## ULVAC Group's Strengths

Ľ

# Research and Development

Sustainably creating value from a medium to long-term perspective

The ULVAC Group provides products and materials around a core of vacuum technology, which is indispensible in a range of sectors. In the future, we will continue to contribute to the advancement of society by seeking out revolutionary and advanced technologies to respond to actual and potential needs and producing products and technologies with high added value around a core of vacuum technology.



### Product creation at the source of responding to market needs and profits

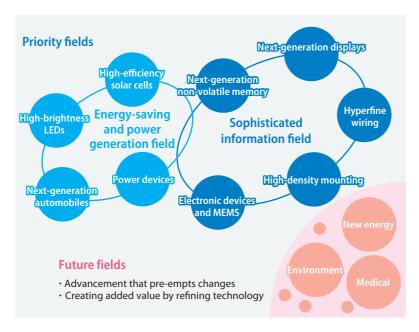
ULVAC contributes to the shaping of a safe and prosperous society by investigating vacuum technology and creating new value that will be needed in the future.

Important areas	<ul> <li>Key technologies for growing and developing fields</li> <li>Technological solutions to deepening social issues</li> </ul>
Sophisticated information field	Next-generation displays (High-definition displays and flexible displays)
	Next-generation non-volatile memory (high capacity and low power consumption memory) and hyperfine wiring
	Electronic components, MEMS (devices and sensors to support the IoT), and high-density mounting
Energy-saving and power generation field	High-efficiency solar cells, high-brightness LEDs, power devices, and next-generation automobiles

### Nine important areas

### Working towards a prosperous and safe lifestyle

In order to leverage ULVAC's strengths, we have designated nine areas as "important areas" and we are dedicating ourselves to development in these areas. Furthermore, we are conducting development and enhancement in each area through the cooperation of the marketing manager (CPM), design and cost reduction manager (CDM) and the technology manager (CTM).



### **Development institutions**

Planting the seeds of long-term growth by establishing a new Future Technology Research Laboratory

We are establishing a global development structure that includes the overseas arms of the group in addition to the domestic arm.

We are differentiating our technology by speeding up development through unification, as well as innovative technology, and technological fusion at each company.

Furthermore, in addition to development and operation in our designated important areas to conduct product development to ensure short to medium-term profits, we have established and commenced operation of the Future Technology Development Laboratory in order to sow the seeds for the long term future, in 10 or 20 years.



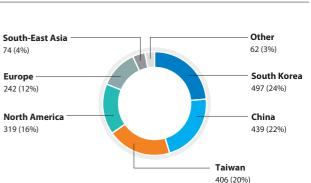
### ULVAC Group's Global Intellectual Property

### Strengthening global intellectual property rights, including those of Group Companies

"Protecting intellectual property rights concerning Group Companies' products" and "respecting third-parties' intellectual property rights" are the ULVAC Group's basic intellectual property strategy. We are applying for patents, particularly in countries where we have many customers. At the end of the fiscal 2014, we held 2,039 overseas patents, which is the most we have ever held. In particular, patents in the Asian region such as South Korea, China, and Taiwan now account for approximately 65% of all patents held, which is a large increase.

In accordance with market trends, the number of product groups that have previously been developed and manufactured in Japan, but for which the technology has now been transferred to overseas Group Companies is also increasing. In the Asian region, such as South Korea, China, and Taiwan, we have been promoting the enhancement of our research and development structure, such as by engaging in the development of equipment and processes appropriate to each market and the needs of our customers. In addition to our intellectual property rules, which also apply to Group Companies, we have also been preparing measures to avoid infringing the intellectual property rights of third-parties.

In the future we will pursue development of new technologies and new products as well as efficient patent applications based on our sales plan and marketing information. We will also conduct efficient and high-quality overseas applications to enhance our global intellectual property rights, while giving consideration to the relationship with our business plan.



#### Patents held by area (in the fiscal 2014)

### **Global Network**

### Solution networks that support global industrial development

We are building sales and service networks that are optimized for each region, not only in Japan, but throughout the Group's 50 companies with a focus on North America and Asia. Vacuum technology is one of the key technologies for many other cutting edge technologies, and will be increasingly required for a wide range of industries and growth fields in the future.

As the world's largest comprehensive vacuum products manufacturer, we conduct everything from research and development, through to manufacture, sales, and customer support. Looking forward, we will continue to support the advancement of the world's industries through vacuum technology.

### **ULVAC Group**

ULVAC, Inc.

