

Environmental Report 2022



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■ Coverage of this report

- Sumitomo Electric Device Innovations, Inc. (Yokohama HQ, Yamanashi Plant) (SEDI)
- Sumitomo Electric Photo-Electronics Components (Suzhou), Ltd. (SPEC)
- Sumiden Device Innovations Vietnam Co., Ltd. (SEDV)

Note: In this Report, the terms “we,” “our” and “us” refer to SEDI, and the term “our Group” refers to the SEDI Group (comprised of the three companies listed above).

Message

Message from the President

In recent years, the impact of climate change has become significant all over the world, and the need for global warming countermeasures is more strongly recognized than ever before. We are aware that efforts to reduce environmental impact, such as carbon neutrality, are a corporate social responsibility and a key management issue. Our mission is to stay committed to the advancement of technology that makes the most of the advantages of compound semiconductors, thereby always offering communication devices that achieve maximum data transmission with minimum power consumption. The amount of data handled by communication infrastructure and data centers has been continuing to grow dramatically. By offering products for communication infrastructure and data centers, we help our customers improve the energy efficiency of their business activities, and we are determined to step up our contribution in the future. Another key issue is environmental impact reduction at the business bases of our Group. As a milestone toward the achievement of carbon neutrality, our Group has set a fiscal 2030 target for reducing the sum of Scope 1 and 2 greenhouse gas emissions, and it announced the target in May 2021. A 50% reduction from fiscal 2020 is not an easy target to reach, but, to achieve this goal, we will devote necessary management resources to production technology innovations and the introduction of renewable energy. Our Group is also working to grasp the current situation of Scope 3 emissions, and it will plan measures to reduce CO₂ emissions throughout the supply chain.



Sumitomo Electric Device Innovations, Inc.
President **Yuichi Hasegawa**

Environmental Activity Policy

Basic Philosophy

We think it is primarily important to establish a society that is sustainable and has less environmental impact. While making continuous and steady efforts to promote our global environmental preservation activities, we contribute to the people of the world and society by providing products and services related to compound semiconductors.

Activity Guidelines

- 1 Step up our efforts to combat causes of global warming
- 2 Proceed with resource conservation and recycling
- 3 Promote environmental pollution prevention and environmental protection
- 4 Expand the offering of eco-friendly products to meet customer demands more effectively

Acquisition of Certifications for Environmental Management Systems

Not only our Yokohama Headquarters and Yamanashi Plant but also our two manufacturing subsidiaries, SPEC (China) and SEDV (Vietnam), have established environmental management systems and have acquired ISO 14001 certifications.



Yokohama



Yamanashi



SPEC



SEDV

Efforts to Combat Causes of Global Warming

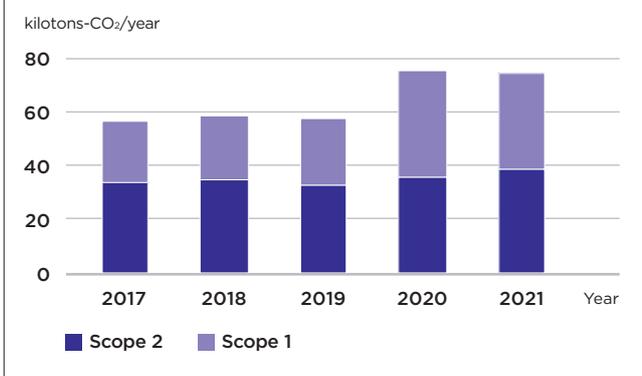


Greenhouse Gas Emissions (Scopes 1 + 2) Results and Target

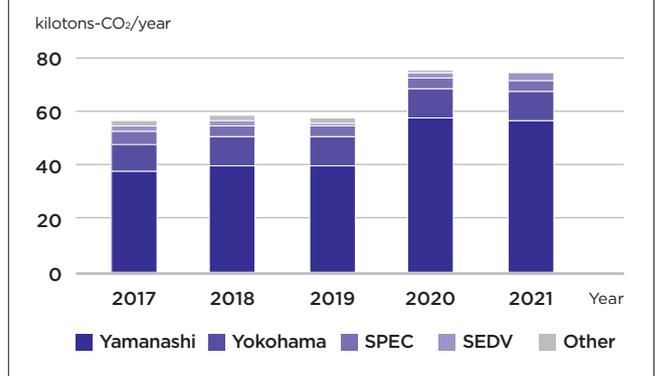
Fiscal 2020 results	Target for fiscal 2030
75.6 kilotons-CO ₂ /year	37.8 kilotons-CO ₂ /year (a 50% reduction from fiscal 2020)

