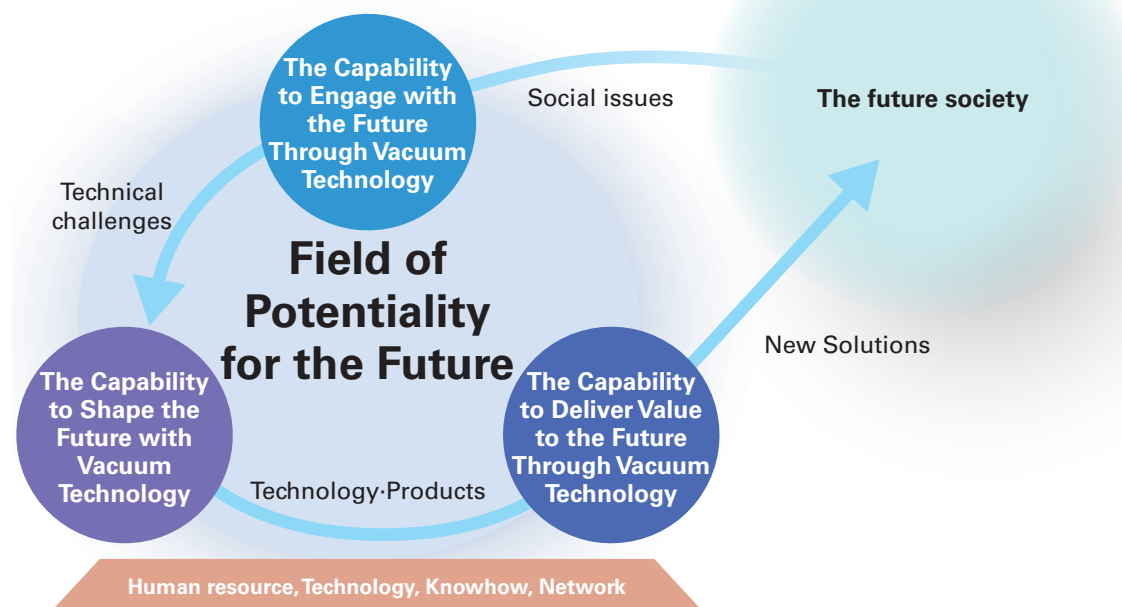


ULVAC's Strengths: "Continue to Be a 'Field of Potentiality' for the Future"

ULVAC's strengths do not merely rest on the presence of specific technologies, expertise, or business model differences. Instead, they stem from three core capabilities cultivated over decades of vacuum technology development: "dialogue with the future," "realizing aspirations," and "delivering value." Leveraging these strengths, ULVAC continues to create social value through vacuum technology.



Strength 1

The Capability to Engage with the Future Through Vacuum Technology

In a complex and uncertain social environment, delivering value in response to changing times requires the ability to understand the future envisioned by customers and identify the core issues that truly need to be addressed.

In the field of semiconductor technology, which underpins the digital society, ULVAC has established the Technology Center PYEONGTAEK to more closely and swiftly understand customer needs while accelerating joint development. This center began operations in August 2024. Additionally, ULVAC is exploring new possibilities for vacuum technology by joining initiatives such as US-JOINT, a next-generation semiconductor packaging consortium established by customers in the United States, and engaging in industry-academia collaborative projects in advanced fields.

Furthermore, in the highly challenging field of biomedical engineering, the "ULVAC-Osaka University Joint Research Laboratory for Future Technology," established in partnership with Osaka University, is engaged in research and development aimed at addressing society issues from a long-term perspective, paving the way for future innovations.

Strength 2

The Capability to Shape the Future with Vacuum Technology

Since its founding, ULVAC has focused on vacuum technology as its core and has continuously taken on challenges across a wide range of fields, establishing advanced technical expertise and accumulating valuable know-how. Building on these strengths, ULVAC provides solutions to the challenging issues presented by its customers, leading to the creation of new solutions.

To advance vacuum technology, ULVAC is conducting research and development in collaboration with Institute of Science Tokyo, aiming to enhance the performance of plasma process equipment. This effort combines the university's expertise in plasma measurement technology with AI technology.

In addition, to enhance the value of the products we create, ULVAC is enhancing its equipment software development capabilities. We are focusing on providing solutions that optimize our customers' operational efficiency by leveraging vast amounts of data collected from our equipment for various analyses, including AI technology. Furthermore, ULVAC is proactively exploring new applications for its proprietary vacuum technology across different industries. One example is a joint development project with the New Energy and Industrial Technology Development Organization (NEDO), where roll-to-roll vacuum deposition technology, refined through applications in the food and electronic devices industries, is being applied to next-generation battery manufacturing.

Within the company, ULVAC hosts the ULVAC R&D Conference, an initiative aimed at sharing research and development outcomes to foster new ideas and synergies. Additionally, the company regularly holds a company-wide awards event, "UL-GAIA," as part of its efforts to enhance the 'power to realize aspirations'.

