



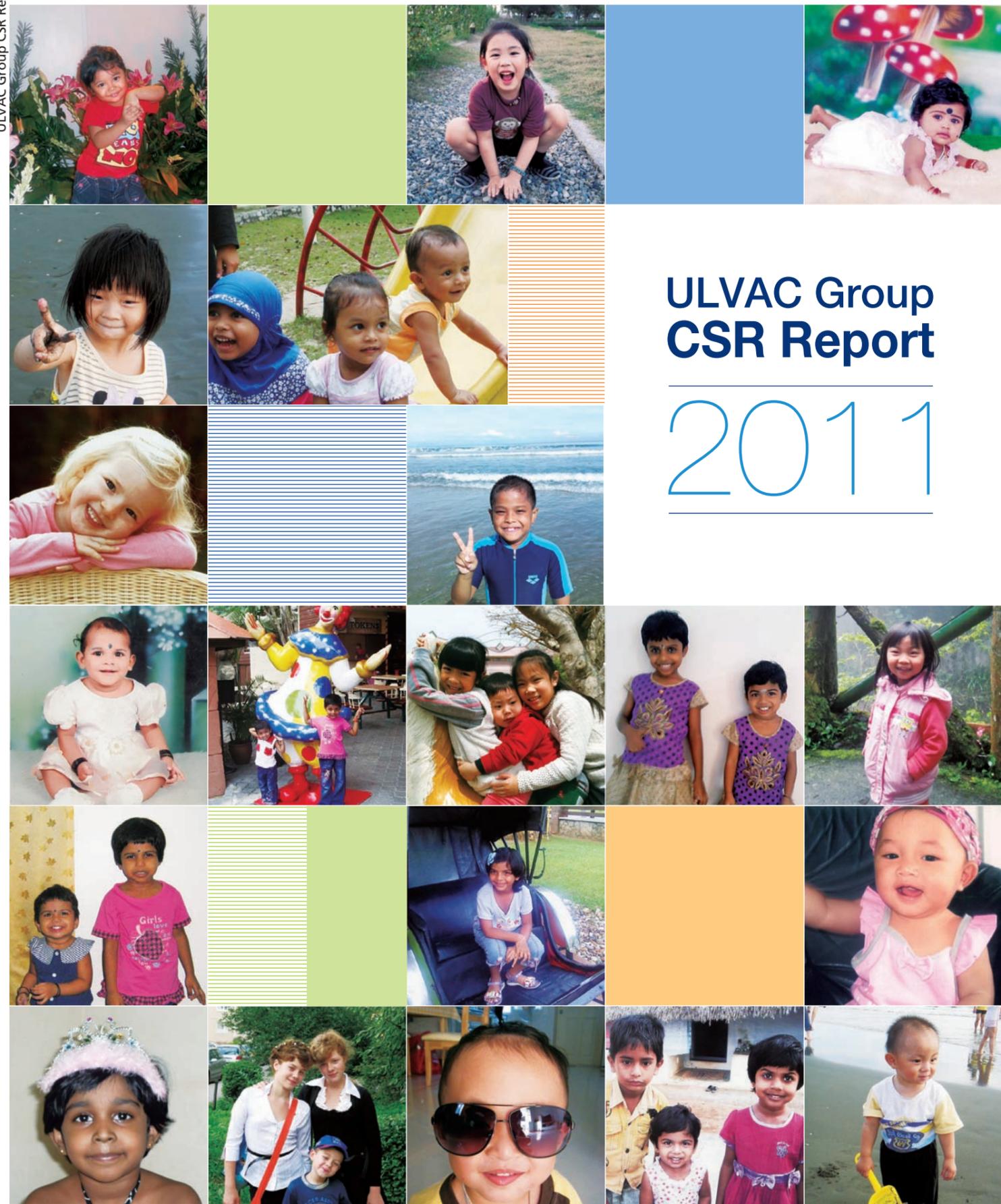
# ULVAC Group CSR Report 2011

About the Cover

Our cover features photos of children of ULVAC employees in Russia, Germany, Malaysia, and Taiwan under the theme of "Cheer up, ULVAC!"

## ULVAC, Inc.

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# ULVAC Group CSR

The ULVAC Group practices CSR by fulfilling our responsibilities to all our stakeholders and contributing to society through the research and development of cutting-edge technologies.

## Basic Management Philosophy

ULVAC Group pursues its contribution to the growth of industry and science through providing both support and cooperation in order to make the best use of vacuum and related technologies throughout the world.

## Management Policy

- Improvement of Customer Satisfaction
- Innovative Production Technology
- Unique Product Development
- Free and Open Culture
- Increased Corporate Value

### Origin of Company Name

'ULVAC' is a combination of 'UL' from 'ultimate' and 'VAC' from 'vacuum,' signifying that we pursue the 'Ultimate in Vacuum Technology.'

Seeking to achieve a dramatic advance, we will further develop the ULVAC brand by pursuing the development of new technologies that complement vacuum technology.

### Editorial Policy

This report is published to promote understanding of the ULVAC Group's CSR activities among our stakeholders, and we consider it an important communications tool.

We believe that our greatest mission is 'contributing to the development of science and industry with our proprietary cutting-edge technologies.' Based on this belief, this report outlines our initiatives in technology, the environment, and organization, which form a key foundation for our CSR activities. Moreover, as we are further globalizing and innovating, the report widely covers some overseas ULVAC Group companies.

### Report's Scope and Period

**Scope** ULVAC Group  
While the report covers the ULVAC Group as a whole, any portions for which the scope differs are indicated.

**Period** Year ended June 2011 (July 1, 2010 to June 30, 2011)  
Portions with information relating to periods other than the above are indicated.

- Published  
Japanese edition: September 2011  
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(Previous Japanese edition published September 2010; next edition to be published in September 2012.)

- Guidelines Referenced  
Japan's Ministry of the Environment:  
Environmental Reporting Guidelines 2007  
Japan's Ministry of the Environment:  
Environmental Performance Indicators Guideline for Organizations 2002

<Disclaimers>  
Figures shown in tables and graphs in this report may not add up to the indicated total because of rounding. Some figures have been revised from previous years' data because the scope of reporting was expanded or calculating methods have been changed.

## Technology



ULVAC has turned its constant pursuit of unique technologies into an engine of growth. As we seek to expand further, we are synthesizing our Group technologies and carrying out business activities globally.

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## Environment



ULVAC uses its unique technologies for the benefit of the global environment. By continuing to develop these unique technologies, we will further contribute to environmental sustainability.

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## Organization



ULVAC is tireless in its pursuit of cutting-edge technology and understand that it is people that support this pursuit. We are crafting a system that responds to the changing times, defends that which is worthy of holding on to, and fosters an optimal climate that aligns ULVAC Group growth with personal talent realization.

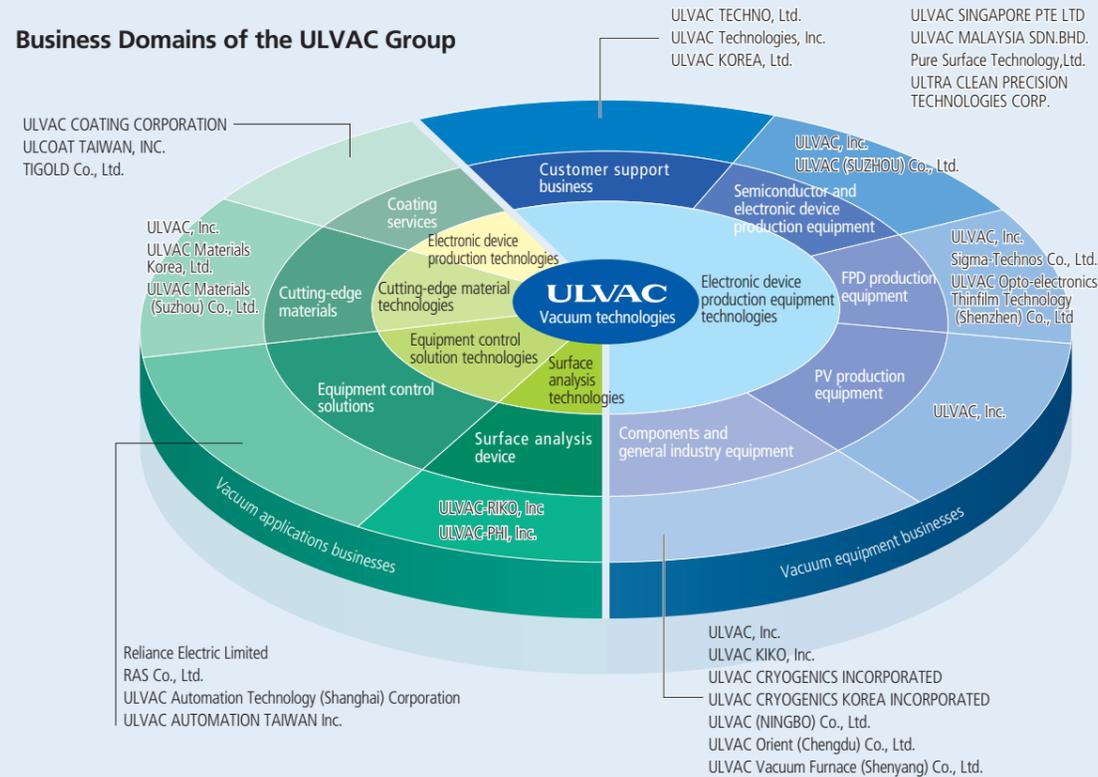
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# Corporate Profile of ULVAC, Inc.

Name	ULVAC, Inc.	Number of Employees	1,912 (7,878 including consolidated subsidiaries)
Trademark	ULVAC, Inc.	Business Areas	Development, manufacturing, sale, and customer support for vacuum equipment, peripheral devices, vacuum components, and materials for the display, solar cell, semiconductor, electronic, electric, metal, machinery, automobile, chemical, food product, and medical product industries, as well as universities and research labs, and import and export of various equipment.
Head Office	2500 Hagisono, Chigasaki, Kanagawa 253-8543, Japan		Additionally, research guidance and technical advising on vacuum technology in general.
Established	August 23, 1952		
Capital	20,873,042,500 yen		

## Business Domains of the ULVAC Group

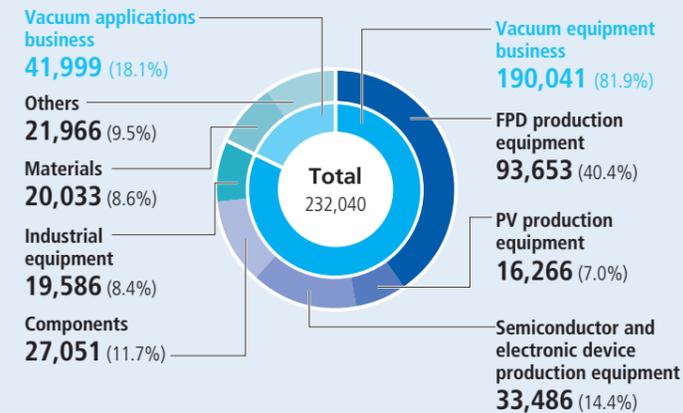


## ULVAC Group

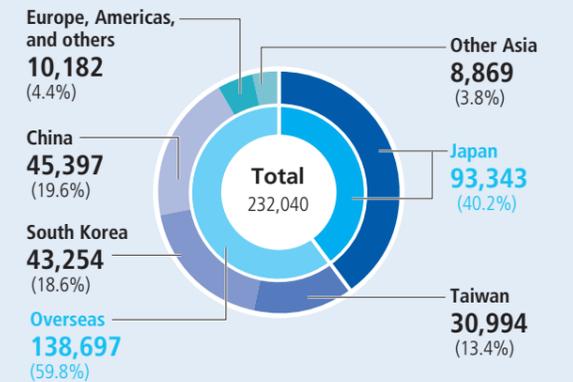
ULVAC, Inc.	
<b>ULVAC Group Companies in Japan</b>	<b>Overseas ULVAC Group Companies</b>
<ul style="list-style-type: none"> <li>ULVAC TECHNO, Ltd.</li> <li>ULVAC KYUSHU CORPORATION</li> <li>ULVAC TOHOKU, Inc.</li> <li>ULVAC CORPORATE CENTER Ltd.</li> <li>ULVAC-RIKO, Inc.</li> <li>ULVAC KIKO, Inc.</li> <li>Reliance Electric Limited</li> <li>ULVAC EQUIPMENT SALES, Inc.</li> <li>ULVAC CRYOGENICS INCORPORATED</li> <li>ULVAC-PHI, Inc.</li> <li>ULVAC COATING CORPORATION</li> <li>SHOWA SHINKU CO., LTD.</li> <li>SANKO ULVAC Co., Ltd.</li> <li>Sigma-Technos Co., Ltd.</li> <li>RAS Co., Ltd.</li> <li>TIGOLD Co., Ltd.</li> <li>Nisshin Seigyo</li> <li>Initium, Inc.</li> <li>ULVAC ENGINEERING, Inc.</li> <li>ULVAC HUMAN RELATIONS, Ltd.</li> <li>ULVAC Elder, Ltd.</li> <li>SHINKU CERAMICS, Ltd.</li> <li>FINE SURFACE TECHNOLOGY CO., LTD.</li> </ul>	<ul style="list-style-type: none"> <li><b>North America</b> <ul style="list-style-type: none"> <li>ULVAC Technologies, Inc.</li> <li>Physical Electronics USA, Inc.</li> </ul> </li> <li><b>Europe</b> <ul style="list-style-type: none"> <li>ULVAC G.m.b.H.</li> <li>OOO ULVAC</li> </ul> </li> <li><b>China</b> <ul style="list-style-type: none"> <li>ULVAC (China) Holding Co., Ltd.</li> <li>ULVAC (NINGBO) Co., Ltd.</li> <li>ULVAC (SUZHOU) Co., Ltd.</li> <li>ULVAC Orient (Chengdu) Co., Ltd.</li> <li>ULVAC Automation Technology (Shanghai) Corporation</li> <li>ULVAC Tianma Electric (Jing Jiang) Co., Ltd.</li> <li>ULVAC Vacuum Furnace (Shenyang) Co., Ltd.</li> <li>ULVAC (Shanghai) Co., Ltd.</li> <li>ULVAC CRYOGENICS (NINGBO) INCORPORATED</li> <li>ULVAC (Shanghai) Trading Co., Ltd.</li> <li>ULVAC NONFERROUS METALS (NINGBO) CO., LTD.</li> <li>ULVAC Materials (Suzhou) Co., Ltd.</li> <li>ULVAC Opto-electronics Thinfilm Technology (Shenzhen) Co., Ltd.</li> <li>ULVAC Research Center Suzhou Co., Ltd.</li> <li>Luoyang Xinyou Magnesium Co., Ltd.</li> <li>Hong Kong ULVAC Co., Ltd.</li> </ul> </li> <li><b>Taiwan</b> <ul style="list-style-type: none"> <li>ULVAC TAIWAN INC.</li> <li>ULTRA CLEAN PRECISION TECHNOLOGIES CORP.</li> <li>ULVAC SOFTWARE CREATIVE TECHNOLOGY, Co., Ltd.</li> <li>ULVAC Materials Taiwan, Inc.</li> <li>ULVAC AUTOMATION TAIWAN Inc.</li> <li>ULVAC Research Center TAIWAN, Inc.</li> <li>ULCOAT TAIWAN, INC.</li> <li>MUE Materials Taiwan Co., Ltd.</li> </ul> </li> <li><b>South Korea</b> <ul style="list-style-type: none"> <li>ULVAC KOREA, Ltd.</li> <li>Ulvac Korea Precision, Ltd.</li> <li>Pure Surface Technology, Ltd.</li> <li>ULVAC CRYOGENICS KOREA INCORPORATED</li> <li>UF TECH, Ltd.</li> <li>ULVAC Research Center KOREA, Ltd.</li> <li>ULVAC Materials Korea, Ltd.</li> </ul> </li> <li><b>Southeast Asia</b> <ul style="list-style-type: none"> <li>ULVAC SINGAPORE PTE LTD</li> <li>ULVAC MALAYSIA SDN. BHD.</li> <li>ULVAC (THAILAND) LTD.</li> </ul> </li> </ul>

