

Occupational Safety and Health

The ULVAC Group has made "Safety First" the fundamental principle of business management. By operating our Occupational Safety and Health Management System (OSHMS) focused on risk assessment, we endeavor to ensure safety of the products and services used by our customers and create dynamic workplaces where Group employees can work in good physical and mental health.

Approach on Occupational Safety and Health

In the execution of development, manufacturing, transport, installation, maintenance and other business processes, everyone in the ULVAC Group, from senior management to line workers, is encouraged to seize the initiative in continuously undertaking improvements placing the highest priority on safety, striving to maintain and improve the safety of everyone involved and ensure a healthy working environment.

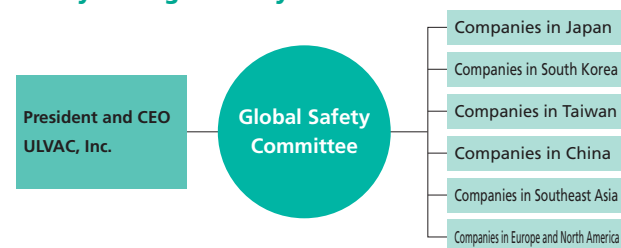
ULVAC Safety Basic Policy

- 1. Compliance to the code/regulations, and implementation of risk assessment**
Comply with Codes of Occupational Safety & Health Management and Rules according to ULVAC's OSHMS, and conduct Risk Assessment in order to perform Occupational Safety & Health Management activities with the help of all the employees.
- 2. Assure safety of ULVAC's products**
Comply with ULVAC's standard for safety design and perform risk assessment of our products, in order to deliver our safe products and services to our customers.
- 3. Planned education about Occupational Safety & Health & Product Safety**
For all the employees and contractor's employees, perform Occupational Safety & Health training based on ULVAC Safety Management system, while offering scheduled Product Safety training for our users.
- 4. Promotion of mental health care**
Promote mental health care achieve a health, vigorous workplace environment.
- 5. Global expansion of ULVAC group**
Through the Safety & Health promotion activities by the Global Safety Management Committee, we will try to create an appropriate work environment for the whole ULVAC group, and contribute to prosperity of our businesses.

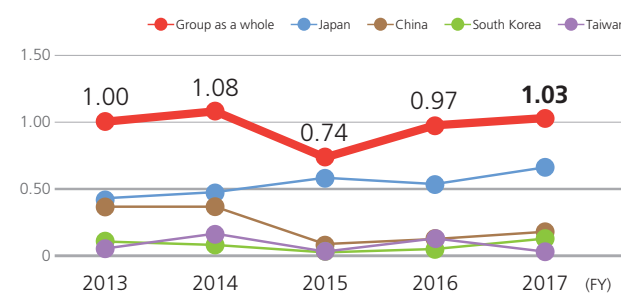
Aiming for a Type-V Zero Accident Record

To ensure the safety and good health of its customers and employees, the ULVAC Group regularly holds meetings of the Global Safety Committee, and all Group companies promote safety and health activities in an integrated manner. Each Group company operates the safety management system, and everyone is engaged in safety and health activities, such as management reviews conducted by the CEO and risk assessments performed by each employee. The Chigasaki Plant achieved a Type-IV zero accident record (total of 10.5 million hours) in 2017 and now aims to achieve a Type-V zero accident record (total of 15.8 million hours), the highest level provided by the Ministry of Health, Labour and Welfare. With "Safety First" as their motto, all Group companies will continue their efforts to extend the zero accident record.

Safety Management System



Frequency ratio of occupational accidents



*This graph shows the rate of occupational accidents for each fiscal year, with the value for fiscal 2013 (as of June 2014) as 1.00. The number of accidents remained low in fiscal 2017.

Safety and Health Activities

ULVAC KOREA, Ltd. has installed digital signage and shows videos on safety, health, and the environment to raise employee safety awareness. ULVAC CRYOGENICS KOREA INCORPORATED has installed employee-designed notice boards at workplace entrances for use in providing safety, health, and environmental information to employees. These Group companies will continue to update information and campaign activities as necessary to ensure that their employees fully recognize the importance of safety, health, environmental considerations and adherence to company rules.



Playing a video on safety information at lunchtime (ULVAC KOREA, Ltd.)