As a measure to fight global warming, our Group strives to reduce greenhouse gas emissions. It has set the target on the sum of Scope 1 and 2 emissions for fiscal 2030 at 37.8 kilotons-CO₂/year, where Scope 1 emissions are direct emissions as a result of business activities of our Group and Scope 2 emissions are indirect emissions resulting from our Group's electricity consumption. This target is equivalent to a 50% reduction from the base year, fiscal 2020.

Trends in Greenhouse Gas Emissions by Scope

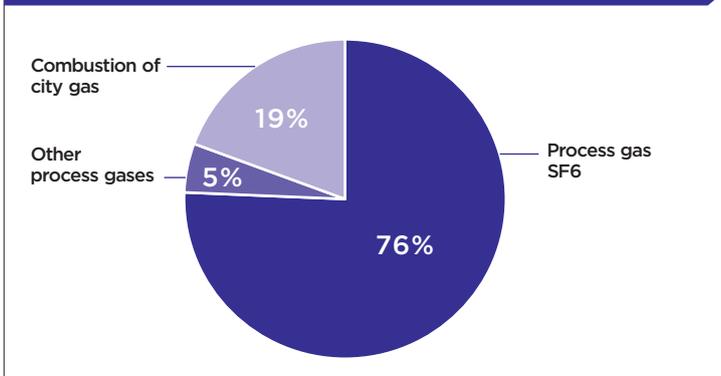


Trends in Greenhouse Gas Emissions by Base



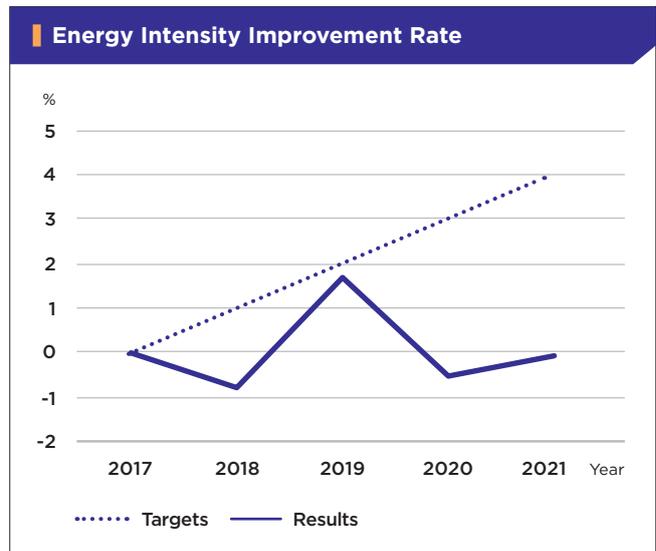
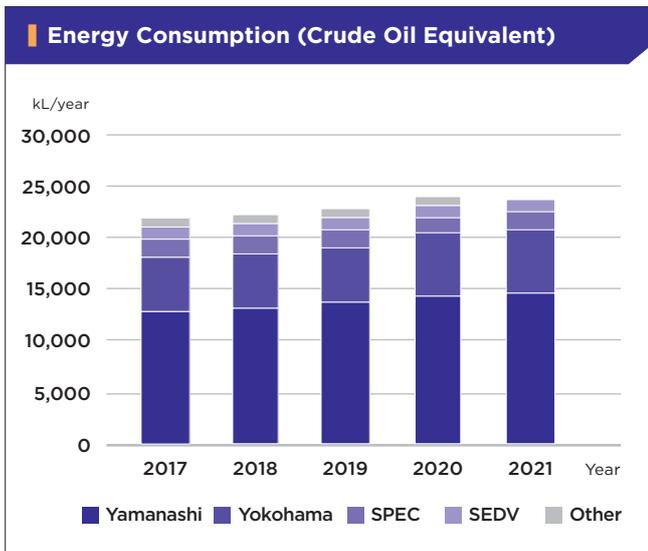
Our Group's greenhouse gas emissions in fiscal 2021 were 74.7 kilotons-CO₂ (a 1.2% reduction from the previous year). Although Scope 2 emissions increased by 7.1% from the previous year, Scope 1 emissions reduced by 8.7%, resulting in a reduction in the sum. As for emissions by base, the Yamanashi Plant and Yokohama Headquarters, both of which implement semiconductor wafer processes, have the highest emissions, accounting for 75% and 15%, respectively, of the total emissions in fiscal 2021.