# Business Performance of the ULVAC Group

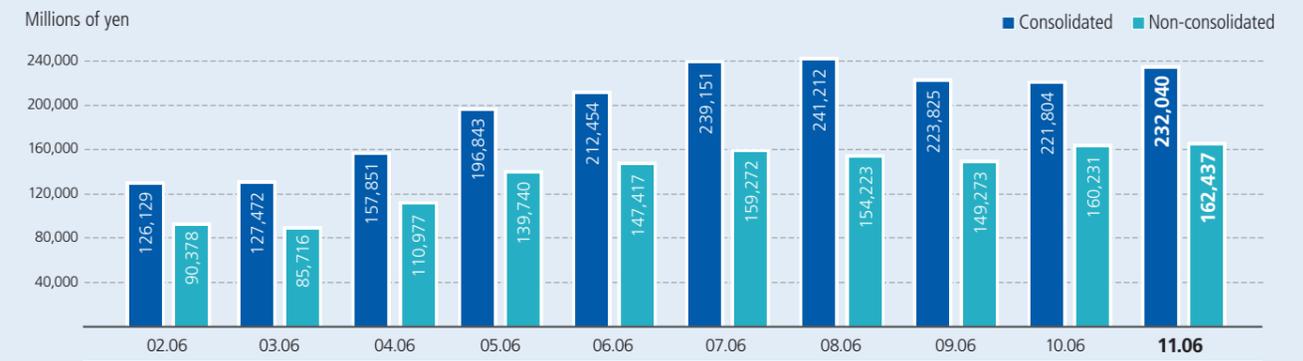
## Net sales by business segment (Millions of yen)



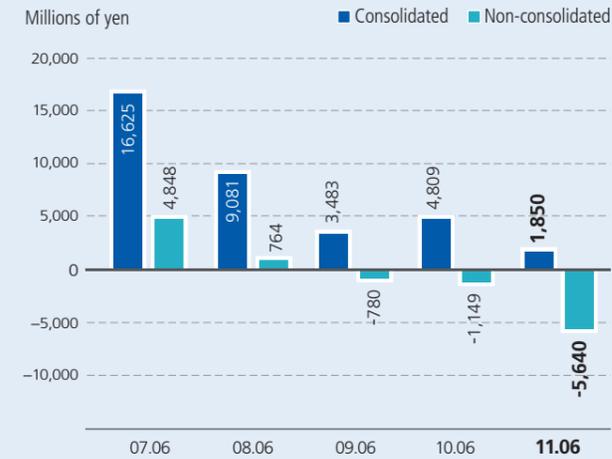
## Net sales by region (Millions of yen)



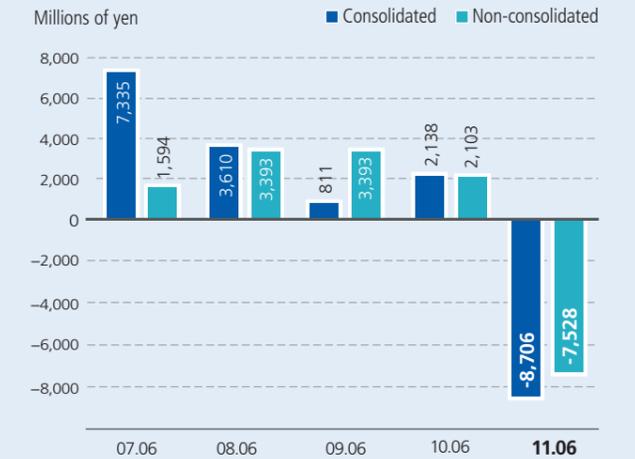
## Net Sales



## Operating income



## Net income for the term



## Status of Responsible Investment (RI)

### FTSE4Good Global Index

ULVAC was selected for five consecutive years for inclusion in the FTSE4Good Global Index, which is a Responsible Investment (RI) index established by the FTSE Group\* that covers businesses from around the world.

\* FTSE Group is an enterprise owned by The Financial Times and London Stock Exchange.



FTSE4Good

## Message from Top Management

**The ULVAC Group contributes to the development of science and industry with its proprietary cutting-edge technologies. We believe that fulfilling this mission is the best way for the ULVAC Group to benefit society.**



Dr. Kyuzo Nakamura, Chairman

中村久三

### Looking Back on the Great East Japan Earthquake

First of all, I would like to express my heartfelt sympathy for those affected by the March 11 Great East Japan Earthquake and pray for the fastest possible recovery of the disaster-stricken areas.

This earthquake has once again underscored the importance of our customer support system. We aim to provide the most effective disaster recovery support through ULVAC's advanced technologies, which are designed to realize a better world.

As stated in our basic corporate philosophy, the ULVAC Group companies cooperate and work together to comprehensively use the vacuum and peripheral technologies, aiming to contribute to the growth in industries and science. Our group remains united in our resolve to create a strong company that can be trusted by all stakeholders.

\* The effects of the earthquake on the ULVAC Group and our response to the disaster are described on pages 7 and 8 of this CSR Report.

### Toward the Development of a Sustainable Society

Recognizing that the conservation of the environment is one of the highest priority challenges facing humanity, the ULVAC Group has committed itself to conserving the Earth's natural environment and is making contributions to ensure environmentally sustainable growth and development for society across all business activities. Through our daily activities, we are working based on our environmental philosophy toward the realization of a sustainable society in the future. In particular, the nuclear power plant accident resulting from the earthquake has raised awareness of the need to reduce the use of nuclear power around the world, thereby drawing global attention to technologies that allow for the saving, creation, and storage of energy. Our various products provide technologies, such as photovoltaic power generation systems, secondary batteries, LEDs, organic electroluminescent devices, and power semiconductors. In order to promote the safe and environmentally friendly, efficient use of energy, we will continue to contribute to society through our cutting-edge technologies.

To this end, the ULVAC Group will expand its business globally, including in India and the South American countries, while at the same time enhancing its production systems in Asia. In 2012, ULVAC will celebrate its 60th anniversary. Over the past 60 years, we have become a firm with about 60 group companies in the world. We will continue to practice ULVAC's open and dynamic style of generating ideas, our corporate spirit which is our heritage as a company that started out as a venture enterprise, while also respecting the lifestyles and cultures of different countries and regions. Through our efforts to cater to the needs of our customers and local communities, we will create a corporate group capable of providing valuable services to a wide range of stakeholders.

**We will promote the development of the most advanced, environmentally friendly technologies worldwide.**

Hidenori Suwa, President and CEO

諏訪秀則



Special Report

# ULVAC Group's Response to the Great East Japan Earthquake

We would like to express our heartfelt sympathy to those affected by the Great East Japan Earthquake. At 2:46 p.m. on March 11, a magnitude 9.0 earthquake, the largest earthquake ever recorded in Japan, occurred off the Pacific coast of eastern Japan and caused enormous tsunami waves that devastated the coastal areas.

This Special Report details the damage to ULVAC Group companies resulting from the earthquake as well as our activities during and after the disaster.

## Damage to ULVAC Group companies

Most of the buildings comprising the ULVAC Group companies' offices and factories suffered no serious damage. The employees of ULVAC Group companies were all safe and sound save for several persons who suffered minor injuries.

ULVAC's Tsukuba Institute for Super Materials, where the walls and columns were damaged by the earthquake, is already back to normal operation.



A collapsed column in Building B at the Tsukuba Institute for Super Materials

## Damage to the facilities of ULVAC Tohoku Inc.

ULVAC Tohoku Inc.'s head office plant, which is located in the Hachinohe North-Interchange Industrial Complex, suffered only minor damage. However, the company's Plant 2, located near the coast, suffered serious losses due to damage caused by

the tsunami to products in storage as well as to devices that were being manufactured. We assessed the damage to products and other ULVAC Tohoku plant facilities. We acted quickly to minimize inconvenience to our customers.

## ULVAC Tohoku Inc.'s business continuity activities from immediately after the earthquake until the restoration of Plant 2

<p><b>3.11   Occurrence of the earthquake</b></p> <p>Information on the damage to ULVAC's offices and factories was distributed via the ULVAC Group Risk Network*</p> <ul style="list-style-type: none"> <li>All employees gathered in front of the logistics center to prepare for evacuation.</li> <li>The safety of all employees was confirmed by a quick roll call.</li> <li>Employees whose homes were still reachable were allowed to return home</li> <li>An emergency task force was established and private power generators were put into operation in order to secure the minimum necessary power.</li> </ul> <p>* ULVAC Group Risk Network: A networked system designed to distribute information to the presidents, executives, and managers of all ULVAC Group companies</p> <p><b>3.12   Information collection</b></p> <p>ULVAC's President Suwa issued instructions to collect information about the areas affected by the earthquake and organized an emergency meeting attended by members of domestic ULVAC Group companies.</p> <ul style="list-style-type: none"> <li>Managers collected information about the damage to buildings and equipment on the premises.</li> </ul> <p><b>3.14   Employees return to work</b></p> <p>The first shipment of devices after the earthquake was made after performing quality testing with the cooperation of ULVAC.</p> <ul style="list-style-type: none"> <li>Restoration work started on the premises</li> <li>Information collected on the damage to Plant 2</li> </ul> <p><b>Major points</b> Broken equipment: Repaired, replaced, or discarded Intact equipment: Fully used, maintained/managed, and reinforced Equipment newly required: Built, modified, or newly provisioned.</p> <p><b>3.18   Provision of employee transportation</b></p> <ul style="list-style-type: none"> <li>Due to difficulties in obtaining gasoline, the company started commuter bus services (until March 26).</li> </ul> <p><b>Major points</b> In view of the need to maintain the workforce required for plant operation, the company used four buses to provide commuter services for employees.</p>	<p><b>3.18   Restoration work on Plant 2 started</b></p> <ul style="list-style-type: none"> <li>Information was collected on the damage caused by the tsunami to devices awaiting shipment.</li> <li>Information was collected on the damage caused by the tsunami to the facilities on the premises as well as the devices that were being manufactured.</li> </ul> <p><b>Major points</b> As our highest priority toward restoration, we worked to create the space required for demolition and sorting debris.</p> <p><b>3.25   Restoration of damaged equipment</b></p> <ul style="list-style-type: none"> <li>We started carrying out the damaged equipment.</li> <li>We started the demolition, sorting, and cleaning of damaged equipment.</li> </ul> <p><b>Major points</b> <b>New criteria</b> We established new judgment criteria beyond those of the existing ISO standards and immediately implemented these criteria. (Establishment of criteria for seawater infiltration and measurement of the salt level)</p> <p><b>3.26   Shipment of undamaged devices</b></p> <ul style="list-style-type: none"> <li>Devices were transported to the Port of Yokohama for shipment. The company's policy was modified on March 15 to allow for the use of land transportation; transportation routes were studied carefully prior to shipment.</li> </ul> <p><b>Major points</b> In order to avoid inconveniencing our customers, we needed to deliver our products as soon as possible.</p> <p><b>3.30   Restoration</b></p> <ul style="list-style-type: none"> <li>Plant 2 started operation.</li> </ul> <p><b>Major points</b> Under our policy of avoiding closing plants even for a day, with the support of our partners (suppliers) and through the use of power generators and other temporary equipment, we were able to quickly put the production plant (Plant 2) back into operation.</p>
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## Effects of planned power outages and ULVAC's countermeasures

On the day after the earthquake, under the instructions of the Chairman and the President, ULVAC examined the order of priority as to which equipment was to be put back into operation first. We adjusted the operation of plant utilities in accordance

with the power outage schedule. We also implemented staggered commuting from March 15 and operated some of our facilities at night.

## Topics

### ULVAC's power outage strategy featured in a TV program for international audiences as well as a newspaper

ULVAC was featured as a company working to avoid plant closures during the planned power outages after the earthquake in the March 29 "NHK World" TV program as well as in the Nikkei newspaper.

Immediately after the earthquake, pessimistic views regarding Japan's manufacturing industry spread widely around the world. However, this TV program provided an opportunity to inform the world that Japanese manufacturers were taking every possible measure to continue their business operations.

## Support for affected areas

ULVAC donated 10 million yen to Hachinohe City, where ULVAC Tohoku's head office is located, and 5 million yen to Aomori Prefecture. Through the Japan Red Cross Society, we also donated disaster relief funds collected from our employees totaling over 1.4 million yen to the affected areas.

In addition, a total of 71 cardboard boxes containing of supplies, including sanitary goods and clothes donated by

employees as well as hygiene products stored at the company, were distributed to Kesennuma City with the help of Shonan Bellmare, a local J-League soccer club and ULVAC's CSR partner.



Bellmare CSR staff members sorting out relief supplies

## Coping with restrictions on the use of electricity

All large power consumers (i.e., those with a contracted power supply of 500 kW or more) in the areas covered by the Tokyo Electric Power Company were requested to reduce their maximum summer power consumption by 15% compared to the previous summer's consumption level from July 1 onwards.

Among ULVAC's plants, the following were subject to the restrictions: the ULVAC head office/plant, Fuji Susono, Chiba Tomisato, and Chiba Sanmu plants.

At the ULVAC head office/plant, which focuses on development, we increased production during the night-shift to respond to customers' needs.

All business divisions filed applications to operate during the day and conducted demand monitoring\*. We had no experience in load adjustment or backup operations using private power generators, which made us realize the importance of electricity.

Although power supply shortages resulting from the closure of nuclear power plants are likely to continue, our Group companies are committed to maintaining the operation of their factories and attaining profits.

We believe that it is our obligation as a manufacturer to make it through these difficult times and to improve our basic capabilities.

\* Demand monitoring: Monitoring power consumption to predict and monitor power demand.

## Improvement of our disaster prevention system

ULVAC has been working to establish a disaster prevention system focused on earthquakes and fires. Based on the lessons learned from this earthquake, we began reviewing measures to prevent damage caused by tsunami waves. However, since the ULVAC Chigasaki plant is unlikely to be hit by such waves, measures for that plant are focused primarily on damage due to flooding of the Sagami river.

To minimize the potential damage caused by the flooding of the Sagami river (the result of a heavy downpour occurring roughly once every 150 years), we will implement effective measures to prevent the inundation of development equipment inside our buildings.

We also made major changes to our emergency evacuation drills, which now focus not only on evacuating outside but also evacuating to the second and higher floors as well as the implementation of roll calls and confirmation of employees' safety. We also concluded an emergency agreement with Chigasaki City in order to develop a system for more actively accepting residents in the areas around our plant.



Mr. Nobuaki Hattori, Mayor of Chigasaki City (left) and ULVAC Director Motoyoshi



## Technology

ULVAC constantly takes on new technical challenges as we develop our business activities globally. This section introduces ULVAC's technologies as well as our commitment to quality assurance and procurement that support our brand.

# Technology

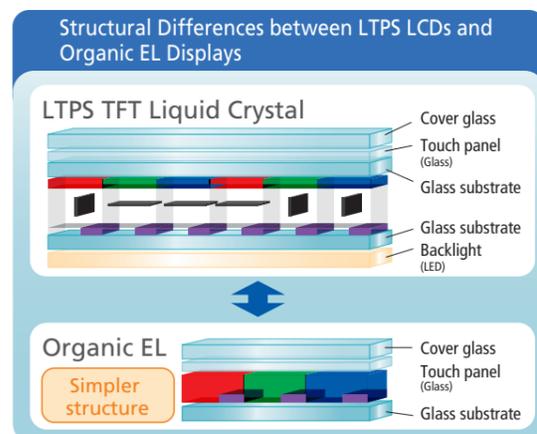
## Organic EL is Important for the Next Generation We respond to social needs with our cutting-edge technologies

We offer not only proposals but also global support

Did you know that the displays you see in everyday life can be divided into various types? ULVAC produces a wide variety of next-generation systems for manufacturing displays. Organic EL (Electroluminescent) displays, which have been drawing attention in recent years, are expected to become one of the core types of next-generation displays because they consume less power compared to LCDs (Liquid Crystal Displays) and can be made very thin, allowing for great flexibility.

