end processing to improve semiconductor performance, a trend accelerated by the rise of generative AI.

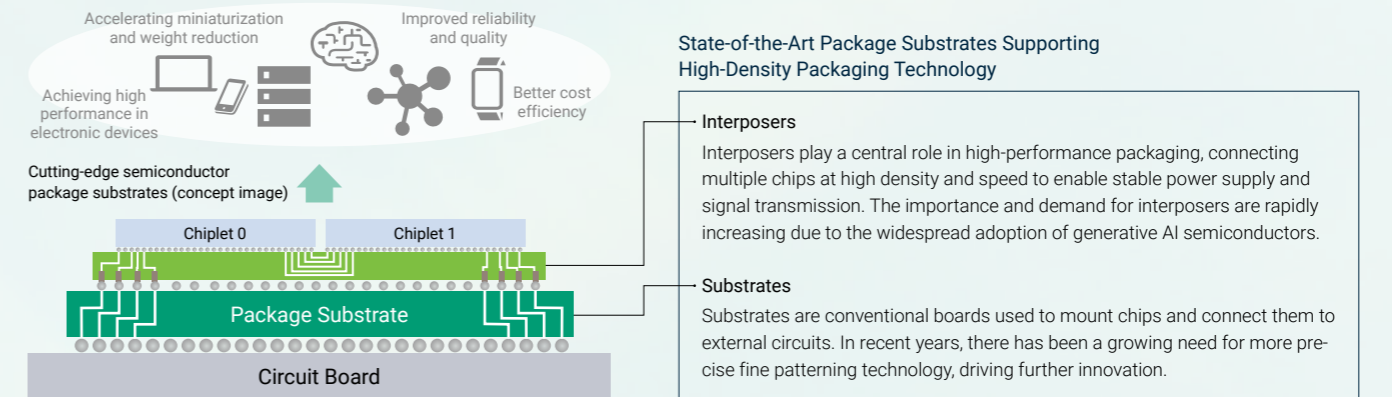
Semiconductor Manufacturing Process



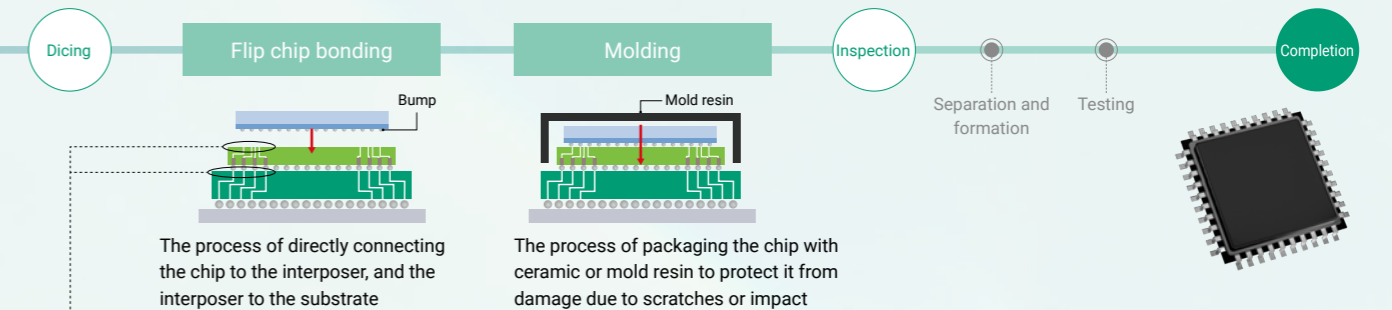
► How is innovation impacting back-end processing?

The importance of high-density packaging technology in back-end processing

Technological innovations in back-end processing are becoming increasingly important to meet the demands of improving semiconductor performance. Chiplet technology, which enables the high-density integration of multiple chips on a small substrate and high-density patterning on the substrate, are particularly essential for achieving high-speed, reliable device connections and improved performance. Furthermore, package substrates are becoming larger to accommodate more chips and complex functions. Ushio lithography equipment supports these larger substrates, contributing to the production of high-performance, high-quality semiconductor devices, including those with high-density patterning.



Back-end process (advanced packaging)



The Role of Ushio Lithography Equipment

- Advanced patterning and connection**
- Multi-layer integration through high-precision alignment**
- High productivity**

Ushio offers a wide range of lithography equipment compatible with high-density patterning technology. This equipment contributes to advancing substrate manufacturing in semiconductor back-end processing, which is enabled by its unmatched capability to accommodate complex and diverse patterning.

Lithography Equipment Lineup

- Digital lithography systems**: Lithography equipment equipped with advanced digital functionality for flexible, high-precision lithography of high-performance packages, including interposers. **2025 NEW**
- Steppers**: Lithography equipment that achieves high resolution and precision alignment, combining high productivity and reliability in the manufacture of advanced substrates that support high-performance IT equipment. **90% share**
- Direct imaging lithography equipment**: Lithography equipment providing flexible, high-precision maskless lithography for a wide range of substrate applications, including advanced package substrates. **50% share**

Please refer to [P.17](#) for digital lithography systems, and [P.16](#) for steppers.

Positioning and Differentiation in the Semiconductor Market

—Lithography Equipment as a Growth Driver

Accelerating growth in the advanced packaging market is one of the key business strategies within our New Growth Strategy.

