

# 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 ISO 14001 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 and manufacturing processes.

## 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 FY 2019

Total waste emissions decreased 17% compared with the previous fiscal year.

This decrease is considered to be attributable to a decrease in the use of acid and alkali in Japan due to the change of chemical agents and an approximately 50% decrease in waste discharged by Group companies in South Korea and China.

We are also implementing group-wide initiatives, including visualization of wattage, 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.

## Major initiatives

### GHD series of oil rotary vacuum pumps equipped with magnet coupling: ULVAC KIKO, Inc.

Conventional oil rotary vacuum pumps have an oil seal at the rotor shaft to prevent leakage of oil to the atmospheric side. However, oil leakage tends to occur owing to wear and tear due to long-term operation. Also, when the pump is stopped while the vacuum status is maintained in the vacuum chamber of the equipment to which the pump is connected, backflow of oil from the pump to the vacuum chamber through the air intake pipe occurs because of atmospheric pressure. In order to prevent oil backflow when pump operation is stopped, conventional oil rotary vacuum pumps have a valve. As a solution to these problems, ULVAC KIKO, Inc. offers the GHD series of oil rotary vacuum pumps. They are equipped with a non-contact-type magnet coupling that transmits power using magnetic force and eliminates the need for a shaft seal at the atmospheric side, instead of contact-type coupling used for power transmission from the motor to the pump. They are also equipped with a differential pressure sealing-type check valve directly below the intake pipe. Design for environment is adopted for the GHD series, applying the concept of quiet operation, space saving, and no oil leakage. Compared with conventional contact-type models, the GHD series reduces power consumption by up to 20 W.



GHD-031 oil rotary vacuum pump

### Management of chemical substances

Chemical substances are highly versatile and functional and are widely applied in everyday life. On the other hand, some substances are harmful to the human body and the environment. ULVAC uses a wide variety of chemical substances in the parts and materials composing products (metals, resins, coatings, etc.), manufacturing processes (organic solvents, lubricants, and other substances used in cleaning, etc.), and technology development (chemicals, gases, etc.). We appropriately manage these substances and strive to prevent accidents and environmental pollution.

### Plastic reduction initiatives

ULVAC is working to reduce use of plastics, considering that it is important to emphasize environmental protection in every aspect of business activities.

In Japan, the amount of packaging materials purchased was reduced by 15% year on year at ULVAC Head Office/Plant and at ULVAC-PHI, Inc. and by 24% year on year at ULVAC TECHNO, Ltd. by promoting reuse in house of packaging materials for pumps.

ULVAC TAIWAN INC. achieved a 7% year-on-year reduction in plastic consumption by ceasing the use of disposable cushioning materials and by switching to reusable cushioning materials with antistatic functions.

ULVAC CRYOGENICS KOREA INCORPORATED is endeavoring to eliminate the use of vinyl packaging for raw materials. It provided dedicated trolleys to the suppliers for delivery of raw materials. As a result, vinyl consumption in the first half of FY 2019 was reduced by 30% compared with the same period of the previous year.

ULVAC will continue initiatives to reduce plastic consumption and promote recycling.



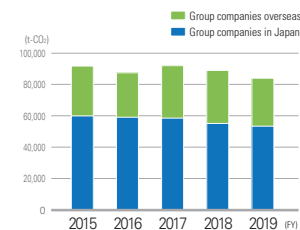
Reusable cushioning materials with antistatic functions introduced by ULVAC TAIWAN INC.

## Material balance (Source: Aggregate data for FY 2019)

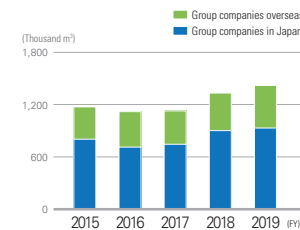
INPUT		OUTPUT	
Electricity consumption	172,442 thousand kWh	CO <sub>2</sub> emissions	83,929 t-CO <sub>2</sub> (Emissions due to consumption of electricity, gas, and fuels)
Gas consumption	LPG : 214 t LNG : 680 t City gas : 1,201 thousand m <sup>3</sup>	Total waste emissions	7,062 t Total amount of waste recycled: 6,007 t Amount of landfill 345.5 t
Fuel consumption	Heavy oil: 33 kL Kerosene oil: 26 kL Diesel oil: 166 kL	Final landfill disposal rate	4.9 %
Water consumption	1,419 thousand m <sup>3</sup>		
Packaging materials	990 t		

\* The above data are based on the data from 37 Group companies in Japan and overseas.  
\* The volume of packaging materials is based on the data from 18 Group companies in Japan and overseas.

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



## Water consumption



## Waste emissions