### ULVAC and Organic EL Displays

ULVAC has supported the evolution of LCDs for a long time. By applying our technologies, low-temperature polysilicon (LTPS) LCDs, a successor to amorphous silicon (a-Si) LCDs, we realized improved video performance (increasing the beauty of fast movements), higher precision (more realistic detail), and weight reductions. In addition, organic EL displays are expected to become a next-generation display for smartphone and tablets, for which there is great demand. Expectations regarding energy saving for organic EL displays are especially high because such displays emit light by themselves; no backlights are required, which results in lower power consumption.

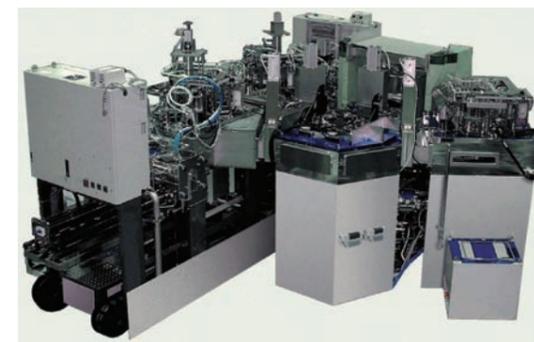


### ULVAC Group's Organic EL Solution

An organic EL basically consists of a carrier (electron) transportation layer between the electrodes and a luminescence layer which is made up of organic materials. Among such materials, those used for the luminescence layer play an important role. Depending on their molecular weight, such organic EL materials are categorized as one of the following two types: low molecular or high molecular.

ULVAC supports both material types and offers proposals not only for organic deposition systems but also for TFT production, sealing, and other various systems. ULVAC's organic evaporation sources were all developed in-house and have been mounted in our mass production systems since 2001.

Though at this time the primary evaporation source used for mass production systems is known as linear source, we are currently developing a device that uses organic materials with an efficiency several times higher than that of our existing devices. Also, we are proactively developing an inkjet device for applying organic materials more efficiently.

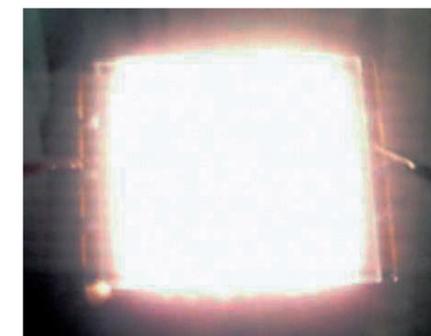


Organic EL Production System "ZELDA"

### Expectations for Organic EL Lights

Our efforts to reduce power consumption this summer in Japan greatly influenced various electric home appliances. In particular, many people purchased new energy-saving lights. Organic EL lights are known as next-generation lights and they are known for having higher performance than conventional incandescent lamps, fluorescent lamps, and even LEDs. ULVAC was the first in the world to develop an organic EL lighting device with a substrate of 100 mm<sup>2</sup> and has also succeeded in developing a 6-inch lighting device with better practical performance. We are continuing to develop this device with a focus on practical application.

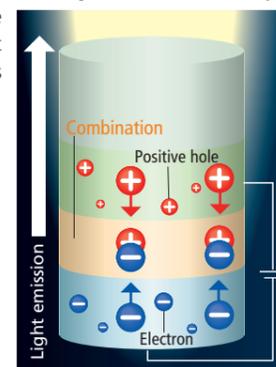
In addition, besides displays and lights, we are actively studying the use of organic semiconductors in solar cells. The advantages of these solar cells include that they are thinner than other types of solar cells; that they are less expensive than silicon, which is a material used in major types of solar cells; and that they use fewer materials. ULVAC will continue to proactively study and develop technologies such as these that play important roles in energy saving.



Organic EL lighting device

### Principle of Organic EL Luminescence

When voltage is applied, a positive hole and an electron are generated from each of an anode and a positive electrode. When these are combined in the luminescence layer, the organic material of the layer is excited. The layer emits light as it returns to its original state.



### We support you with our global system

ULVAC Group can validate all organic EL processes required by our customers and has a system for supporting such processes both domestically and globally at our group companies, including Korea Institute for Super Materials. In addition, we realize prompt support by using ULVAC products for the components required in organic EL processes. We will continue to enhance domestic and global cooperation across our group and respond to the various requests of our customers. When you think organic EL, please leave it to us!

**Mamoru Nagase**  
Senior Manager, FPD-PV Global Business Unit



# Power Semiconductor Devices that Minimize Power Loss Saving energy by producing "Production"

ULVAC provides power semiconductor device production systems.

The electrical products and vehicles surrounding us operate by converting the power supplied to them according to their individual specifications. The semiconductor device used to control this power conversion circuit is known as a power semiconductor device, and such a device is essential for using power efficiently. ULVAC provides our customers with power semiconductor device production systems that make full use of our semiconductor production system technologies.

## Roles of Power Semiconductor Devices

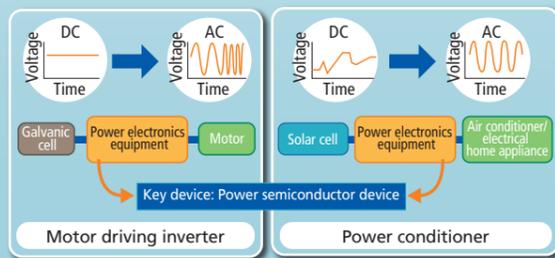
Electrical home appliances such as air conditioners, washing machines, and refrigerators are supplied with AC power. They convert AC to DC power using a converter within the product, and at times they further reconvert DC to AC power using an inverter. A power semiconductor device is built into the motor that drives the inverter or power conditioner, and this is used to perform power conversion or to control the device in order to increase energy efficiency. Power semiconductors feature large current capacity, high voltage resistance, reduced heat buildup, and better heat dissipation, among other characteristics. This type of semiconductor is a key device for realizing energy savings and has a wide range of applications, such as electric trains, industrial device power supplies, medical equipment, eco-cars, electrical home appliances, power controls, and motor controls.



To ensure the steady provision of those things we often take for granted in our daily lives, power semiconductor devices are built into various pieces of equipment to realize the stable supply of power and reduce energy use.

### Power Semiconductor Structure

- Power semiconductor devices are semiconductor devices that convert electric currents from AC to DC or raise or lower voltage in order to efficiently control power.
- Power semiconductor devices are essential devices for saving energy that are used in a wide range of fields, from power controls for industrial equipment, electric trains, eco-cars (EV, HEV), electrical home appliances, and solar energy and wind power generation to motor controls.



## News Expectations for IGBT\* in the Chinese Market

Most of the electrical home appliances currently used in China are non-inverter types with low energy efficiency. For example, in Japan the percentage of home air conditioners using inverters is 100%, while it is 7% in China. The Chinese government's twelfth 5-year plan includes measures for "renewing industrial equipment" and "saving energy and conserving the environment." The government is also promoting replacing old products by offering government funding based on the "Measures for Replacing Old Electrical Home Appliances with New Ones." In response, manufacturers of electrical home appliances in China are planning to produce inverter air conditioners. We expect that ULVAC's power semiconductor production system technologies will be made use of in conjunction with this trend.

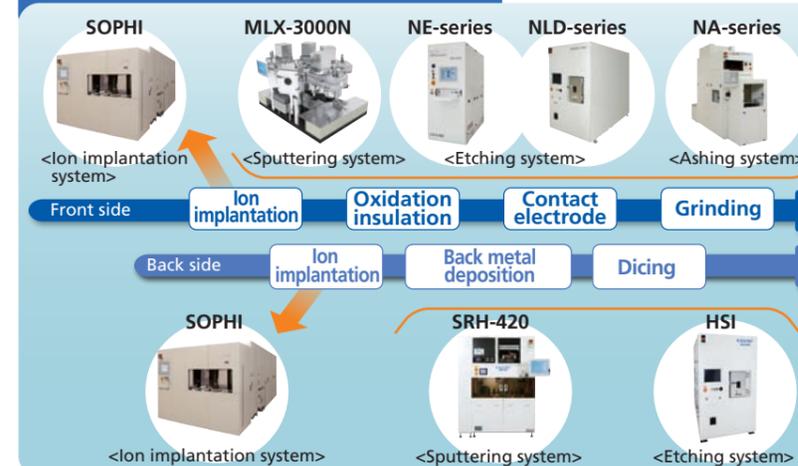
\* IGBT: Insulated Gate Bipolar Transistor/one variety of power semiconductor

## Roles of ULVAC

ULVAC provides an ion implantation system, SOPHI-200, and a sputtering system, SRH-420, for producing IGBT, a thin power semiconductor that realizes high current with reduced power loss. The thickness of the wafers used as substrate for IGBT is now approximately half of that used in 1995, when it was first developed. This technology is important in order to reduce power loss as much as possible during the process in which electricity flows from the front to the rear surface. In addition, by forming a field stop layer on the rear surface, reduced power loss, higher speed, improved pressure resistance, and downsizing can be realized. ULVAC has developed its own original ion implantation and sputtering systems capable of handling extremely thin wafers and also utilizes this technology for rear surface electrode formation, surface processing, and very thin wafer transportation for IGBT.

In addition, to further improve performance going forward, we are

### Power Semiconductor Device (IGBT) Process Flow



advancing developments to change the wafer materials from the conventional silicon to silicon carbide (SiC) or gallium nitride (GaN).

ULVAC is participating in an SiC power semiconductor mass production prototype project and is jointly carrying out development. SiC features low power loss, high pressure resistance, and high

thermal conductivity properties and is expected to serve as a next-generation power semiconductor material. ULVAC was the first manufacturer in the world to develop an ion implantation system, IH-860DSiC, to serve as an SiC device mass production system.

### Power Semiconductor Device Production System

<h4>Ion Implantation System SOPHI-200</h4> <p><b>Features</b></p> <ul style="list-style-type: none"> <li>Can handle extremely thin wafers up to 200 mm diameter</li> <li>Excellent track record handling thicknesses from 50 μm to 100 μm</li> <li>Equipped with a cooling platen (electrostatic chuck type)</li> <li>Can also handle standard wafers</li> <li>Inexpensive parallel beam ion implantation system</li> </ul>	<h4>Sputtering System SRH-420</h4> <p><b>Features</b></p> <ul style="list-style-type: none"> <li>Can handle extremely thin wafers up to 200 mm diameter</li> <li>Easy to change substrate sizes</li> <li>Pursuit of ultimate cost performance</li> <li>Can also transport standard wafers</li> <li>Supports lamination/simultaneous sputtering with multiple cathodes</li> </ul>	<h4>Ion Implantation System for SiC IH-860DSiC</h4> <p><b>Features</b></p> <ul style="list-style-type: none"> <li>Can perform automatic, continuous high-temperature implantation at up to 500°C</li> <li>Can perform implantation with a maximum energy of 700 keV</li> <li>Can perform continuous implantation with different amounts of energy</li> <li>Enables high throughput by employing a dual platen method</li> <li>Can convert Al+ beams to high current (up to 200 μA)</li> </ul>
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## Voice Technologies that contribute to the global environment

The fields to which IGBT power semiconductor devices can be applied have been expanded by technical innovations compared to the time in which IGBT was initially developed. For IGBT substrates, ULVAC's technologies for field stop layer formation ion implantation systems and electrode film formation sputtering systems are used actively in processes for extremely thin wafers' rear surfaces. We have also developed extremely thin wafer transportation technologies since 1997 and have significant experience with such technologies. It is expected that inverters will increasingly be employed in electrical home appliances due to environmental conservation measures adopted in

China, and many power semiconductor manufacturers in China have already begun manufacturing IGBT. Such electrical home appliances featuring inverters that are produced in China will likely be exported to Europe and the United States. In this way, I hope that ULVAC's technologies will make a huge contribution to the global environment.



Junki Fujiyama  
Director, Semiconductor & Electronics Equipment Global Business Unit

# Converting Unused Energy to Future Energy Compact and portable power generation systems that use low-temperature heat sources

We are challenging ourselves to solve environmental issues with renewable energy.

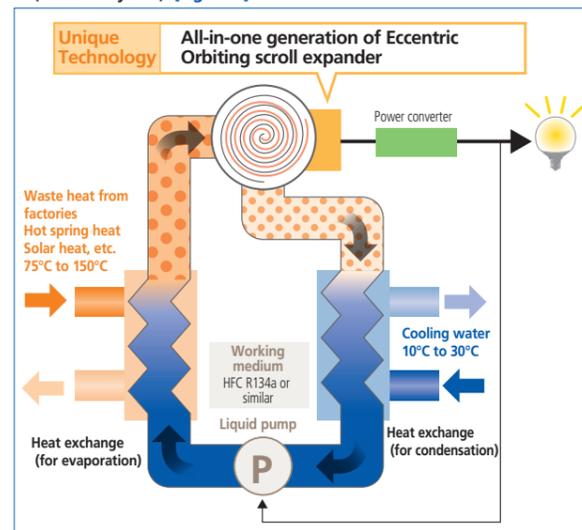
To prevent global warming and the depletion of petroleum resources, demand for the use of renewable energy has been increasing rapidly. Also, as a result of the Great East Japan Earthquake, there is strong demand for the immediate practical realization of power generation technologies using heretofore untapped energy.

ULVAC-RIKO, Inc. has developed a compact and portable power generation system capable of generating 3 to 12 kW by using a low-temperature heat source (150°C or less). We asked Professor Tsutsumi of the University of Tokyo to comment as an advisor on our research and development, and we also asked for the cooperation of RichStone Limited, the National Institute of Advanced Industrial Science and Technology (AIST), and the Kanto Bureau of Economy, Trade and Industry.

## Background and Outline of the Research and Development Effort

Though there many low-temperature heat sources of 150°C or less—such as waste heat from factories, hot spring heat, and solar heat—they are often not yet used to generate power, and even if so they are used only as heat. In addition, although the practical realization of such power generation systems is under consideration, most power generation facilities have a capacity of 50 kW or more, which requires a large amount of heat, and consequently their potential deployment locations are limited due to high initial costs, including that of the installation space as well as construction costs. ULVAC-RIKO's power generation system, however, can generate power using only cold and hot (between 75°C to 100°C) water, which is heated by the low-temperature heat source (150°C or less). This system is small enough to be transported by pickup truck, produces less noise, and can be installed easily in spaces where heat is generated.

### Schematic Figure of Compact and Portable Power Generation System (Rankine Cycle<sup>\*1</sup>) [Figure 1]



## Successful Generation of 3.8 kW of Power

During the development of this power generation system, we manufactured a 3 kW compact and portable power generation system [Photo 1] using the Rankine cycle method [Figure 1] and conducted a test to generate power using hot and cold water [Photo 2]. To take just one example from our results, we achieved 7.2% energy regeneration efficiency<sup>\*2</sup> and generated 3.8 kW of power [Table 1] with hot water at a temperature of 91°C, volume of 43 liters/min, and temperature difference of 69°C. This demonstrates that we were able to realize energy efficiency and achieve practical power generation output.

