

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

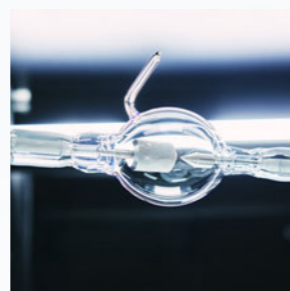
The history of Ushio's UV lamps began in 1965 with the development of a high intensity point light source filled with mercury. In the 1970s, we entered the semiconductor manufacturing equipment market with the development of a super high-pressure UV lamp. In the years that followed, we continued to reliably 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.



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▶ Excimer Lamps

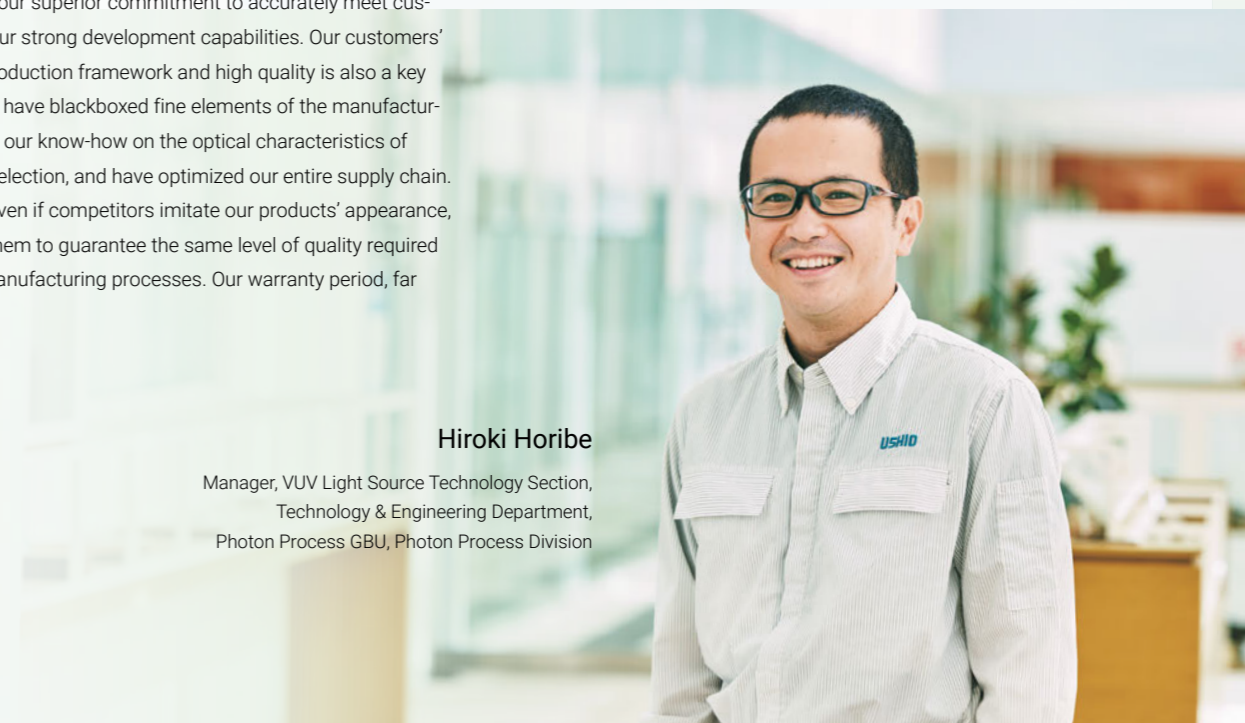
–Further refining our technology and exploring new applications

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.



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