



Eco-Factories & Offices

Throughout the entire production process, we work to save energy and enhance facilities in an attempt to prevent global warming and reduce industrial waste.

Operations and Environmental Impact (Toyama Technology & Manufacturing Center)

The Toyama Technology & Manufacturing Center expends resources and energy in order to make and provide products and consequently discharges CO₂ and waste products. It monitors the inputs and outputs of such elements, and works to reduce hazardous chemical substances and increase energy efficiency.

For information on the Group's environmental impact reduction measures taken through the semiconductor value chain, see "Business Reforms to Be Made by the Company in Line with the SDGs" on page 17 and "Eco-Friendly, Next-Generation Products" on page 19.

Input Business activities at the Toyama Technology & Manufacturing Center Product/Services ▶ Output The values in parentheses show the change from fiscal 2017.

Energy

Electricity	23,522 MWh	(+8%)
	[228,144 GJ]	
Fuel oil (heavy oil, kerosene)	120 kL	(-17%)
	[4,621 GJ]	
Gas (city gas, LPG)	54,000 m ³	(+7%)
	[5,761 GJ]	

Raw materials

Materials and parts	109 t	(-39%)
Packaging materials	387 t	(-17%)
Papers	18 t	(-9%)

Chemical substances

PRTR*1-specified chemical substances handled	1.9 t	(-31%)
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Water

Tap water, industrial water	154,000 m ³	(-1%)
Tap water	10,000 m ³	
Industrial water	144,000 m ³	

Exhaust gas

CO ₂ emissions*2	10,749 t	(+7%)
Direct CO ₂ emissions	658 t	
Indirect CO ₂ emissions	10,091 t	
SOx	0.0 Nm ³	(0%)
NOx	92 Nm ³	(-62%)

Waste and valuables

Release	491 t	(-4%)
Final disposal	2 t	(+52%)

Chemical substances

Release, transfer and re-cycling of PRTR-specified chemical substances	0.6 t	(+105%)
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Drainage

Amount of drainage	154,000 m ³	(-1%)
Discharged to rivers after purification	154,000 m ³	
BOD	0.5 t	(+24%)

*1 PRTR: Pollutant Release and Transfer Register

*2 CO₂ emissions: Emissions were calculated based on the 2005 emission coefficients for electric power by country published by the International Energy Agency (IEA).

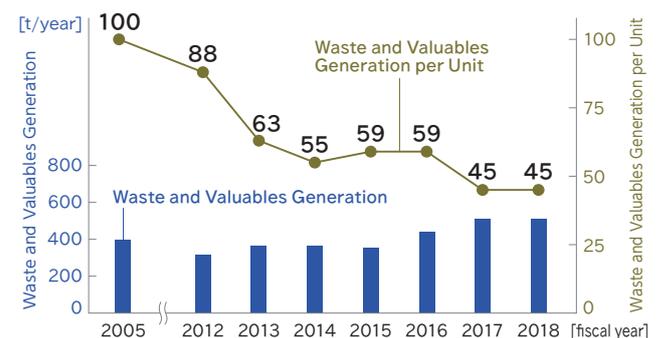
Reduction of Waste

To curb waste generation, the Toyama Technology & Manufacturing Center works to reduce Waste and Valuables Generation per Unit. In fiscal 2018, this per-unit generation index remained at the same level as the previous year. Specifically, it came to 45, an improvement of 55% relative to fiscal 2005. In fiscal 2018 we conducted an activity to reduce landfill waste for "zero emissions." To this end we fostered the appropriate sorting of waste by raising employees' awareness around recycling and the effective use of resources through in-house education.

We also make it a rule to visit the sites of waste treatment companies to confirm that our waste, which includes industrial waste, general waste and waste sold as valuables, is treated appropriately throughout the process from collection and transportation to disposal. We conduct on-site checks with a

focus on legal compliance, safety and environmental friendliness.

Improvement in the generation of waste and valuables and in the per-unit generation index (Toyama Technology & Manufacturing Center)

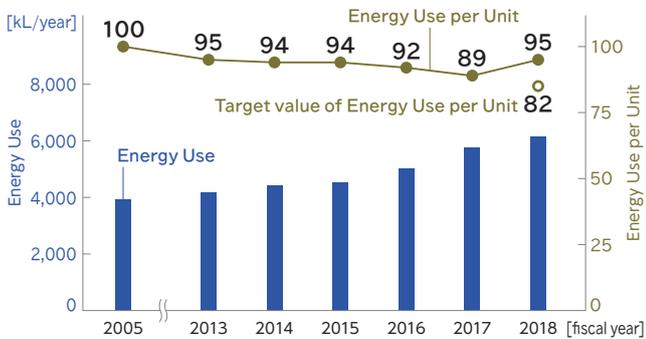


Prevention of Global Warming and Energy Saving

Most of the energy consumed by the Toyama Technology & Manufacturing Center goes toward operating the evaluation equipment used for process development. We therefore work to reduce unnecessary idling to lower the environmental impact of the equipment. In fiscal 2018, we strived to reduce Energy Use per Unit to 82 (an 18% improvement relative to fiscal 2005). However, the energy use index came in below the target at 95 (a 5% improvement relative to fiscal 2005) due to the expansion of product development and process evaluation.

To save energy used by facilities, we are fostering replacement, including upgrading to high-efficiency air-conditioning equipment and switching to LED lighting. With regard to operations, in support of the national campaign against global warming promoted by the government since 2005, we implemented “Cool Biz” and “Warm Biz” campaigns and continued our participation in the “Lights Out Campaign.”

Improvement in energy use and in the per-unit use index (Toyama Technology & Manufacturing Center)



Commended as a Company Excellent in Energy Management

The Toyama Technology & Manufacturing Center was given the highest commendation by the Director-General of the Chubu Bureau of Economy, Trade and Industry among those commended by the Bureau as contributors to energy saving. Every February, which is designated “Energy Saving Month” in Japan, the Bureau gives commendations to companies and individuals who have made outstanding contributions to energy conservation.

This fiscal year, the Company became the only recipient of the Bureau’s commendation in the Hokuriku area.

We were given the commendation in recognition of our use of an energy-saving SCR evaluator,* shift to LED lighting in our buildings, adoption of a “free cooling system” (to use low-temperature external air for heat exchange for air-conditioning), and replacement of equipment with more energy-efficient models.

* SCR evaluator: Equipment to evaluate the process status of the Company’s products in super-clean rooms



(Right) Hidehiro Yanagawa, General Manager of the Toyama Technology & Manufacturing Center
(Left) Yumio Nakamura, Manager of the Production Facilities Section

Proper Disposal of Waste

Much of the waste discharged from the Toyama Technology & Manufacturing Center is recycled, and most of the wafers used for process evaluation are sold as valuable waste and reused.

Some waste wafers are sorted by waste treatment companies for use by solar cell manufacturers as a material for silicon solar cells. Waste wafers that are not suitable for this application are used by other manufacturers, for example, as an additive used for the manufacture of aluminum ingots and as an oxygen absorbent for steel products.

As our responsibility as a waste generator, we closely check whether our waste products are disposed of appropriately and work to foster their recycling.

Flow of appropriate waste disposal