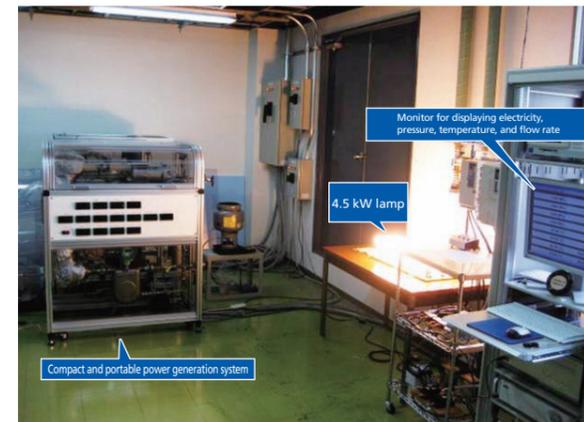
One of the essential units necessary to realize this power generation system is the all-in-one generation of eccentric orbiting scroll expander<sup>\*3</sup> (eco scroll expander<sup>\*4</sup>). ULVAC-RIKO has developed this scroll expander based on their proprietary technologies and through them realized low mechanical loss, a highly-sealed expansion chamber, and low noise.

<sup>\*1</sup> Rankine cycle: One of the processes used to convert heat to mechanical energy by using an operating medium consisting of liquid and gas (Examples) Thermal and nuclear power generation  
<sup>\*2</sup> Energy regeneration efficiency: The percentage of power that can be extracted from the supplied energy  
<sup>\*3</sup> Scroll expander: A unit consisting of a pair of spiral components of identical shape, one fixed and the other loose (relatively speaking, capable of shaking motion) in order to increase the volume of the expansion chamber and to realize expansion  
<sup>\*4</sup> Eco scroll expander: A scroll expander implementing a unique method

### Compact and Portable Power Generation System (Test Model) [Photo 1]



### View of Electric Power Examination of Compact and Portable Power Generation System [Photo 2]



### Electric Power Examination Test Result of Compact and Portable Power Generation System [Table 1]

	Maximum measured value
Volume efficiency	98%
Total adiabatic efficiency	71%
Energy regeneration efficiency	7.2%
Generated power output	3.8 kW

## Features of the Highly-Efficient Compact and Portable Power Generation System

One feature of this system is that it can convert hot water (from 75°C to 100°C) into electricity. The system is small, W1,100 × D800 × H1,400 mm, and weighs only approx. 200 kg. Its mobile design allows it to be transported by a pickup truck and installed easily. Also, it makes less noise, increasing the number of possible installation locations. Additionally, by combining 3-kW eco scroll expanders, the output of the system can be increased from 3 up to 12 kW, depending on the size of the heat source.

## Adaptable Low-Temperature Heat Sources

This system uses various low-temperature heat sources, including waste heat from factories, large automobiles, and ships; waste evaporation heat; waste heat from fuel batteries; geothermal heat; and solar heat. This technology has a wide variety of applications such as hybrid cars, electric compressors for electric vehicles, air blowers<sup>\*5</sup> for fuel batteries, and vacuum pumps.

In the future, we plan to perform field and endurance tests on-site in order to accumulate base technologies aimed at commercialization focusing on convenience, reliability, and maintainability before launching such technologies into the market.

<sup>\*5</sup> Air blower: A machine that discharges the intermediate pressure between a blower and a compressor

## Voice

## To make products that respond to our customers' needs

With the help of our partners, in just two short years we have succeeded in developing this power generation system, which uses low-temperature heat sources that have heretofore been neglected. After the Great East Japan Earthquake, the demand for energy has increased and we have received more and more inquiries, not only from those in our target industries but also those in other various industries, individuals, and even potential customers overseas.

We will continue to strive to quickly release products that satisfy our customers' needs.



(From the left, back row) Satoshi Endo, Manager, Development Section, R&D Department; Dr. Yoshikazu Ishii, President and CEO; Kiyotaka Mantani, Development Section  
 (From the left, front row) Soh Kahwin, Development Section; Kosuke Sasahara, Development Section; Hiroshi Sagara, Assistant Manager, Development Section

### ULVAC-RIKO, Inc.

Since its establishment in 1962, ULVAC-RIKO, Inc. has manufactured and sold thermal analysis and thermal property measurement systems that operate at a wide range of temperatures from extremely low to extremely high, heating and cooling systems using infrared lamps, and application equipment, all of which use their core heat technology, in addition to selling

instruments imported from overseas. Five years ago, they started a new business in order to establish an additional main business for the future. Presently, they are focusing especially on developing new products that use their unique technologies in growing fields such as those related to the environment, energy, and nanotechnology.



# Improve the ULVAC Brand

## Our goal is safe, confidence-inspiring products

Almost all production facilities of the ULVAC Group have now completed ISO 9001 certification procedures for quality management systems. We are producing high-quality products around the world at our many production factories and joint ventures. To maintain "ULVAC quality," we have also established ULVAC brand standards and a certification system, and have a strict check system in place for the start of production and type approval.

**Quality Policy**  
We are committed to improving the Quality of our work to provide products and services that satisfy our customers.

- Action Policies**
- 1 We comply with all rules and procedures.
  - 2 We do not deliver any nonconforming products to the next process.
  - 3 We observe delivery times to the next process.
  - 4 We commit to the production budget.

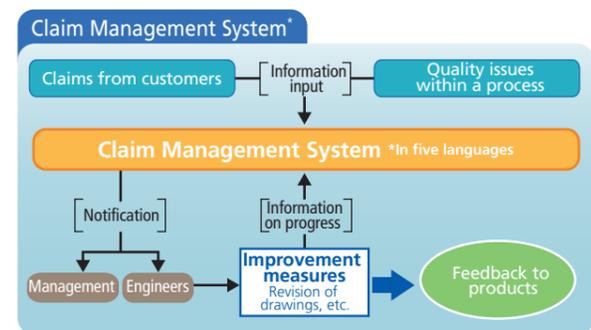
## Making Rapid Improvements Based on Quality Information

### Our claim management system

All information on quality issues related to ULVAC and its production facilities is managed comprehensively by the Claim Management System, enabling the information to be shared by the Group. The system identifies persons in charge within the process at the Chigasaki Plant or our manufacturing assignees and also notes the date. Any customer complaints after product delivery are also processed by the system. If a serious safety issue arises, the system automatically sends out the information to all management personnel according to the level of risk of each claim. If the situation is particularly serious, the information is labeled a "Critical Claim" and reported at the monthly business meeting (a regular monthly meeting in which the president and division managers participate), where responses are discussed and determined via a top-down approach.



A quality inspection

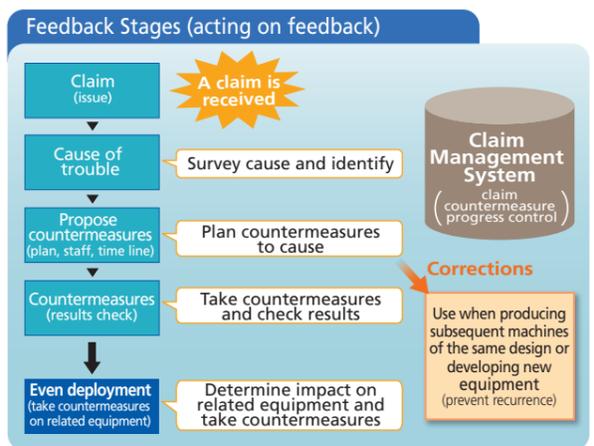


\*In five languages (Japanese, English, Korean, Chinese (Simplified, Original))

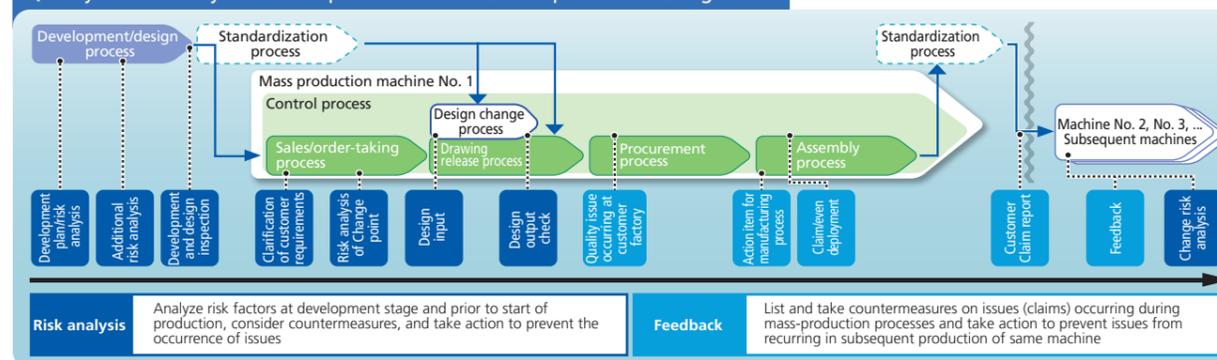
### Quality control system for customer satisfaction and confidence

Risk analysis and feedback are two fundamental concepts of ULVAC's quality management system. Following the flow that begins at the development and design stage, we identify risks, identify countermeasures to them on a "risk analysis sheet" and work to prevent quality issues. In the event of an issue occurring after production processes and shipping, we write up a feedback list based on data collected from our Claim Management System and feed back the information at each stage.

We also run a stringent quality check on such issues during the quality inspection prior to shipping. In this manner, we aim to be timely providers of products that reflect the most up-to-date technology so that we can promptly support our customers' production activities.



### Quality Assurance System Concept in Relation to Development and Design Flow



## Globalization of the ULVAC Brand

Based on a checklist, products of the ULVAC Group are assessed with respect to their model registrations; clarification of commercial distribution; compliance with the standards for use of ULVAC trademarks; management systems for quality, environment, safety, hazardous substances, etc.; protection of intellectual property rights; and technology leakage preventive measures, among others.

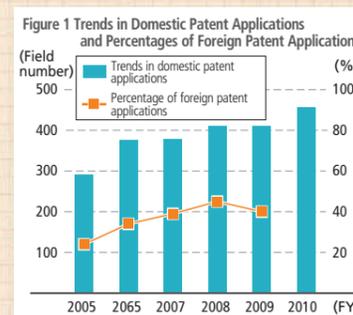
After this assessment, products are then examined and approved by the Board of Standing Directors and Auditors. Only products that satisfy all of these criteria are permitted to be manufactured, produced, and sold. Such products are maintained and managed using the product, production, and sales matrix for ULVAC Group products. Such a strict system allows us to distribute "ULVAC Quality" around the world, thereby supporting our globalization.

## ULVAC Global Intellectual Property Rights — Expanding ULVAC technologies and the ULVAC brand worldwide —

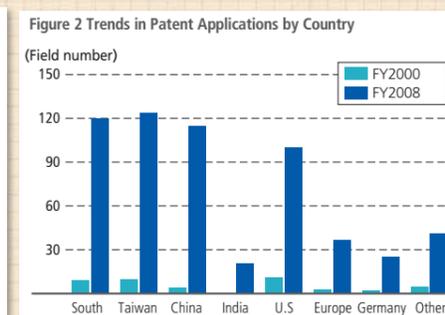
ULVAC actively protects the technologies attained through our significant research and development investments as intellectual property right. We have also increased the number of domestic patent applications we have filed while proactively expanding our foreign patent application efforts in conjunction with the globalization of our business.

Figure 1 shows trends in our filing of domestic patent applications and the percentages of foreign patent applications versus domestic applications. South Korea, China, and Taiwan are among the major countries in which we are filing applications. We are applying for patents in accordance with our business globalization strategies (see Figure 2). Also, we have registered the "ULVAC" trademark in countries around the world in order to establish and maintain the worldwide reliability of our ULVAC brand.

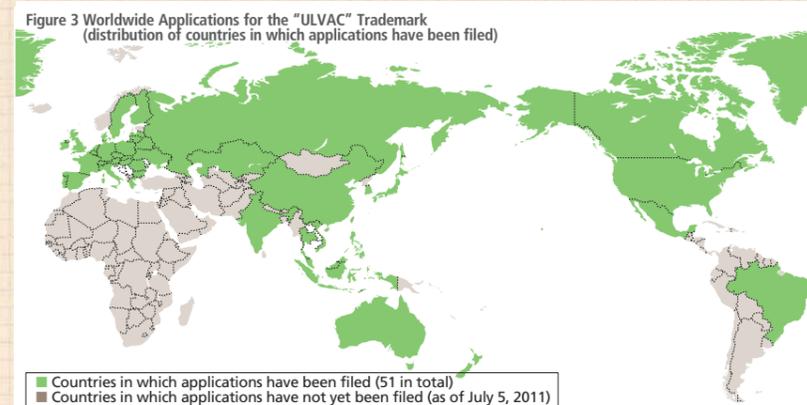
Particularly in order to prevent issues related to technology leakage and counterfeit products, we revised the Intellectual Property Rights Management Regulations for Domestic and Overseas ULVAC Group Companies in order to further enhance our legal protection system on a global basis.



\* The percentage of foreign patent applications for FY2010 is not yet available.



\* Data since FY2009 is not yet available because such submissions are international applications based on the PCT (Patent Corporation Treaty).



## Building Good Relationships with Suppliers

Suppliers are critical partners to the ULVAC Group. We maintain and promote fair and proper business relations and work to optimize materials and logistics procurement that is based on solid mutual trust.

### China Procurement Center Established

ULVAC has a policy of producing products locally for our customers and is now preparing to further promote overseas production by starting production of large liquid crystal and solar cell production systems in Suzhou, China. In addition, to respond to strong pressure from our customers to reduce costs, we have established the China Procurement Center in Suzhou and are working constantly to procure parts and materials of optimal quality at low prices.

In 2011, in order to further enhance our procurement capacity, in cooperation with our group companies we are planning activities to promote overseas procurement in China. We will continuously strive to understand differences in regulations and cultures (which are important for our goals), comply with the RoHS directive, and ensure quality.



(Second from the right, second row) Tomoko Hirose,  
In charge of China Procurement Center (on loan from ULVAC, Inc.)

### Modal Shift Trial

In order to reduce carbon emissions and costs by shifting from our traditional means of transportation, trucks, to that of trains, we conducted a modal shift trial on transporting vacuum application materials. To measure the effects of the change in transportation method change on the cargo, a small vibration gauge was installed in the cargo to record the impact of acceleration during transportation and also to verify the external forces applied to such cargo during the loading and unloading of the container as well as during transport by train. Our results indicate that when the cargo is transported by train approx. 330 km, carbon emissions are reduced by an estimated 41.57% per trip compared to transport by truck.

Transport by trains is inferior to that of trucks with respect to time control, as trains are restricted by a schedule. However, such transport is very effective in terms of the global environment, such as reducing carbon emissions. We consider the establishment of this new transportation option a big step for ULVAC's corporate activities.



Tetsuji Obara,  
Assistant Manager, Logistics Department, Procurement Center

### ULVAC Quality is Supported by Our Suppliers' Quality — Our supplier certification system has started operation —

ULVAC products consist of a significant number of parts and materials, most of which are provided by our suppliers. Thus the quality of our products depends on our suppliers' quality. Throughout the expansion of both domestic and global production areas, it is important to assess supplier quality in an accurate and fair manner at each group company.

To this end, we have integrated the assessment systems at all of our group companies and we established a "supplier certification system" in 2010.

In the course of introducing our supplier certification system, we investigated each supplier's operation and management characteristics. For overseas suppliers, we made extra room for advice and discussion in consideration of the difference in our respective cultures. Instead of merely making demands, we allowed each supplier to explain its management methodology and we arranged a results-based quality control method together. Consequently, in a single year the average failure rate of deliverables for all group companies has been reduced to one-third compared with the previous year.

This system only permits procurement from certified suppliers satisfying our supplier certification system. In other words, it aims to ensure all procured products are of the same quality even if the people placing or taking orders change, as well as to ensure that final products are of the same quality even if the factory in which such products are produced differs. Therefore, acceptance inspection criteria, which we unified

across our group, and appropriate guidance and audit systems are important for ULVAC's SCM (Supply Chain Management). We will visit suppliers' sites to learn about their issues and offer guidance for or support any necessary improvements together. We have many opportunities to learn from our suppliers. To discuss these and other issues, we will hold acceptance inspection meetings, in which group companies also participate, and quality and procurement-related meetings both domestically and globally in order to promote our cooperative quality improvement activities.