Fiscal 2021 Scope 1 Emissions Breakdown



Solar power generation system (Yamanashi)

SF6 accounts for 76% of our Group's Scope 1 emissions (in fiscal 2021). This gas is indispensable for efficient processing of semiconductor wafers to achieve high quality, but SF6 has a high global warming potential. Although SF6 emissions increased in fiscal 2020 due to a production increase, Our Group has been striving to reduce them. In fiscal 2021, the Yamanashi Plant installed a rooftop solar power generation system. This system started operating in September that year, contributing to reducing greenhouse gas emissions by 152 tons-CO₂ in fiscal 2021.



Our Group has been working on energy intensity improvement as one of its measures to reduce greenhouse gas emissions. Energy intensity is an indicator obtained by normalizing the sum of electricity and city gas consumption in crude oil equivalent by a production index. The production index is calculated based on production volume and energy consumption for each product type and process.

The fiscal 2021 target for energy intensity improvement was 4% from the base year, fiscal 2017, but the energy intensity worsened by 0.1%. Although measures were taken for improvement, mainly the introduction of highly energy-efficient equipment, they were not enough to make up for the energy consumption increase caused by the production increase.

Example of Energy Conservation Efforts



Air conditioning equipment upgrade at the Yamanashi Plant

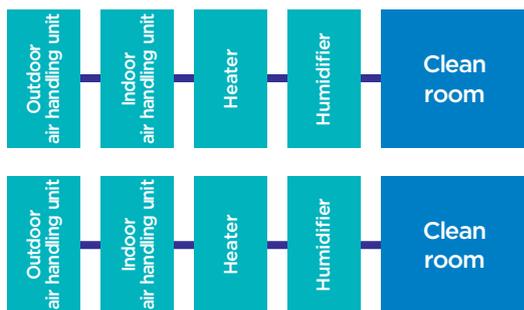
Purpose

The Yamanashi Plant had a 20-year-old plant building with obsolete infrastructure equipment (air handling units, a central monitoring system, and general-room air conditioners). Therefore, the Plant introduced the latest equipment to conserve energy.

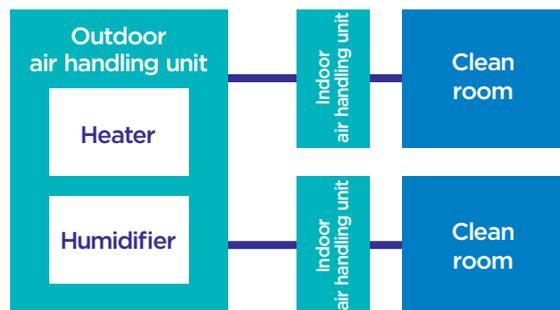
Measures and Results

Obsolete relay-controlled equipment has been replaced by energy-saving inverter-controlled equipment. Multiple outdoor air handling units, one for each clean room, have been replaced by a single unit that covers all the clean rooms. Moreover, the new outdoor air handling unit regulates the temperature and humidity of the air drawn from the outside, reducing the load on the indoor air handling units. These changes have led to a reduction in annual energy consumption by 110 kL (crude oil equivalent).