### **ULVAC Group Companies in Japan**

ULVAC TECHNO, Ltd. ULVAC KYUSHU CORPORATION ULVAC TOHOKU, Inc. ULVAC KIKO, Inc. ULVAC EQUIPMENT SALES, Inc. ULVAC CRYOGENICS INCORPORATED ULVAC-PHI, Inc. TIGORD CORPORATION ULVAC COATING CORPORATION NISSIN SEIGYO Co., I TD ULVAC Human Relations, Ltd. SHINKU CERAMICS CO., LTD. FINE SURFACE TECHNOLOGY CO., LTD. Reliance Electric Limited SHOWA SHINKU CO., LTD.

**Overseas ULVAC Group Companies** North America ULVAC Technologies, Inc. Physical Electronics USA, Inc. Europe ULVAC GmbH China ULVAC (CHINA) HOLDING CO., LTD. ULVAC (NINGBO) CO., Ltd. ULVAC (SUZHOU) CO. LTD. ULVAC Orient (Chengdu) Co., Ltd. ULVAC Automation Technology (Shanghai) Corporation ULVAC Tianma Electric (Jingjiang) Co., Ltd. ULVAC Vacuum Furnace (Shenyang) Co., Ltd. ULVAC (Shanghai) Trading Co., Ltd. ULVAC Materials (Suzhou) Co., Ltd ULVAC Opto-electronics Thin film Technology (Shenzhen) Co., Ltd. ULVAC CRYOGENICS (NINGBO) INCORPORATED ULVAC NONFERROUS METALS (NINGBO) CO., LTD. ULVAC Research Center SUZHOU Co., Ltd. Luoyang Xinyou Magnesium CO., LTD Hong Kong ULVAC Co., Ltd. VACUUM EQUIPMENT (SHANGHAI) CO., LTD.



### • Taiwan ULVAC TAIWAN INC. ULTRA CLEAN PRECISION TECHNOLOGIES CORP. ULCOAT TAIWAN, Inc. ULVAC AUTOMATION TAIWAN Inc. UI VAC SOFTWARE CREATIVE TECHNOLOGY.CO. J TD ULVAC Materials Taiwan.Inc.

South Korea UI VAC KORFA I td Ulvac Korea Precision,Ltd. Pure Surface Technology,Ltd. ULVAC CRYOGENICS KOREA INCORPORATED ULVAC Materials Korea.Ltd UF TECH,Ltd.

Southeast Asia ULVAC SINGAPORE PTE LTD ULVAC MALAYSIA SDN.BHD ULVAC (THAILAND) LTD.





### **Customer Support**

### ULVAC CS Solutions focuses all of the Group's knowledge

We provide global customer support to keep our customers satisfied after purchase of equipment, from installation of equipment to operation, field support, evaluation, analysis, provision of materials and parts, and maintenance etc. of vacuum pumps etc. In the future, in order to respond appropriately to the demands of diversification and sophistication, we will pursue value-adding service focusing all of our knowledge, such as our unique technology, service, and know-how, in order to support our customers' production activities in a manner that meets their needs. Furthermore, by using information about our customers' needs as feedback for development of new equipment, we are able to produce even more sophisticated vacuum technology and service.

### **Equipment maintenance service**

service.

### • Global CIP (continuous improvement program)

This service is for the purpose of providing our overseas customers, in addition to our domestic customers, with effective usage techniques, and improvements in yield rate and productivity over many generations for the equipment they are already using.

### • Factory outsourcing (FOS)

We conduct support for the operation and maintenance of equipment and facilities, as well as the ordering of parts, selection of equipment, and process development, by contract, dispatch or personnel transfer.

#### Rejuvenation, precision cleaning, and resource recovery

We aim for overall cost reductions through extension of component life and the cleaning cycle, and recovery of valuable materials etc. Based on our extensive knowledge of vacuum equipment as a whole, we propose the optimal surface treatment and cleaning for your needs.

### **Component maintenance**

Pump maintenance

We maintain components such as vacuum pumps.

#### JCSS vacuum gauge calibration service

ULVAC is an MRA/JCSS\* accredited calibration laboratory in the pressure (vacuum gauges) category.

\*International MRA (mutual recognition agreement)

### **Components and consumables**

We achieve high-quality, swift, and reliable delivery through in-house manufacture of components.

### Analysis service

to production equipment.

### **Training service**

By valuing close communication with our customers, we are able to achieve rapid

\*JCSS (Japan Calibration Service System): Calibration laboratory accreditation system under the Measurement Act

We conduct an analysis service using the ULVAC Group's analysis and evaluation equipment.

#### Second-hand sales and purchase

We sell, purchase, refurbish, relocate, import and export etc. second hand products, ranging from components

We conduct a training service for ULVAC products (equipment, vacuum pumps, and components).