ULVAC quality is supported by our suppliers' quality. Through cooperative quality improvement activities, we will produce ULVAC quality that satisfies our customers, aiming to achieve a "Win-Win" relationship in which we can improve together with our suppliers.



ULVAC employees offering guidance to a supplier, on-site

### Supplier Comment

#### Aiming to Further Improve the Environment Quality System

First of all, please allow me to express my appreciation at our being awarded an Excellence Award for QCD (Quality, Cost, Delivery). We are all encouraged by receiving such high accolades from one of our customers.

We have been able to achieve our current state of affairs by responding to high-level requests from ULVAC as well as our other customers and stakeholders.

Especially in recent years, requests for environment-friendly corporate activities have been increasing. To respond to this trend, we have obtained ISO 14001 certification at 15 of our offices around the world, including three factories in China in January 2010.

Motohiro Uemura,  
Branch Manager, Atsugi Branch,  
East Japan Sales Region II, THK Co., Ltd.



In addition, THK promotes green procurement as the foundation of its environmental conservation compliance and environmental aspects. In 2009, in response to the revision of CSCL<sup>\*1</sup>, enforcement of REACH regulations<sup>\*2</sup>, etc., we drastically altered our criteria for chemical substances in cooperation with our traders.

Together with our customers and traders, we will carry out our social responsibilities and strive to build an environment quality system that facilitates a mutually prosperous society.

<sup>\*1</sup> CSCL: Abbreviation of the "Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc."  
This act deals with safety evaluations of newly manufactured or imported chemical substances.

<sup>\*2</sup> REACH regulation: An EU regulation on chemicals that came into force in June 2007

# Environment



## Environment

The following section outlines a variety of environmental initiatives of ULVAC Group companies, including a battery-powered boat project, one application of our cutting-edge technologies that contributes to the global environment.

# Environment

\*Namegaya area of Chigasaki City: Location of our Tanbo (rice field) Project (started last year)

## The ULVAC Group Promotes Reduction of Environmental Impact with Proprietary Cutting-Edge Technologies

Amid growing demand to reduce CO<sub>2</sub> emissions to halt global warming, the Great East Japan Earthquake badly damaged several nuclear power plants, which until that point had been considered one of the most effective measures against global warming. The serious environmental destruction caused by the disaster has reminded us of the difficulty of tackling environmental issues and the necessity for drastic measures.

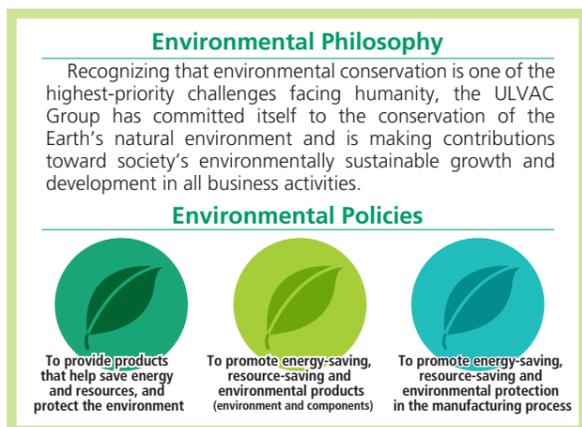
The ULVAC Group, which is committed to providing products that help protect the global environment, has been promoting environmentally friendly plant operations throughout the production processes for such products.

ULVAC's environmental initiatives can be classified into three main policies (as shown on the right).

In this section, we will introduce these initiatives.

### Contributing to reducing environmental impacts through ULVAC's proprietary technologies

ULVAC provides cutting-edge technologies for realizing natural energy, saving energy, saving resources, and reducing environmental impact. Among our cutting-edge products with high market shares, one finds production equipment for solar batteries, LEDs, LCD televisions, thin-film lithium batteries, condensers for hybrid cars, and rare-earth magnets. Though there may be few opportunities for



consumers to see our equipment firsthand, our products play important roles in producing our daily life environments. In addition, our compact and portable power generation systems that make use of temperature differences have recently been attracting the attention of hot spring resorts (see pages 13–14 for details). We have also developed a new production method for coating materials used for building insulated glass and can now offer such products at low prices. Further, our quick charging systems for electric vehicles, which are unique solutions combining solar and storage batteries with wind power generation, are being installed all over Japan.

### To provide environmentally friendly products

If the products developed with our proprietary technologies negatively impact the environment, our efforts mean nothing. Therefore, in addition to managing the chemicals contained in the materials used for our products, we are making voluntary efforts to refrain from using the chemicals listed in the RoHS Directive. Thanks to the cooperation of our suppliers, as of June 30, 2011, ULVAC sells 2,731 products that use no RoHS-listed substances. We will continue these efforts.

We are also working to reduce the operational energy necessary for our equipment. Our newest models of our semiconductor production equipment use 40% less electricity than the previous models. We have shipped more than 1,200 units of ECO-SHOCK; ECO-SHOCK energy-saving attachments are capable of reducing the electricity usage of vacuum pumps as much as 50% to 80% while the pumps are no-load running.

By setting voluntary targets, we have been working to reduce energy usage. To promote the use of natural energy, we have installed a solar power generation system at our Chigasaki Plant.

In this way, the ULVAC Group continues to contribute to environmental conservation with its proprietary cutting-edge technologies.



**Yoshio Sunaga**  
Executive Vice President  
and Environmental  
Management Representative

### Enhanced Environmental Management of the ULVAC Group

By establishing the Global Environmental Management Committee in 2010, the ULVAC Group enhanced its environmental management system. This stronger system now covers not only domestic but also overseas group companies in order to match the group's global production system.

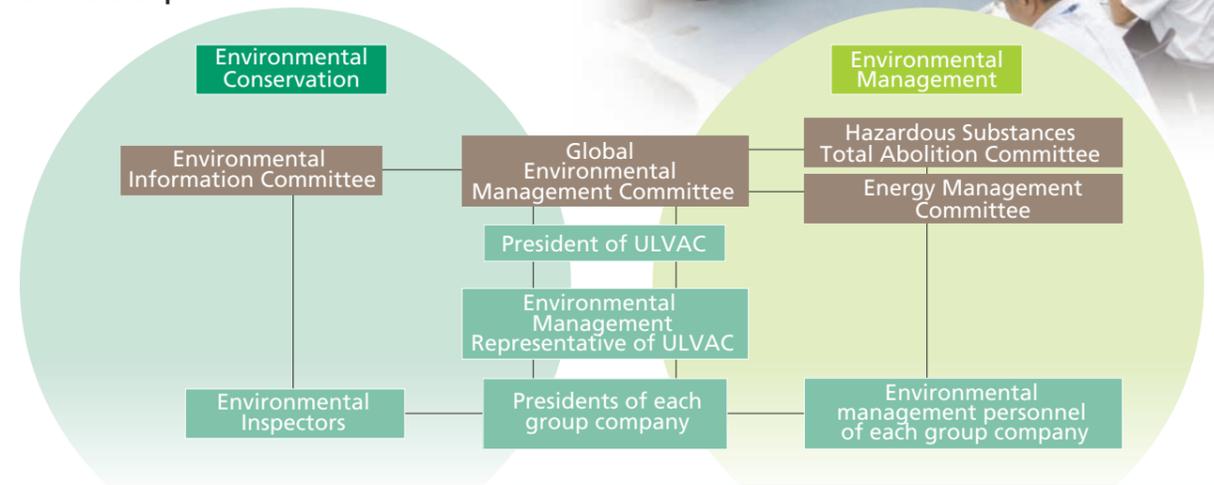
Global Environmental Management Committee



### To protect the environment in the manufacturing process

Production and recycling processes for equipment and materials necessarily involve certain risks of environmental pollution. To reduce such risks, any involved risks are double-checked by the Environmental Management Section and the Corporate Safety & Health Department upon newly installing, maintaining, changing, or terminating environmental facilities. In addition, we share information on environmental risks through cross-sectional activities led by the Global Environmental Management Committee. We have also been monitoring fixed points within our plants in order to prevent serious environmental accidents.

### Environmental Management System of the ULVAC Group



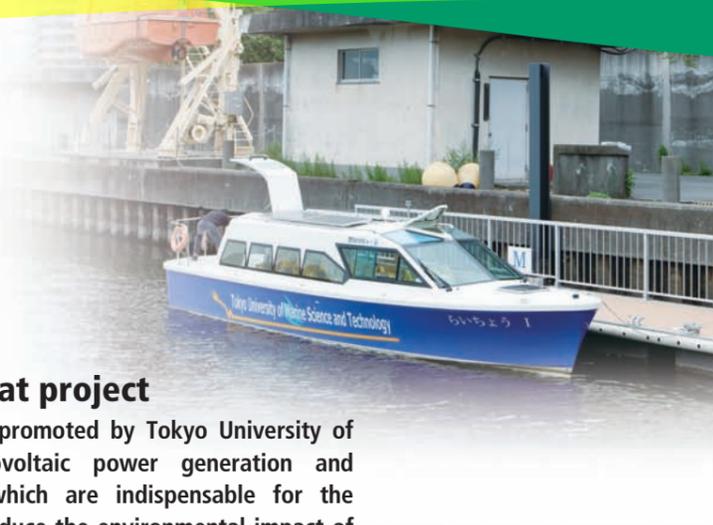
For more details on the ULVAC Group's environmental initiatives, visit the URL below

<http://www.ulvac.co.jp/csr/>

# Tackling Global Warming at Sea

## Participation in a battery-powered boat project

ULVAC participated in a battery-powered boat project promoted by Tokyo University of Marine Science and Technology, developing photovoltaic power generation and quick-charging systems for battery-powered boats, which are indispensable for the widespread use of such boats. Battery-powered boats reduce the environmental impact of traffic at sea. We asked the university professor leading this project, Professor Takamasa, to share with us the background and goals of the project as well as his expectations for ULVAC.



## Battery-Powered Boat Project

**Q: First, would you tell us about the developmental background of battery-powered boats?**

Most boats used today run on diesel. This is why boats generate noise, vibrations, and odors, and this causes adverse environmental impact on the quality of air and water because of the exhaust gas. In fact, many boats are less friendly to the environment than public transportation or cars.

Given such circumstances, our collaborative industry-university project team started to develop a battery-powered boat, the "Raicho-I" ("raicho" means "thunderbird" in Japanese), with a view to its commercialization. This new boat is equipped with a secondary battery and motor instead of the conventional combination of a fuel tank and engine.

## Social Issues Solved by Battery-Powered Boats

**Q: How do you think widespread use of battery-powered boats will change society?**

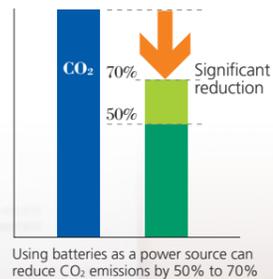
The Raicho-I is the world's first boat to be powered by a lithium-ion battery that has a rapid charging system. Conventional battery-powered boats use lead batteries that

weigh 10 times as much as lithium-ion batteries. Lithium-ion batteries, in addition to helping reduce the weight of boats, can be charged to approximately 80% of their full charge capacities within 30 minutes. Compared to boats of the same class equipped with diesel engines, operating a battery-powered boat costs roughly half (one-sixth if nighttime power is used) and emits 50% to 70% less CO<sub>2</sub>.

Since these new boats run on electricity, they can contribute to society's shift from being reliant on gasoline and other fossil fuels to becoming a low-carbon society.

Also, if people see boats as an environmentally friendly means of transportation, this may promote marine leisure activities and even cause changes to the future of marine traffic and fisheries.

For example, kombu (kelp) cultivation is vulnerable to water pollution caused by the gas and oil discharged from boats. Thus battery-powered boats will contribute to the conservation of the marine ecosystem.



Japan is surrounded by the ocean and has many rivers. This technology is just what Japan needs.



**Tomoji Takamasa**  
PhD in Engineering, Professor, and Dean,  
Graduate School of Marine Science and  
Technology,  
Tokyo University of Marine Science and  
Technology

## The Future of Battery-Powered Boats

**Q: What do you want to achieve with battery-powered boats? And what are your expectations for ULVAC?**

Japan is surrounded by the ocean and has many rivers and isolated islands. For this reason, I strongly believe that Japan truly needs battery-powered boats. Such boats will not only reduce the load on the environment, they will also serve as an important means of transportation in the manner of cars and airplanes, thereby greatly contributing to reductions in traffic jams and accidents as well as the growth of new industries.

I also want to realize the "eco-friendly fishing ports" (ports that aim to prevent global warming by reducing CO<sub>2</sub> emissions from fishery activities as well as to reduce fishery costs by saving energy) being promoted by the Ministry of Agriculture, Forestry and Fisheries. By increasing the number of battery-powered fishing boats and deploying more battery charging infrastructure, such fishing ports will soon move closer to realization. To this end, we are testing

battery-powered boats in fisheries. These efforts will help protect the fishing industry, which is among Japan's most important industries.

Of course, still many challenges remain to be overcome. We won't be able to do this alone. It is only by cooperating with companies that have excellent technology, such as ULVAC, that we will be able to create new value.

I hope that as our partner for making a difference in the world, ULVAC will enhance its technological strengths through this joint research and development as well as our experiment- and verification-related activities.



## Battery-Powered Boats and ULVAC's Technology

In 2010, ULVAC completed a photovoltaic electric vehicle quick-charging system (a PV/EV charging system). This technology enabled our participation in the battery-powered boat project. During the project, we challenged ourselves to develop the motor and drive unit of the "Raicho-S." As EV motors are connected to transmissions, they must be high-speed, low-torque motors in order to generate power. For boats not designed for frequent stop-start operations, ULVAC developed drive units featuring low-speed, high-torque motors capable of being directly connected to propellers (rather than through reduction gears,

which causes power loss). Our technology helped realize this simple propulsion system. In addition to quick chargers and motor inverters, ULVAC has also developed power semiconductors and power generation/storage systems that use natural energy, such as solar and wind power, which are essential for controlling such quick chargers and motor inverters. ULVAC will continue to offer technologies that contribute to society.



Quick-charging system for battery-powered boats



## Progress in battery-powered boats contributes to conserving the global environment. To this end, I'm determined to meet any requests.

ULVAC successfully developed the motor inverters, thereby playing an important role in the battery-powered boat project. For this project, we needed to develop truly unprecedented low-speed, high-torque boat motors in just half a year. Despite the difficulty of such a task, we were able to meet the deadline in cooperation with our research divisions and overseas group companies.

Though the motor inverter installed on the "Raicho-S" is still a prototype, we are pushing forward to commercialize it: we have not only visited China many times to procure reliable parts and components, but we are also verifying such materials internally. We are confident that these steady efforts will lead to the cost reductions necessary to realize mass production of battery-powered boats.

In addition to commercializing the motor inverters for battery-powered boats, we are aiming to install photovoltaic quick-charging systems at fishing ports. To this end, we will offer various technologies by combining the technological strengths of our group companies.



**Koji Shibayama**, Senior Manager, Components Division



Water jet



"Raicho-S"

# Construction of a New, Environmentally Friendly Cleaning Plant

The ULVAC Group audits its environmental facilities upon their opening in order to reduce their environmental loads and prevent environmental incidents.

## Construction of a Cleaning Plant for Large FPDs in Suzhou, China

We are building a new cleaning plant in the Suzhou Industrial Park to provide cleaning services for large FPDs in China (scheduled for completion in December 2011 and to start cleaning operation in February 2012). Designed in accordance with the ULVAC Group's design, construction, and operation standards for chemical treatment plants\*, this new plant will adopt the following new environmentally friendly cleaning methods: recycling of heat, water, and other resources generated from the operation of the plant's equipment as well as the use of new materials and technologies instead of the conventional chemicals.