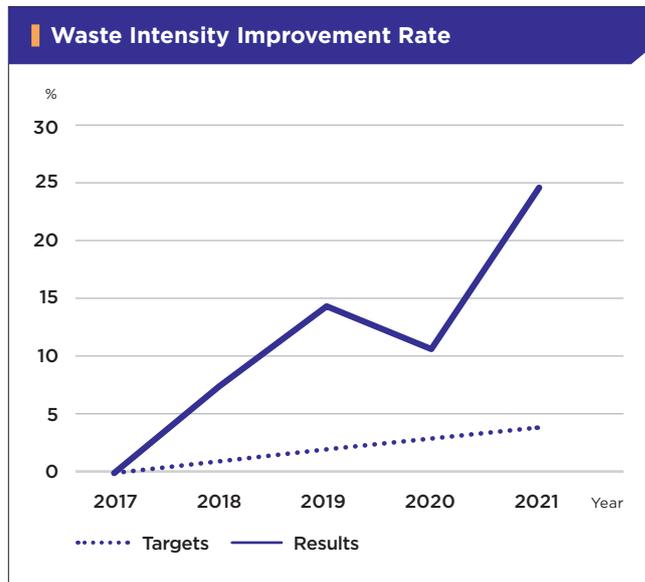
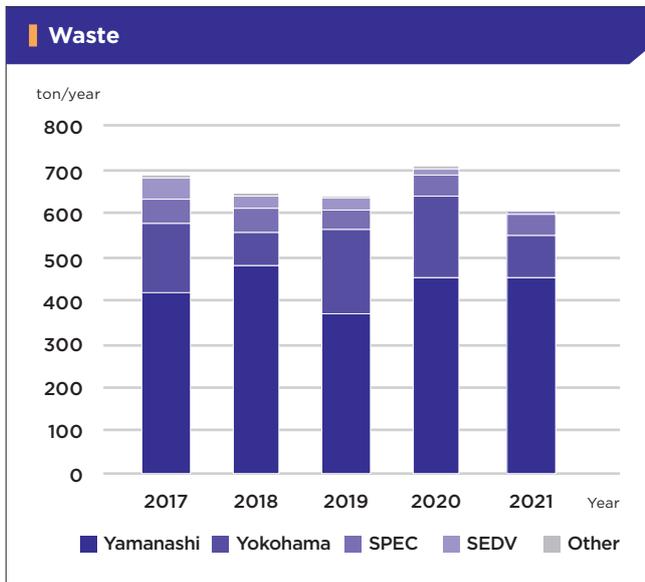
Before the update



After the update



Commitment to Resource Conservation and Recycling



Our Group considers that effective use of resources and reduction of wastes are key issues to reduce the impact on the global environment.

As an indicator of its waste reduction activities, our Group uses waste intensity, which is the amount of waste normalized by a production index. The fiscal 2021 target for the improvement of waste intensity was 4% or more compared to fiscal 2017, and the actual improvement rate amounted to 24%.

A significant contributing factor to the improvement was reduction of sludge from wastewater treatment facilities.

Example of Waste Reduction Activities

Reduction of dehydrated sludge at the Yamanashi Plant

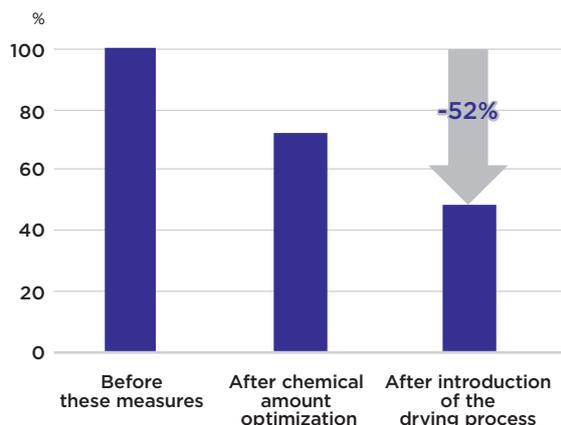
Purpose

Acids and alkaline chemicals used in the semiconductor manufacturing process are detoxified in the wastewater treatment process at the Plant before being discharged into the sewage system. This treatment process generates dehydrated sludge as industrial waste. The Yamanashi Plant worked on sludge reduction to reduce the amount of industrial waste generated.