Strength 3

The Capability to Deliver Value to the Future Through Vacuum Technology

ULVAC has built a production network spanning Japan, China, South Korea, and Taiwan, complemented by regional supply chains that enable local procurement at each site. This structure allows ULVAC to provide value through a globally integrated supply system. In terms of development capabilities, ULVAC has established a global development framework that emphasizes collaboration with customers, allowing us to offer agile and tailored solutions that precisely address their needs.

Our value delivery continues even after product shipment. Through our global customer support network, we provide maintenance and service offerings that cover every stage of the product lifecycle. Additionally, we proactively propose solutions and feed the needs identified during these interactions back into the development of new products.

Applying Our Strengths in Practice

Expansion into the Metal Hard Mask Process

Metal Hard Mask Deposition Technology was developed to meet customer needs, driven by the passion and dedication of ULVAC engineers. In 2018, ULVAC successfully entered the semiconductor logic manufacturing process with this technology, establishing a key position in advanced semiconductor manufacturing.

In semiconductor manufacturing processes, Metal Hard Masks (MHM), composed of thin metal films, are used as etching masks to support increasingly fine processing requirements. When forming through-holes with short-wavelength EUV light sources, maintaining pattern integrity proved challenging with conventional masks. However, ULVAC's newly developed MHM technology overcomes this issue, enabling precise and reliable pattern formation.

Traditionally, TiN (titanium nitride), a ceramic material known for its high hardness and excellent wear resistance, has been used in MHM applications. TiN films were generally considered to possess strong compressive stress. However, in response to customer requests for "TiN films with tensile stress instead of compressive

stress," we embarked on a new challenge. Through extensive R&D efforts, we successfully developed an advanced TiN film deposition technology that enables precise control of film stress from compressive to tensile while maintaining high density. This breakthrough, which addressed a previously unmet need, has been highly evaluated by our customers.

Subsequently, the adoption of MHM has expanded in response to the trend toward further miniaturization. Additionally, ULVAC has seized opportunities to enter new processes beyond MHM. Today, semiconductor logic is positioned as one of ULVAC's key growth drivers.



Roll-to-Roll Vacuum Deposition System for EV Batteries

The roll-to-roll vacuum deposition system for EV batteries is a new product developed by the VMS Division (formerly the FPD Division). This technology, which enables miniaturization, increases capacity, and enhances the safety of battery components, has been recognized for its technological advantages, leading to a major order in FY2023. It is expected to become a key pillar of growth for the VMS Division moving forward.

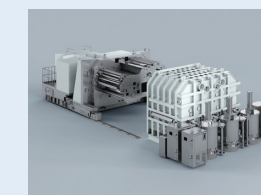
The development of this product was driven by the accelerating global shift toward EVs, particularly in China and Western countries. As demand grows for next-generation EV batteries, there is an increasing need to achieve both higher energy density and enhanced safety while also reducing greenhouse gas emissions during the manufacturing process.

ULVAC recognized the technical challenges associated with EV batteries at an early stage and has been proactively engaged in the development of next-generation batteries. By disseminating its technology through academic conferences and other platforms, ULVAC has fostered opportunities for co-creation with its customers.

The VMS Division brought together ULVAC's foundational technologies, including roll-to-roll vacuum deposition, electrostatic

adsorption, and simulation technologies, to develop a key technology to enable the mass production of next-generation batteries. By leveraging ULVAC's unique strengths—such as its expertise in minimizing thermal damage to thin films and its expertise in simultaneous double-sided deposition—we successfully overcame technical challenges, demonstrating ULVAC's innovative capabilities.

This product is currently being marketed primarily in China, where numerous EV battery manufacturers are highly concentrated. To prepare for the anticipated growth in orders, the entire ULVAC Group is working together in a coordinated effort. Simultaneously, ULVAC is actively pursuing initiatives to optimize material utilization efficiency through innovative design while promoting automation to enhance production processes.



Awarded the "2023 Excellent Performance Award" by TSMC

On December 7, 2023, at the Supply Chain Management Conference hosted by Taiwan Semiconductor Manufacturing Co., Ltd. (TSMC), ULVAC received the "Excellent Performance Award." This prestigious award was presented to just nine outstanding vendors worldwide, including three Japanese companies. ULVAC's recognition was based on its technological excellence, as well as its swift, high-quality manufacturing capabilities and collaborative approach, which were highly regarded by TSMC.

ULVAC has strengthened its advanced technology proposals and flexible production systems to meet the growing demand for generative AI and high-performance computing (HPC). By leveraging

its global supply chain, ULVAC has been able to respond swiftly and accurately to customer needs, earning high evaluation as a key partner supporting TSMC's business expansion.

Going forward, ULVAC will continue to refine its technological expertise and responsiveness, consistently delivering value to its customers.