Wastewater is to be collected by special chemical tanks and discharged in amounts below the statutory effluent limit by the new wastewater treatment equipment. The final

wastewater treatment tank is equipped with double monitoring sensors and automatic control valves to prevent the discharge of wastewater exceeding the limit from the plant.

At this new plant, with a total area of 4,000 square meters (which can be expanded as necessary), we will work to improve product quality, enhance productivity, and operational efficiency as well as promote cleaning line automation. The plant will offer full service to customers, including large equipment production, parts processing, technological development, process provisioning, and cleaning services. We hope this environmentally friendly plant will receive many orders.

**\* Design, construction, and operation standards for chemical treatment plants:**  
The ULVAC Group's standards intend to ensure that plants handling surface treatment and cleaning operations that use acids and alkali have environmentally-conscious designs and are safely built and operated with minimal environmental impact.



Cleaning Plant

### Outline of the New Plant

- Location:** On the premises of ULVAC (Suzhou) Co., Ltd., No. 277 Suhong East Road, Suzhou Industrial Park, Suzhou City, Jiangsu Province
- Construction Schedule:** April 2011 start, December 2011 completion
- Building:** One-story plant with a total floor area of 4,000 m<sup>2</sup>

### ULVAC (Shanghai) Trading Co., Ltd.

Sale and customer support for ULVAC products in China



### ULVAC (Suzhou) Co., Ltd.

Production and sale of vacuum equipment, devices, and components in China



Cleaning Department, Suzhou Branch, ULVAC (Shanghai) Trading Co., Ltd.  
Tang Jian-Ming, General Manager (center)  
Zhou Ming-Hua, Deputy General Manager (left)  
Wang Bin, Manager (right)

## Targets of ULVAC environmental initiatives and FY2010 results

Initiative item	Environmental policy	Action item	ULVAC environmental initiative target	FY2010 results	Evaluation	FY2011 environmental initiative target
Environmental contribution through our products	To provide products that help save energy and resources and protect the environment	Distribution of products contributing to the environment/re-use of resources	Expanding sales of eco-friendly products	We actively participated in exhibitions and trade fairs and promoted our products. We installed photovoltaic quick-charging systems on Yakushima Island and other locations. We also installed quick-chargers in various locations, contributing to an approximately 20,000 kg annual reduction in CO <sub>2</sub> emissions	○	Expanding sales of eco-friendly products
		Green procurement	Completing elimination of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE by July 2011	Some of the products of the Components Division and the Materials Division now comply with RoHS	△	Completing elimination of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE by July 2013
	To promote energy and resource savings and environmental protection in products (equipment and components)	Energy savings through production processes and products	Reducing energy consumption of products	We gathered data on our equipment's energy consumption while in use and examined how to reduce such consumption. We will apply our findings in our products	○	Reducing energy consumption of products
Improving efficiency in usage of target and process materials (gas)		Improving efficiency in usage of various target materials and assessed our results with actual equipment and systems. We are investigating further efficiency improvements	We improved efficiency in usage of various target materials and assessed our results with actual equipment and systems. We are investigating further efficiency improvements	○	Improving efficiency in usage of target and process materials (gas)	
Environmental contribution at our plants and offices	To promote energy and resource savings and environmental protection in production processes	Practicing the 3Rs	Recycling raw materials	We examined recycling of various target raw materials. For some target materials, we established a procedure from the solution to the recycling stage	○	Recycling raw materials
			Recycling and reduction of waste	We successfully improved the efficiency of waste recycling by reviewing the waste treatment method in the Chiba area. We lowered the landfill rate in the Chigasaki and Susono areas to below 3%	◎	Recycling and reduction of waste
		Resource savings	Improving yield of materials	We improved the yield of long MoTi products. We will reflect the higher yield by reducing costs	◎	Improving yield of materials
		Improvement of the plant and office environments	Reducing usage of harmful chemicals	We improved the safety of the specialty gas by strengthening usage management. Through proper use, we reduced wasteful use of such gas	○	Reducing usage of harmful chemicals
		Energy savings	Reducing energy consumption	We upgraded the heat source equipment at the Institute of Semiconductor & Electronics Technologies, reducing energy consumption by approximately 20% in crude oil terms	◎	

◎ Target achieved ○ Target 70%+ achieved  
△ Target 50%+ achieved × Target less than 50% achieved

## Environmental performance of the ULVAC Group

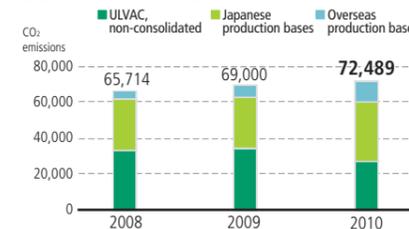
The ULVAC Group consists of about 60 domestic and overseas companies, each of which is committed to conserving energy and resources. We will continue to strive to use resources effectively and conduct our businesses in an environmentally friendly manner.

### Towards more efficient use of energy

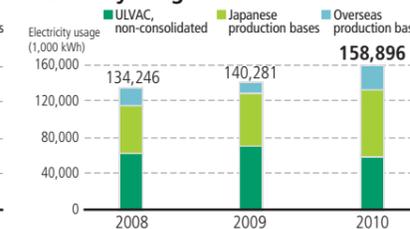
The ULVAC Group promotes energy conservation at its R&D and production sites. In FY2010, the group's overseas

energy use increased by 194% due to both steady production and the expanded scope of companies targeted for calculation. On the other hand, the group's domestic energy use dropped to 96.4% of the previous year's level thanks to stricter energy management. As overseas production is expected to continue to increase throughout FY2011, improving overseas energy use efficiency remains a challenge. We will continue our efforts to reduce energy use.

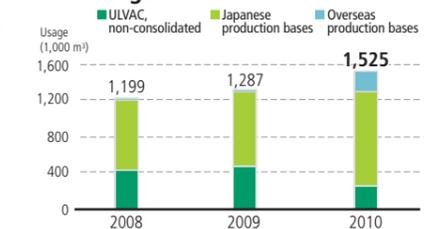
### CO<sub>2</sub> emissions trends



### Electricity usage trends



### Water usage trends



### Material balance (ULVAC Group)

INPUT			OUTPUT	
<b>Electricity usage</b> 158,896,000 kWh	<b>Fuel usage</b> ● Heavy oil: 1,178 KL ● Kerosene: 69 KL ● Light oil: 89 KL	<b>Chemical substances (PRTR-listed)</b> 275 t	<b>CO<sub>2</sub> emissions</b> 72,489t-CO <sub>2</sub> Caused by use of electricity, gas, and fuel	
<b>Gas usage</b> ● PG: 130 t ● LNG: 746 t ● City gas: 1,939 t	<b>Water usage</b> 1,525,000 m <sup>3</sup>	<b>Packaging</b> 1,168 t	<b>Total waste emissions</b> 7,586 t	<b>Landfill rate</b> 7.2%

\* This data is based on individual data from major Japanese production bases (19 sites), overseas production bases (26), and R&D bases (4).  
\* Data for overseas production bases comes from 11 of the 26 such bases.  
\* Data for packaging is the total from 16 of the 44 sites.

Topics

### Accolades for our contributions in reducing greenhouse gas emissions

#### Recipient of the first "Kanagawa Award for the Prevention of Global Warming"

ULVAC won the first "Kanagawa Award for the Prevention of Global Warming" in the Greenhouse Gas Reduction Technology Development Category for our development of a photovoltaic quick-charging system for electric vehicles. This award is given to enterprises, organizations, or individuals that have made excellent achievements toward greenhouse gas reduction. In this case, ULVAC developed the first photovoltaic quick-charging system in the prefecture and installed the system in Chigasaki's municipal parking area. The award is in recognition of our efforts to develop charging infrastructure for electric vehicles and promote the use of natural energy.

At the first awards ceremony, 10 companies received an award in the Greenhouse Gas Reduction Performance Category while 5 companies received an award in the Greenhouse Gas Reduction Technology Development Category. ULVAC entered the contest upon the recommendation of Chigasaki City and was the only winner among the 15 winners to be recommended by a public institution.



Director Yamamoto (left) receiving the award from the then governor of Kanagawa Prefecture

### Saving electricity with renewable energy: solar and wind power

#### Developing a battery charging station for power-assisted bicycles

ULVAC developed and launched the Hybrid Cycle Pit, a battery charging system for power-assisted bicycles that integrates a small wind power generator, a solar power generator, and a battery charger.

The system's lithium-ion secondary battery makes it possible to offer 24-hour charging service using only clean energy (no commercial power supplies are necessary). The system can charge the batteries of up to 5 power-assisted bicycles at once, and as many as 10 bicycles per day. The electricity stored in the secondary

battery can also be used as emergency power.

The ULVAC Group will augment our product development efforts and business activities in order to realize a sustainable society using clean, renewable energy.



In July 2011, a ceremony to mark the opening of the Hybrid Cycle Pit was held in Chigasaki Park in Chigasaki City, Kanagawa

### A distinguished natural heritage with a quick-charging station

#### Installing an electric vehicle quick-charging station with a power storage function on Yakushima Island, a World Natural Heritage Site

ULVAC installed an electric vehicle quick-charging station with a power storage function in the parking area of Kurio Beach in Yakushima Town, Kagoshima Prefecture. This system generates power using a combination of solar panels (5 kW) and a commercial power supply, storing the generated power in a lithium-ion battery. Its quick charger is capable of charging the batteries of electric vehicles to up to 80% of their full charge capacities in about 30 minutes.

This station can also be used as an emergency power system in the same manner as the battery charging station for power-assisted bicycles (above).

To accommodate foreign tourists to Yakushima

Island, the charging service is made available in four languages (English, Chinese, Korean, and Japanese). ULVAC hopes that this charging station will help reduce CO<sub>2</sub> emissions and conserve the island's rich natural environment.



Electric vehicle quick-charging station with a power storage function



The monitor offers a choice of four languages

## Chemical Substance Management

The ULVAC Group is committed to properly managing the various chemical substances used in the research and development as well as production processes of products and parts.

### Elimination of RoHS-Listed Substances

The ULVAC Group worked hard to eliminate RoHS-listed substances from our procurement items and products with an initial deadline in 2006 and a second deadline in 2008, but we were unable to fully achieve elimination before these deadlines. The third deadline was set to June 2011.

By this time, we were able to raise the RoHS conformity rate of our 1.6 million procurement items to 99.8%.

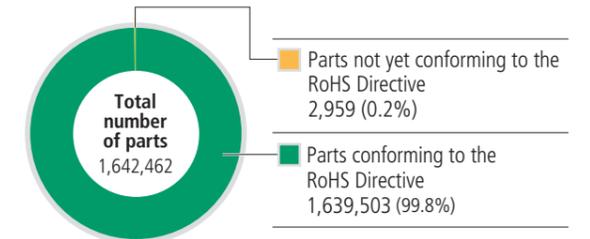
As for the number of products, however, 2,731 products (approximately 30%) conform to the RoHS Directive.

The remaining 70% of non-conforming products include many large devices composed of thousands or tens of thousands of parts. In some such non-conforming

devices, conforming parts account for 99.8% of all parts.

Unfortunately, we have yet to fully eliminate RoHS-listed substances, but we will review our targets and continue elimination efforts with our goal of passing a healthy environment to the next generation.

#### Promoting conformity to RoHS of registered parts



### Toward Proper Management of Chemical Substances

The Tsukuba Institute for Super Materials researches and develops new materials, functions, and better deposition processes. Consequently, it handles many kinds of chemical substances as well as nanomaterials, such as carbon nanotubes.

To reduce the risks involved in the use and storage of chemical substances, the institute collects MSDS\* and other hazard and toxicity information as well as safety information, assessing the risks of each research and development effort in advance. The March 11 Great East Japan Earthquake was sufficiently large to destroy the welds and wires of the tip-resistant fittings of the chemical storage cabinets, but the cabinets did not fall, thereby protecting the stored chemical substances. I believe this is evidence that the personnel responsible for

chemical substance management at each laboratory are storing chemical substances using the most suitable method for each kind.



The earthquake damaged the earthquake-resistant fittings of this chemical storage cabinet.



Takahiro Nakayama, Tsukuba Institute for Super Materials

\*MSDS: Abbreviation of material safety data sheet. Such sheets contain information necessary for safely handling chemical substances.



## Organization

The ULVAC Group sets personnel policies and offers a variety of talent development systems to enable our staff members to work to their full potential. This section features the voices of employees, including people in charge of specific systems, describing how these systems are used.

## Open and Dynamic Organizations Facilitate Innovative Development

ULVAC's corporate philosophy includes a policy of maintaining a free and open culture. We believe that technological innovation requires a free and level organization. ULVAC's driving force is an environment that freely generates ideas regardless of position or rank and where people are free to speak their mind.

### A culture of taking challenges, with no fear of failure

In lieu of a performance-based wage system, ULVAC maintains basic aspects of Japanese-style employment. Employment practices such as a seniority system and lifetime employment create psychological allowances for failure and encourage taking on challenges. Such practices also promote collaboration among researchers and help them focus on team achievements.

We use extremely simple seniority-based pay systems. Although we conduct performance reviews, these do not result in a significant wage differential. This is based on the belief that excess competition within the company interferes with teamwork, and that if we are to compete with anyone, it should be someone outside.

### Developing outstanding employees

The key to developing outstanding employees is knowing how to foster a person who can foster others. ULVAC trains its employees according to an annual plan adopted by our Training Committee.

To give an example, our top executives and other people concerned, including those from Group companies, take part in our strategy study meetings where free discussion takes

place on various issues, such as reviewing the nature of our business and medium/long-term strategy. By working cross-organizationally across departmental boundaries, participants look for and carry out solutions, a process which teaches them strategic thinking with a multilateral approach. Through discussions with executives and their senior employees, young employees take an active part in theme-specific technology study meetings in order to learn about different ways and styles of thinking.

Persons wishing to review the basics or study for another type of occupation are offered a wide range of training opportunities through essential basic education, which young employees are required to take.

We also offer diverse training programs, such as a newly started overseas training program aimed at developing personnel with international mindsets.



**Tomoyasu Suzuki**  
General Manager  
Personnel Department

## Personnel Data

ULVAC promotes work/life balance by continuously reducing hours of overtime work and encouraging employees to take paid days off. We continue to advance the hiring of people with disabilities, and as in the year before, we employed more such persons than the law required.

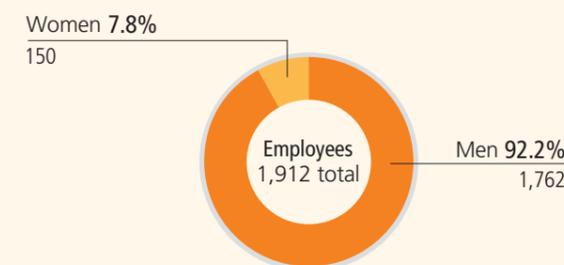
### Number of employees working in ULVAC Group companies [FY2010]



### Changes in the number and percentage of disabled people employed (ULVAC, non-consolidated)



### Percentage of men and women employees [FY2010] (ULVAC, non-consolidated)



### Percentage of men and women in management positions [FY2010] (ULVAC, non-consolidated)



## Topics

### Young employees share their opinions with the president

President Suwa initiated informal meetings between himself and young employees, describing such meetings as follows: "Although ULVAC regards itself as a level organization, there seems to be a barrier between myself and the young employees. I would like to remove that barrier and offer our employees an opportunity to speak their minds." Meetings are held once per month and attended by those chosen from among the young employees born in that month. Participants share dinner in casual dress at an outside restaurant.

For most participants, this is their first experience to talk with the president. These meetings have three rules: 1. Don't state non-constructive opinions; 2. Don't purposely create antagonism; and 3. Don't slander specific individuals. So long as participants observe these rules, they may talk about anything they choose.