Provision of safety, health, and environmental information at a workplace entrance (ULVAC CRYOGENICS KOREA INCORPORATED)

Environment

Based on its environmental policy, the ULVAC Group provides products that allow customers to embrace the feeling that they have made environmental contributions. Through management and reduction of energy consumption and other efforts, we are working to minimize environmental impacts. As we have a global production system, we are working to gain integrated ISO14001 certification so as to strengthen governance, ensuring information sharing among Group companies and swift implementation of instructions issued by top management. The ULVAC Group will continue its efforts to reduce environmental impacts through its products.

Environmental Philosophy

The ULVAC Group is tackling protection of the global environment, one of the major issues confronting people worldwide. We will consider environmental conservation in all aspects of our business activities and will contribute to realization of a better living environment and a more affluent society.

Environmental Policy

Develop energy-saving products, reduce the use of natural resources and protect the environment.
 1) ULVAC Group products/Final products
 2) ULVAC Group manufacturing process

Environmental Activities in Fiscal 2017

Although production volume increased, total waste emissions decreased by approximately 14% compared with the previous fiscal year. This decrease was largely attributable to the increase of the recovery rate of valuable materials to 29%. As recovery of valuable materials is important also from the perspective of material recycling, we will continue to promote it throughout the ULVAC Group.

We are also implementing groupwide initiatives, including visualization of wattage, preparation and

utilization of a manual for energy saving, concentration of locations where electricity-intensive activities are conducted, and 100% conversion to LED lighting for factories and offices, in order to reduce energy (electricity) consumption.

The ULVAC Group will continue to promote environmental management activities in order to reduce environmental impacts derived from its business activities.

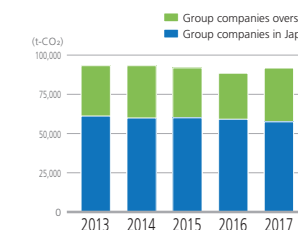
Material balance (Source: Aggregate data for fiscal 2017)

INPUT		OUTPUT		
Electricity consumption	174,794 thousand kwh	CO ₂ emissions	91,822 t-CO ₂ (Emissions due to consumption of electricity, gas, and fuels)	
Gas consumption	LPG: 106 t LNG: 584 t City gas: 1,690 thousand m ³		Total waste emissions	7,556 t Total amount of waste recycled: 7,197 t
Fuel consumption	Heavy oil: 224 kL Kerosene oil: 30 kL Diesel oil: 192 kL			Final landfill disposal rate
Water consumption	1,127 thousand m ³			
Packaging materials	1,712 t			

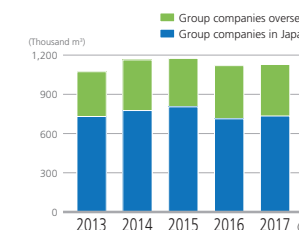
* The above data are based on the data from 38 Group companies in Japan and overseas.

* The volume of packaging materials is based on the data from 17 Group companies in Japan and overseas.

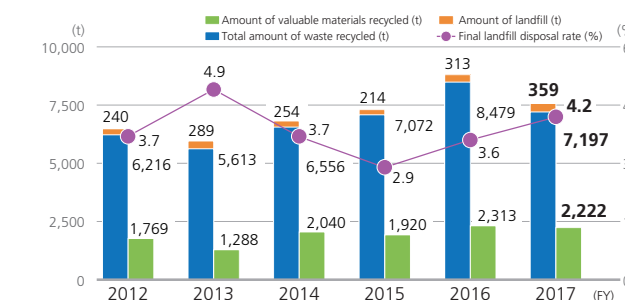
CO₂ emissions



Water consumption



Waste emissions



Environment

Initiatives through Products

LS series new dry vacuum pump achieves both high pumping speed and low power consumption

Components Division, ULVAC, Inc.

This product's principal characteristic is the simultaneous achievement of both high pumping speed and low power consumption. While achieving high pumping speed at near atmospheric pressure thanks to the newly developed screw rotor, the built-in patented ECO-SHOCK minimizes power consumption, resulting in realization of seemingly contradictory technological features. Product reliability has been enhanced through operation tests in high-temperature, low-temperature, and dusty (equivalent to IP*144) environments, in addition to repeated atmospheric vacuum pumping at short intervals. The Components Division develops and sells dry vacuum pumps. Rising demand for electronic devices, smartphones and communication technology-related items in the global market are a tail wind for this product.



LS120A dry vacuum pump

*1 IP ratings indicate the level of protection against dust and water.

Cat-CVD equipment for silicon heterojunction solar cells improves conversion efficiency

FPD•PV Division, ULVAC, Inc.