We are steadily advancing steppers (UX-5) and digital lithography equipment, core products of Ushio's advanced packaging

business, as strategic priorities aimed at achieving our Guiding Principles for 2030.

► Competitive Edge and Future Direction of Our Lithography Equipment (UX-5)

The UX-5 was introduced in 1999. At that time, there was a growing need for denser, smaller printed circuit boards. However, standard lithography equipment, mainly using the contact lithography method, made it difficult to achieve the precise alignment required for fine pattern molds and shrinking circuit boards. Yield also decreased due to foreign matter transferring onto the mask through contact with the workpiece. To solve these issues, we leveraged the proprietary optical design technology we had developed since our founding to adopt a contactless step and repeat method using a projector lens. We were the first in the world to commercialize this technology in the form of the UX-5.

The UX-5 is lithography equipment capable of rapidly and accurately transferring fine circuit patterns, and is now widely used as mass production equipment to manufacture semiconductor packaging substrates. As demand for miniaturization of semiconductors accelerates, we have proactively achieved the three key performance elements in lithography equipment—resolution, overlay accuracy, and productivity

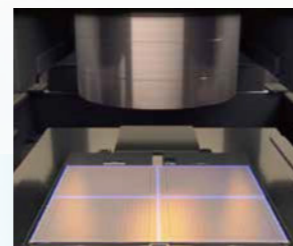
improvement—even before the market demand arises, while precisely addressing the unique packaging substrate needs, such as warping and particle control. This has earned us high trust and acclaim from many customers, enabling us to maintain a 90% share of the global market.

Currently, the increase in global data volumes and the resultant rise in power consumption driven by AI are creating a need for further evolution of semiconductor packages.

With various packaging formats under consideration—for example, the growing demand for glass packaging substrates alongside conventional organic materials—Ushio will continue to meet these new demands and pursue development to support the evolution of our customers' semiconductor packages.



Stepper lithography equipment UX-5



The large irradiation area enables a high rate of productivity (standard panel size: 510 × 515mm)



Yoichi Nishio

Sales Section, Domestic Sales Department,
Photolithography GBU,
Photolithography Division

► Development of DLT System Business and Its Strategic Role in Advanced Packaging

With the accelerating demand for generative AI and high-performance computing, advanced packaging substrate technologies are increasingly required, and the importance of back-end semiconductor processes continues to grow. With these technological innovations, as performance improvements from front-end miniaturization no longer yield proportional gains like before, combining highly advanced back-end processes has become a major trend and a key solution to achieving the performance requirements of next-generation products.

Specifically, there is an active move to split functions (devices) that were previously integrated on silicon chips and instead combine numerous computing and peripheral devices on the package substrate to achieve a single function. As a result, substrate sizes are increasing, and the demand for finer wiring to connect these devices is rising. In response, the industry is accelerating the development of panel-level packaging (PLP) technologies to increase the number of units handled, along with multi-level fine wiring formation that significantly surpasses current substrate wiring design rules.

Against this backdrop, we are actively preparing for full-scale adoption of the DLT system, which is lithography equipment that is not limited by panel size and is capable of achieving resolutions below 1 μ m. Through close collaboration with Applied Materials, Inc. and the dedicated efforts of the manufacturing team at wholly owned subsidiary ADTEC Engineering Co., Ltd.*1's Nagaoka facility, the establishment of our production system for the DLT system is progressing ahead of the original schedule. Key milestones—including parts procurement, first-unit assembly, and customer system manufacturing—have been successfully achieved, laying a solid foundation for scaled production.

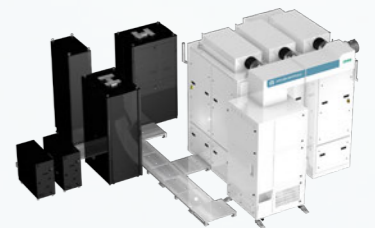
The DLT system has already attracted strong customer interest, with demonstration tests confirming its exceptional imaging quality. In head-to-head comparisons with conventional Laser Direct Imaging (LDI) technology, the DLT system has delivered performance results that were previously unattainable, earning highly positive evaluations from multiple industry leaders.

With that said, industry-wide deployment of advanced mass production processes—including large-panel formats, glass substrates, finer line-and-space (L/S) geometries, and tight overlay tolerances—remains cautious, impacting the immediate scale of market opportunities. In response, we remain agile and

customer-focused, actively adapting our technology roadmap and support capabilities to address evolving needs.

The DLT system is a maskless digital lithography platform that combines high resolution and throughput—capabilities historically limited to stepper-based systems—with the flexibility required for advanced packaging. It supports both wafer-level and panel-level packaging, enhancing chip yield and reducing back-end process costs. Notably, its Digital Dynamic Connection (DDC) function enables real-time correction of die misalignments caused by substrate warpage, directly supporting improved customer yield.

With its differentiated performance and value, the DLT system is positioned as a foundational enabler for next-generation semiconductor packaging. We remain fully committed to advancing this business through continued innovation and operational excellence, aligned with the needs of our customers and the expectations of our shareholders.



DLT System

*1 A wholly owned company in the Ushio Group



William F. Mackenzie

Group Managing Executive Officer,
General Manager, Photonics
Solutions Division,
General Manager, AUCC Division