Participants ask various questions, including those on topics such as business management and the president's work as well as

private matters. The president also asks participants many questions.

We have received many comments from attendees, such as "The meeting increased my motivation for working with President Suwa" and "I picked up many useful tips on how to perform my work." The photos taken at these meetings are always full of smiling faces.

This program is very much in line with the ULVAC approach. We plan to expand this program to other areas and continue to improve and conduct these meetings.



Group photo taken at an informal meeting

## A Workplace for Diverse Human Resources

For ULVAC to grow, we need everyone who works for us to tap their individuality and maximize their potential. We support our workers and help advance their careers, whatever their situation.

### Coming back from parental leave

My parental leave was initially scheduled to end after one year, but I was unable to find a daycare center that would accept my child due to quota limitations, even by the end of the leave period.

I therefore applied for permission to extend my leave for approximately half a year, so in total I took one and a half years of parental leave. I am very grateful that I could return to my previous work despite such a long period of absence.

Since my husband lives by himself in Yamagata on a job assignment, I have no choice but to take leave when my child is

sick, causing a great deal of inconvenience to the other members of my division. However, my managers and colleagues are all very encouraging and I am thankful to work in such a pleasant environment.

I am currently using the short working hour system, which means that I will be working on a limited schedule for some time. Despite these limitations, I am working toward my full potential as a member of ULVAC in order to achieve successful results in the most efficient way possible.

**Maiko Gondo,**  
Tsukuba Institute for Super Materials



### Sign language as a means of communication

I held sign language training sessions every Wednesday after work for employees interested in sign language.

Although at first the participants had difficulty in learning sign language, they memorized terms and expressions one by one.

I was deeply impressed and pleased with the participants' sincere attitudes and their serious efforts toward learning sign language. Now that the four months of training sessions are over, I miss them very much.

Sign language is not just for people with hearing impairments.

Sign language can be used on many different occasions, such as when communicating with a person standing on the opposite platform or for having a conversation while diving in the ocean.

I would like to provide many more people with opportunities to learn sign language.

**Yasuhiko Iwamoto,**  
Procurement Center



### Skills training in China

I have often been to China on business trips. This time, I was invited by our group company in Shenyang, which manufactures heat treatment equipment. I have thus been working in China as a leased employee for three years. I am in charge of general education and training for matters related to products, including manufacturing, assembly, environmental policies, and safety. Due to cultural differences, sometimes it is difficult for me to provide effective training. But as for daily life, home is where you make it, and

I am enjoying my life here in China without suffering any serious inconveniences.

Although the company I am working for has a long history of manufacturing devices, it still needs to learn many things about newly developed equipment. I think there will be plenty of work for me to do in China while I remain in good health.

**Toshiharu Ishikawa,**  
ULVAC Vacuum Furnace (Shenyang) Co., Ltd.



### Training for new employees

I was concerned when I started working because I had no experience using vacuum equipment as a student. ULVAC's new employee training program is composed of three major parts: lectures, training at the Fuji Susono Training Center that focuses on practical exercises, and on-the-job training in our assigned positions. I learned about vacuum technology through lectures and deepened my understanding by actually operating equipment during the exercise training sessions.

I am currently receiving on-the-job

training and working on various tasks with the help of my senior colleagues. At ULVAC, even new employees are allowed to do tasks independently, which gives me a sense of fulfillment every day. The new employees are all friendly with one another. Many of them are also very eager to improve themselves and always inspire me to learn more about my work. I do not have much time left before completing my training, but I want to strive to fully develop my potential by effectively using the limited time I have.



**Aki Tonosaki,**  
Materials Division

### Serving as a bridge between India and Japan

ULVAC's greatest advantage lies in its willingness to take on new challenges and a new knowledge. In order to achieve these goals, we must remain firm in our commitments. In other words, we need strong resolve to never give up until we succeed.

Since I joined ULVAC, I have learned many things about the unique professional approach of Japanese companies through

on-site communication with my colleagues. I consider my experience at ULVAC a priceless asset. My work developing mutual understanding by talking with Japanese people has strengthened my desire to serve as a bridge between India and Japan to make the most of my international experience.

**Biswas Ramkrishna,**  
Sales & Marketing Planning Department



## Supporting Physical and Mental Health

### Health Promotion Office Initiatives

ULVAC's Health Promotion Office has implemented three measures to promote mental health. First, we offer an internal desk for employees to seek advice regarding physical illnesses and other issues, and provide consultation services. In FY2010, we received approximately 60 requests for such services. Second, we provide self-care training to new employees as well as training for managers to help them promptly detect stress-related psychological issues among their subordinates. We have also started sending occupational health staff to division meetings to provide health training. Finally, we support employees on leave by providing periodic consultation services through occupational health staff from the period of leave through their restarting work so that they are able to recover from the illness and return to work without suffering a relapse. In FY2011, the Health Promotion Office aims to provide even more opportunities for training as well as to improve the training content.

To support employees' physical health, we are working to provide thorough follow-up health care based on medical examination results. In the past, our work has been focused on conducting interviews with employees for whom treatment was deemed necessary based on medical examination results and recommending to such employees that they receive treatment at hospitals. However, thanks to an increase in the number of occupational health nurses in our Health Promotion Office, we have been able to develop a health care guidance system aimed at preventing future lifestyle-related diseases. In FY2010, our new service handled approximately 30 cases. We will continue to work to raise the health awareness of as many employees as possible. In FY2011, we also plan to perform sleep apnea syndrome screening tests in order to improve work performance by promoting sound sleep with the help of the ULVAC Health Insurance Association.



Tomisato Plant terrace (resting space for employees)



**Tomo Nakao,**  
Occupational physician, Health Promotion Office

# Occupational Safety and Health

Among the ULVAC Group, "Safety First" is an ideal built into our Basic Philosophy of business operations, and as such we endeavor to secure safety both in our work environment and in products and services for our customers. We run our own occupational safety and health management system (OSHMS)\* (hereinafter, "Safety Management System"), which focuses primarily on risk assessment, to create an ideal environment.

## Development of a safety management system

— To ensure the safety and health of our customers and employees

To realize our basic policy for Safety Management System, ULVAC is striving to the utmost to focus on occupational safety and health activities. The number of product accidents at our customer sites has decreased by 90% in comparison with the FY2002 level. However, the number of occupational accidents in our plants has continued to oscillate without showing signs of improvement; we must break this cycle. To this end, we conducted risk assessments for the first time last year and evaluated the risks using a scoring system in which lower scores indicate smaller risks. Assessing risks based on an objective standard has enabled us to make improvements. We have also tried to ensure compliance with safety rules and implemented punitive measures for violating such rules in order to assure and face safety more seriously by establishing this system.



**Takeo Kato,**  
Director and General Safety  
and Health Manager

As a result of these measures, we saw a decreasing trend in the number of work accidents in FY2010. We will implement these measures continuously throughout the entire ULVAC Group.

ULVAC suffered serious product losses in the Great East Japan Earthquake; however, there were no casualties. We are currently reviewing our disaster prevention measures for inundations caused by tsunami waves and river flooding.

### ULVAC Safety Management System (OSHMS) Basic Policy of Safety & Health System

By setting "Safety First" as our basic philosophy, we will introduce a occupational safety and hygiene management system to secure the safety and health of all employees and users of ULVAC products and services under the slogan "Healthy ULVAC."  
To do this, we will implement:

- 1. Compliance with codes and regulations as well as implementation of risk assessment**  
Comply with the Codes for Occupational Safety & Health Management as well as the Rules according to ULVAC's OSHMS. Conduct Risk Assessment in order to perform Occupational Safety & Health Management activities with the help of all employees.
- 2. Safety assurances for ULVAC products**  
Comply with ULVAC's standard for safety design and perform risk assessment of our products in order to deliver safe products and services to our customers.
- 3. Scheduled training on ULVAC's Safety Management system and Product Safety**  
For all of our employees and contractors' employees, perform Occupational Safety & Health training based on the ULVAC Safety Management system while offering scheduled Product Safety training for our users.
- 4. Global expansion of the ULVAC group**  
Through the Safety & Health promotion activities conducted by the Global Safety Management Committee, we will try to create an appropriate work environment for the whole ULVAC group and contribute to the prosperity of our businesses.

Established on July 1, 2011

**Hidenori Suwa,** CEO, ULVAC, Inc.

## Global measures for overseas business expansion

The ULVAC Group has expanded rapidly in recent years, and our General Safety and Health Managers continue to conduct high-level patrols at our group companies during this time of strong growth. We believe it is important to provide direct guidance on safety to our group companies' local employees through these patrols as well as to enhance their safety awareness. Patrols are conducted mainly in various parts of South Korea, Taiwan, and China. We place our highest priority on China, where our business expansion has been particularly rapid.



High-level patrol in China

## Labor safety

Thanks to various preventive measures, FY2010 saw a decrease in the occupational accident rate. In particular, as a result of strict enforcement of a rule to wear protective glasses, we succeeded in completely eliminating eye-related accidents during work, which had occurred frequently until last year. Based on our Safety Management System, we will strengthen punitive measures for violating safety rules, allocate work supervisors more appropriately and improve our safety education program for subcontractors in order to eliminate occupational accidents throughout our group companies.

## Product safety

In FY2010, the product accident rate decreased by half in comparison with the FY2009 level. The rate has continued to decrease annually as a result of various measures taken since FY2003. Based on our product safety system, we will continue to conduct risk assessment of ULVAC products and will improve our basic education program on product safety standards on a global level for all employees engaged in processes, from manufacturing through to the handling of products, in order to eliminate product-related accidents.

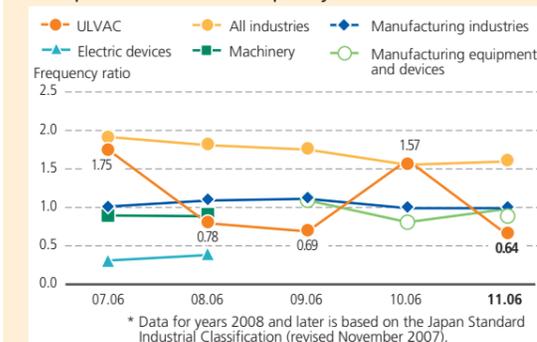
## Emergency life-saving initiatives

To improve our employees' skills and awareness of emergency life-saving techniques through in-house training, we installed a total of six AEDs in the ULVAC Chigasaki Head office/Plant.

This year, at our group company adjacent to the Chigasaki Head office/Plant, there was a case that required emergency treatment. We were able to save the employee's life through the proper use of one of the AEDs installed at the plant. The group and security company employees stationed at ULVAC who administered the emergency treatment were awarded a commendation from the Chigasaki City Fire Department.

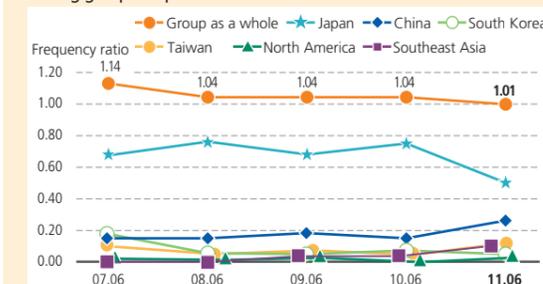
## Trends in product accident counts/occupational accident rates

### Occupational accident frequency ratio



Until FY2007, our reports provided data only for our Chigasaki Plant, but reports since FY2008 cover all ULVAC's sites and branches. Also, in accordance with changes to industry classifications, we used data for the production machinery and equipment manufacturing industry to make the comparisons for years 2008 and later. In FY2010, the occupational accident rate decreased by approximately 60% in comparison with the previous year.

### Trends in the number of occupational accidents among group companies

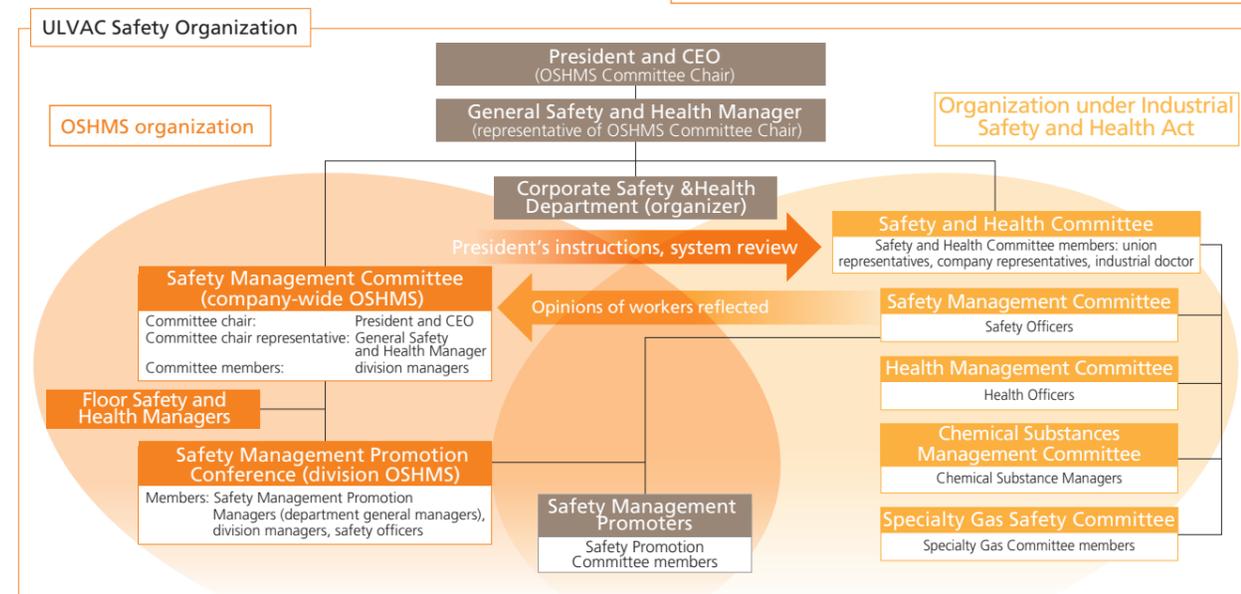


This graph shows the number of occupational accidents by country or region, expressed as ratios to the number of occupational accidents for all ULVAC Group companies in FY2005. In FY2010, the number of accidents decreased in comparison with the previous year in Japan and South Korea, but increased in China, Taiwan, and other areas, consequently remaining at the same level for the ULVAC Group as a whole.

### Trends in product accident counts ratio



This graph indicates the number of product accidents per unit of sales (ULVAC, non-consolidated). (Rates shown on the line are relative to FY2001, which is indexed as 100.) The number of product accidents for FY2010 decreased by half in comparison with FY2009.



\* Occupational Safety and Health Management System (OSHMS): A system for systematically managing occupational safety and health



## Interview with an Environmental Safety & Health Department trainee, ULVAC KOREA, Ltd. (UK)

My name is Park Sung-Woo and I work at the UK Environmental Safety & Health Department. During my three-month training at ULVAC's Corporate Safety & Health Department, I participated in patrols and meetings on occupational safety in order to better understand ULVAC's safety management operations. I was particularly pleased for the chance to become acquainted with other ULVAC employees.

Based on what I learned through my training experience in Japan, I will do my best to improve safety in ULVAC KOREA after returning to South Korea.

**Park Sung-Woo**  
Environmental Safety & Health Department,  
ULVAC KOREA, Ltd.



**Scholarship donation — ULVAC KOREA, Ltd. —**

As part of its scholarship program, ULVAC KOREA, Ltd. offers scholarships through corporate citizenship initiatives twice per year (in May and November) to Cheongbuk Middle School and Pyeongtaek Mechanical and Technical High School in Pyeongtaek, South Korea.

ULVAC KOREA began offering scholarships to Cheongbuk Middle School in May 2004 and to Pyeongtaek Mechanical and Technical High School in November 2006. The company has provided a total of 67 million won in scholarships to 200 students.