Renewables are attracting attention as sources of environmentally friendly energy because they do not emit CO₂. For photovoltaic power generation, in which solar cells are used to obtain power, heterojunction solar cells capable of converting energy from sunlight into electricity more efficiently are a focus of high expectations. Consisting of monocrystalline silicon and amorphous silicon thin films, silicon heterojunction solar cells are distinguished by their higher energy conversion efficiency compared with conventional monocrystalline silicon solar cells. ULVAC has developed a system that employs the catalytic chemical vapor deposition (Cat-CVD*2) method, which is subject to less damage by plasma, to provide high-quality amorphous silicon thin films offering greater conversion efficiency.



Cat-CVD equipment for silicon heterojunction solar cells

*2 Cat-CVD: A chemical vapor deposition method that uses a heated catalyzer to chemically decompose source gas molecules by catalytic cracking reaction and forms thin films by transporting the free radicals to the substrate.

Initiatives through corporate activities

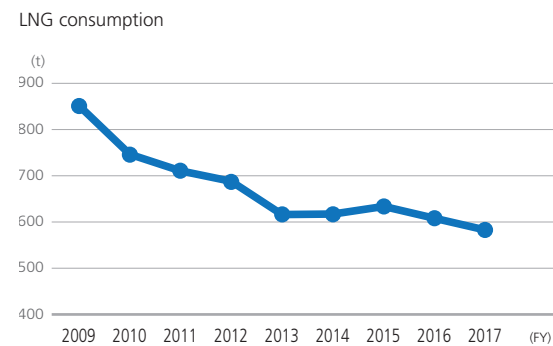
Heat recovery by increasing wastewater recovery

ULVAC COATING CORPORATION

Massive water consumption in the film deposition process was an issue at ULVAC COATING CORPORATION. The company is working to minimize its environmental impact by setting the reduction of water consumption as a quality and environmental objective.

The company has reduced water consumption by recycling wastewater discharged from the production line and also reduced consumption of energy used for heating water, because the temperature of wastewater is higher than that of tap water. The reduction in LNG consumption is equivalent to approximately 250 tons of CO₂ emissions a year.

Mindful of the impact on water resources in the community where it operates, ULVAC COATING continues to promote recycling of wastewater so as to reduce water and energy consumption.



Tree planting

ULVAC (SUZHOU) CO., LTD.

In March 2018, ULVAC (SUZHOU) CO., LTD. held its fourth tree-planting event, planting 29 cherry trees as part of its ongoing effort to enrich the environment.

The company will continue this initiative to raise awareness of the importance of environmental protection.



Social Contribution Activities

The ULVAC Group will continue to contribute to local communities and the global community by effectively utilizing its technologies and human resources to help resolve various social issues.

Japan (Chigasaki)

Plant tour and demonstrations

ULVAC conducts plant tours and vacuum demonstration classes, mainly for elementary schools and other public institutions, local residents, and shareholders. In 2017, on more than five occasions we engaged in joint projects with Chigasaki City, holding events for the purpose of contributing to community youth development and education activities followed by plant tours and vacuum demonstrations. We will continue to deepen ties to local communities and educational groups through activities designed to encourage as many people as possible to take an informed interest in science.



Japan (Chigasaki)

Sale of cookies by a social welfare corporation

Syonokai, a social welfare corporation located in Chigasaki, Kanagawa Prefecture, sells homemade cookies once a month at the ULVAC Head Office/Plant, thus providing an opportunity for persons with disabilities to participate in society. Syonokai has sold cookies at a space provided next to the cafeteria at lunchtime since 2010. We will continue to encourage employment of persons with disabilities by supporting the purchase of cookies.



Malaysia

Water supply assistance during a water stoppage

In March 2018, a water stoppage occurred in Selangor State due to an accident at a water purification plant. ULVAC MALAYSIA SDN. BHD. hastened to supply 20,000 liters of water reserved for use at a special cleaning treatment plant to nearby residents. The ULVAC Group will continue to engage in activities to help resolve various social issues and seek harmonious coexistence with local communities.



Thailand

Lecture on the fundamentals of vacuums at Thai-Nichi Institute of Technology

At the request of Thai-Nichi Institute of Technology, in February 2018 ULVAC (THAILAND) LTD. gave a lecture on the fundamentals of vacuums, covering the types and structure of vacuum pumps, vacuum measurement, and related topics for students of the institute. The company's acceptance of student interns since 2017 led to the request.

Although vacuum technology is an unfamiliar field in Thailand, when an engineer explains that it is a building block of industry, many students develop an interest. The company will continue to support the development of the next generation of engineers by various means, including the acceptance of student interns.