Measures and Results

Optimization of the amount of chemicals used in the wastewater treatment process has made it possible to reduce the amount of sludge generated while maintaining appropriate water quality. Furthermore, introduction of a sludge drying process using an air blower has reduced the water content of the sludge. These measures have resulted in a 52% reduction of the amount of sludge generated.

Effects of the Sludge Reducing Measures



Measures to Reduce Environmental Pollution



As measures to reduce environmental pollution, our Group monitors exhaust and wastewater from plants, conducts emergency drills, and provides employees with education to raise their self-awareness of the importance of environmental conservation. The table below lists the results of these measures taken in fiscal 2021.

Results of Exhaust and Wastewater Monitoring, and Other Measures (fiscal 2021)

	Yokohama	Yamanashi	SPEC	SEDV
Water quality	Kept within the reference value			
Air quality	Kept within the reference value			
Emergency drills	Conducted			
Self-awareness raising education on environmental conservation	Delivered to all employees			



■ Yamanashi Plant
Emergency drill simulating chemical leakage



■ SEDV
Emergency drill simulating chemical leakage



■ SPEC
Environmental inspection report

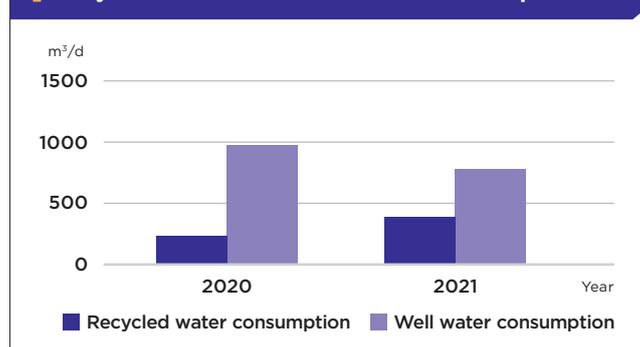
Environmental Protection Activities



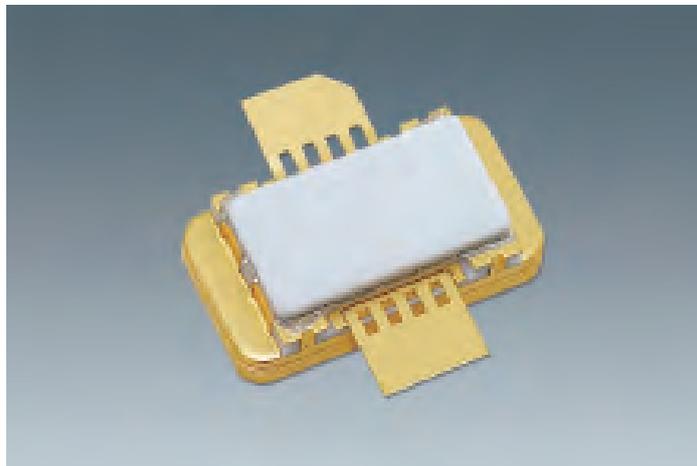
Water Recycling at the Yamanashi Plant

The Yamanashi Plant uses well water in manufacturing processes and for utility facilities. From the perspective of environmental protection, the Plant has promoted the recycling of water used in manufacturing processes and for power equipment so that it can reduce the amount of water drawn from the well. Pure water used in manufacturing processes is constantly monitored for quality after use, and, when it falls within the reference value, the water is recycled. Filtering of water used in the wafer processing process for purification has enabled the water to be recycled in the same process. Furthermore, power equipment has been enhanced so that recycled water can make up the entire amount of water used in chillers and scrubbers.

Recycled Water and Well Water Consumption



Offering of Eco-friendly Products



■ Power amplifier device for base stations

Our Group contributes to improving the energy efficiency of data centers and communication infrastructure by developing and offering device products that enable large-capacity high-speed communication with low power consumption based on the advantages of compound semiconductors.

For example, our GaN power amplifier devices are highly evaluated for high speed performance and low power consumption, and they are widely used at mobile phone base stations. These devices consume approximately 9% less power than conventional Si-based devices. The GaN power amplifier devices we shipped in fiscal 2021 are estimated to have contributed to reducing power consumption by 276 GWh/year compared to Si-based devices. This reduction amounts to 122,000 tons-CO₂/year in greenhouse gas equivalent.