ULVAC KOREA plans to increase the amount of scholarships awarded in 2011 so that more students may make effective use of the scholarships in their studies.

In September 2010, the company was awarded a testimonial by the presidents of Cheongbuk Middle School and Pyeongtaek Mechanical and Technical High School. We will continue our efforts to contribute to society.

**“Providing educational opportunities to children greatly contributes to the future.”**



**“We wish to make ULVAC better known through dialogue with local community residents.”**

**Plant tour program**

ULVAC conducts plant tours primarily for local public organizations. In FY2010, a total of 357 people from 13 organizations participated in tours at the ULVAC Chigasaki Plant. We will continue to create opportunities for local community residents to deepen their understanding of ULVAC through plant tours and will take an active part in holding dialogues with residents.



**“A local community team, we stand in the same field to contribute to society.”**



**Bellmare**

**As a CSR partner of the local J. League team, Shonan Bellmare**

This is the second year ULVAC and Shonan Bellmare have been connected through CSR partnership.

Shonan Bellmare performs all types of social initiatives, and ULVAC is proactively joining the team in CSR initiatives that are particularly relevant to the community.

\* See page 8 for a report on ULVAC's earthquake relief activities through Shonan Bellmare

**Global Corporate Citizenship Initiatives**



Based on its corporate philosophy of contributing to the growth of industry and science with innovative, cutting-edge technologies, the ULVAC Group provides unique technological innovations globally and implements initiatives for solving various social problems by using ULVAC's technologies and human resources.

**“Many small acts of charity eventually generate great power. We will continue our activities to spread such power throughout the world.”**



**Support for local health care facilities — ULVAC KOREA, Ltd. —**

ULVAC KOREA, Ltd. implements a wide range of corporate citizenship initiatives. Of particular importance are the activities started in 2009 by the Charity Service Association, which is composed of volunteers gathered from among the employees of the ULVAC Group companies in South Korea. In FY2010, members of the association visited local health care facilities in order to clean, serve food, and help make arrangements for a picnic in the suburbs.

We will continue our efforts to support local communities through corporate citizenship activities and will actively promote environmental conservation initiatives.

**Tanbo (rice field) Project**

The Tanbo (rice field) Project, which was popular both inside and outside the company in FY2010, kicked off in 2011 with a planting event on May 28.

In Namegaya, Chigasaki City, where the rice is cultivated, there remain to this day unused rice paddies as well as traditional landscapes. We plan to grow corn, peanuts, green soybeans, sweet potatoes, and other crops in these fields as a new experiment in the area's natural environment. We will also expand our communication network with the local community in collaboration with Bunkyo University.

In addition, we will provide a program for veterans\* this year so that participants can begin to understand the difficulties and benefits of cultivating rice by growing rice from scratch.

\* Program for veterans: A program for 2010 program participants who have applied to participate for a second full year



**“The first step toward solving environmental problems is to understand nature's importance. ULVAC conveys the importance of both nature and communicating through its Tanbo (rice field) Project.”**



## IR Communications

ULVAC endeavors to promote communication with and provide information to Japanese and overseas shareholders and investors by leading tours of our plants in Japan and those of our affiliates overseas and holding one-on-one meetings with investors.

### Promoting IR in response to changing business conditions to smooth investor communication

Since our listing on the First Section of the Tokyo Stock Exchange in April 2004, ULVAC's practice of active IR has focused on Japanese institutional and one-on-one investors and analysts. During that time, as a result of proactive business investments in South Korea, Taiwan, and other developing countries, ULVAC's overseas sales have continued to increase and now comprise approximately 60% of our total sales for FY2010. Moreover, the structure of our sales has shifted from primarily FPD production equipment to energy and environmental (including solar cell) production equipment. Against this background, owing to rising global environmental awareness, overseas institutional investors are keenly interested in our company, and the percentage of our shares held by non-Japanese investors is about 24% (as of June 30, 2011). For this reason, we now distribute information to overseas institutional investors and hold overseas information sessions by conducting direct visits as occasions demand in order to make sure overseas investors have up-to-date information.

### Periodic overseas IR initiatives

We hold one-on-one meetings with institutional investors each year in Singapore and San Francisco. The San Francisco meetings are scheduled to coincide with SEMICON West and Intersolar North America, the international exhibitions that draw visitors from all over the United States as well as South Korea, Taiwan, and Japan. This way, we can hold a large number of one-on-one meetings, making our IR more efficient.

### Periodic IR conferences for foreign institutional investors

ULVAC takes part in large-scale conferences held by a securities company thrice per year in Japan. Several hundreds of institutional investors from all over the world come together



Overseas IR meeting

for the conferences and one-on-one meetings as well as to deepen their understanding of ULVAC. We also actively participate in technology conferences and other events held as occasion demands in order to present our cutting-edge technologies.

### Timely information by telephone, video conferencing, and conference call

We value one-on-one meetings with institutional investors, but we also make full use of telephone, video conferencing, and conference calls to communicate in a timely manner.

### Plant tours at ULVAC overseas affiliates

ULVAC is actively moving into South Korea, Taiwan, China, and other developing countries to manufacture there, and along with this our rate of local procurement is rising rapidly. We have two plants that manufacture FPD production equipment in South Korea and one plant that manufactures semiconductors and electronic parts production equipment in Taiwan. Also, in China, we have eight plants, including plants that manufacture LEDs as well as other electronic parts production equipment, heat treatment furnaces, and other industrial equipment in addition to vacuum pumps and parts. These are active manufacturing bases, providing a foundation for ULVAC's further growth, so we are eager to offer tours for institutional investors at these plants.

### Improving content in English versions of annual report and website

Even before our stock exchange listing, ULVAC was already producing an annual report in English to provide information for overseas investors. Our English-language website provides even more information with postings of our financial results summaries in English (in excerpt form) and presentation materials.

ULVAC conducts a wide range of IR activities for institutional and



IR information presented on the official ULVAC website

one-on-one investors and analysts in Japan and abroad. We keep our regular information up to date by posting timely

settlements of accounts and management information on our website.



### A new system for actively promoting public relations, IR, and CSR activities

We established a Corporate Communication & IR Team in FY2011 to create a new system.

Our Corporate Communication & IR Team has been given the role of providing up-to-date information about ULVAC's business, including our corporate finance and growth strategies, not only to institutional investors in Japan and overseas but also to one-on-one investors and all of our stakeholders. We also incorporate CSR into this work in order that we may organize activities by integrating the roles of public relations, IR, and CSR.

We will continue to provide timely information to our investors and other stakeholders and strive to our utmost to maintain good communication with our investors.

**Takayuki Usumi**,  
Senior Manager, Management  
Planning Department,  
Corporate Communications & IR Team



## Stock Position (as of June 30, 2011)

Total number of issuable shares:  
80,000,000 shares

Total number of issued shares:  
49,355,938 shares

Number of shareholders:  
25,353

### Major shareholders

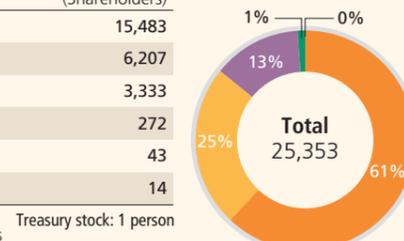
Name of shareholders	Number of shares in possession (1,000 shares)	Ratio of voting rights (%)
TAIYO FUND, L. P.	3,936	7.98
Nippon Life Insurance Company	3,242	6.57
Mizuho Bank, Ltd.	1,916	3.88
Sumitomo Mitsui Banking Corporation	1,864	3.78
The Master Trust Bank of Japan, Ltd. (Trust account)	1,734	3.51
Japan Trustee Services Bank, Ltd. (Trust account)	1,727	3.50
Association of Employee Shareholders of ULVAC	1,257	2.55
State Street Bank and Trust Company	1,188	2.41
The Bank of Tokyo-Mitsubishi UFJ, Ltd.	910	1.84
Inabata&Co.,Ltd.	795	1.61

(Note) Percentage ownership is calculated after deducting treasury stock (2,875 shares).

### Distribution of shareholders by number of stock units (Shareholders)

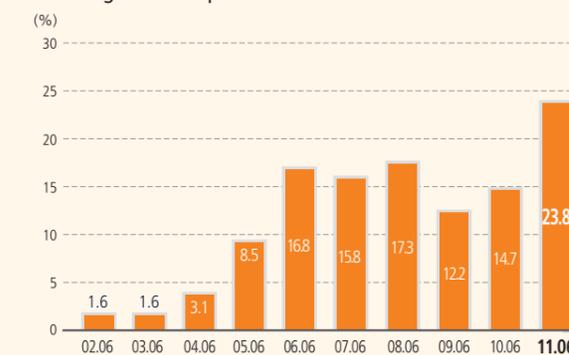
0 to 2	15,483
3 to 9	6,207
10 to 99	3,333
100 to 999	272
1,000 to 4,999	43
5,000 or more	14

\* 1 stock unit: 100 shares



Treasury stock: 1 person

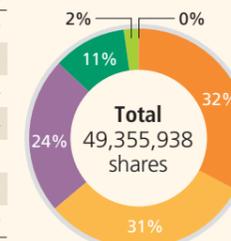
### Percentage of non-Japanese shareholders (%)



### Distribution of number of shares by category (Shares)

Financial institutions	16,135,320
Individuals and others	15,185,186
Foreign-based corporations	11,702,574
Other domestic corporations	5,339,174
Securities companies	938,106
Foreign individuals	52,603
Governments	100

Treasury stock: 2,875 shares



# Corporate Governance

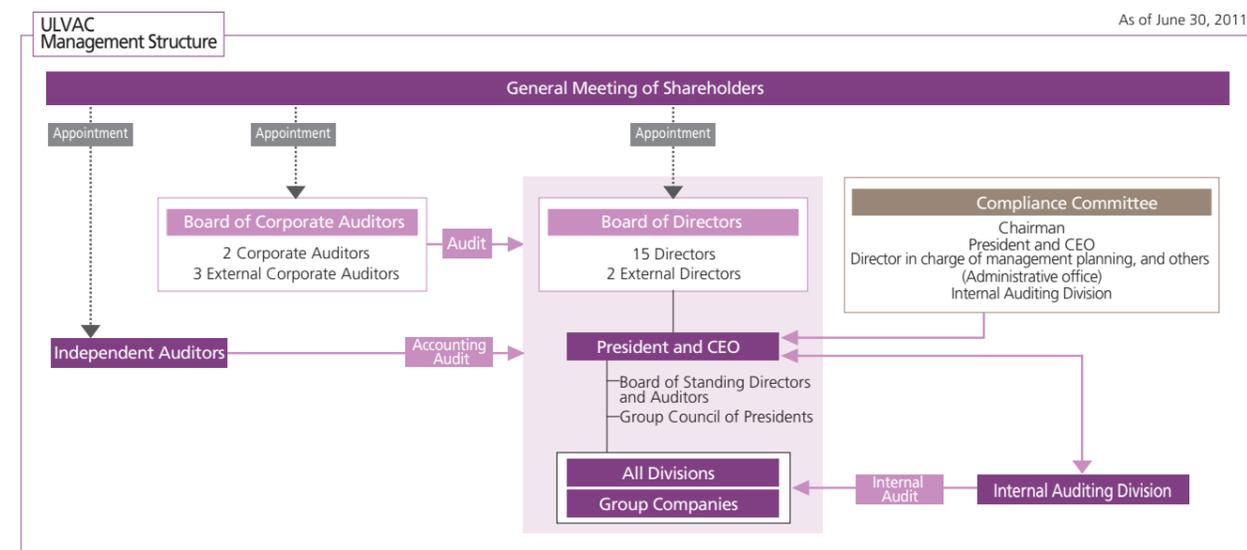
The ULVAC Group regards corporate governance to be one of the most important issues for business operations. We aim to conduct highly transparent and fair business operations that reflect prompt management decisions.

## ULVAC's Management Structure

ULVAC regards fairness, neutrality, and transparency as vital for business operations. Accordingly, our 17-member Board of Directors includes two external directors, and the five-member Board of Corporate Auditors includes three external corporate auditors. The Board of Directors meets as required to maintain momentum, in addition to the regular monthly meetings. The corporate auditors have established close ties with the Internal Auditing Division and also with independent auditors, while maintaining the necessary objectivity for closely overseeing the business structure. ULVAC's business structure has been configured to allow prompt management decision-making, while maintaining sufficient monitoring functions.

## Operational Structure

ULVAC has established a Board of Standing Directors and Auditors to supplement the Board of Directors, to enable prudent examination of key business matters when conducting operations. Meetings of the Board of Standing Directors and Auditors are held twice a month on a regular basis, and additional ad-hoc meetings are held as required, enabling prompt management decision-making. The corporate auditors participate in all important company meetings including those of the Board of Standing Directors and Auditors, so that they can impartially express their opinions and conduct monitoring activities.



# Compliance

To introduce systems for full compliance with laws and regulations, the ULVAC Group has systematically established Compliance Regulations and related rules. In accordance with these regulations and rules, the ULVAC Group has also established operational procedures for the Compliance Committee and the Compliance Violation Reporting System and has been working to cement a spirit of compliance across the company.

## Establishment of a Corporate Code of Conduct

ULVAC has established a Corporate Code of Conduct consisting of 18 items that describe the behavioral standards expected of employees. After describing the details, we give

employees a booklet that describes the content of this code. The booklet helps employees to act in compliance with the law as a representative of our business.

## Compliance with Laws and Regulations via the Compliance Violation Reporting System

ULVAC has developed a Compliance Violation Reporting System to minimize the effects of any violations of laws and regulations. The contact point for the Compliance Violation Reporting System is the Internal Auditing Office that serves as the secretariat of the Compliance Committee, the internal compliance investigation division. To facilitate the use of the Compliance Violation Reporting System, the independence of the office's activities is ensured, and anonymous information is accepted. Moreover, the President and general managers of each department serve as members of the Compliance Committee to ensure prudent examination while assuring the fairness of internal investigations. Each member is required to maintain strict confidentiality, and to operate the system so that reporters and investigators are not treated detrimentally. In this manner, internal investigations are carefully conducted; numerous interviews are held with

both internal and external parties, and attorneys attend any cases requiring their expertise.

## Dealing with Acts of Violation

If, as the result of an investigation, the Compliance Committee finds that laws and internal regulations are being violated, action is quickly taken to put a stop to the act causing the violation. Penalties are imposed on those involved in the violation, and adequate penalties are imposed in the case of serious violations after examination by the Disciplinary Committee. In addition, the fundamental causes that brought about the violation are also studied to formulate effective measures for preventing recurrence.

# Risk Management

The ULVAC Group has developed an organization that facilitates prompt and appropriate action against increasingly complex and diverse risk factors, through a process of identification, classification, analysis, and evaluation. By linking the risk management system to strategic business administration, we seek to achieve even greater corporate value.

## Creating a Risk Management System

The ULVAC Group believes that expanding the risk management system is a critical business task. Thus, we have established the ULVAC Risk Management Policy to ensure that there are common rules across the ULVAC Group. The President of each group company assumes the position of Chief Risk Officer and shares risk information with related departments. Important information is promptly conveyed from the President of each group company to the President of ULVAC, Inc.

As the supervising organization for risk management, the Committee meets twice a year to set out basic policies and improve the management and operation.

## ULVAC Risk Management System

ULVAC has classified a wide range of risks, and has set up departments responsible for each of them. Each department functions as an information center that works with related departments to identify and evaluate all specific risks. In addition, the responsible departments constantly collect risk information, respond appropriately to risks and detect issues. For risk information deemed to be important in the evaluation process, we continually collect information to enable prompt responses to emergencies. A Risk Management Committee, chaired by the President and comprised of the departments responsible for the risks, has also been established to verify the risk management system.

