

# Global Environmental Conservation

## Contribution to Creating a Recycling-Oriented Society

### Waste Management

The Group considers that promoting effective utilization of resources as well as the 3Rs (reduce: reduce waste generation; reuse; and recycle) are crucial for contributing to the realization of a recycling-oriented society. As lead-acid batteries that constitute the Group's main product use harmful substances (such as lead) as raw materials, we recognize the importance of proper disposal of waste generated in our production processes.

By promoting quality improvement activities aimed at reducing in-process defects, the Group ensures reduced waste generation (including hazardous waste). In addition, we are committed to reducing the amount of waste generated by reusing raw material loss (such as lead scrap) in the production processes. As for recycling, we are engaged in activities to improve the rate of recycling of resources. We have also established a system to ensure proper disposal of waste in accordance with laws and regulations so as to prevent improper waste disposal (including illegal dumping).

#### ■ Examples of initiatives for effective use of resources

- Strict implementation of waste separation rules
- Appropriate selection of recycling companies
- Reusing raw materials loss

#### ■ Examples of operations to ensure proper waste disposal

- Establishing a company-internal system to promote proper waste management
- Strict implementation of waste separation and waste storage rules
- Periodic on-site inspections of waste disposal contractors
- Nurturing personnel in charge of waste disposal practices (including implementation of regular education on waste)

 [Refer here for data on waste-related changes \(amount of recycling, quantity of final disposal\).](https://www.gs-yuasa.com/en/csr/env_performance.php#data1_1_03)  
([https://www.gs-yuasa.com/en/csr/env\\_performance.php#data1\\_1\\_03](https://www.gs-yuasa.com/en/csr/env_performance.php#data1_1_03))

## TOPICS

## Reducing Sludge Discharge

At the Kyoto Plant, we are working to reduce the large volumes of wastewater treatment sludge that is discharged within the plant site. In fiscal 2023, we took action to reduce the amount of water contained in sludge. Previously, sludge was manually dewatered, but new sludge dewatering equipment (a belt press dewatering machine) and dewatered sludge dryer were installed. We built the dryer ourselves to operate on solar power and reduce environmental impact. As a result of these changes to sludge dewatering and drying work, the amount of sludge was reduced by 4,570 kg (approximately 3%) from the previous year, work efficiency was increased, and work safety is insured. The water that is released during the dewatering process is properly treated in a wastewater treatment plant.



Belt press dewatering machine



Dewatered sludge dryer

## TOPICS

## Reuse of Wooden Pallets

At the Gunma Plant, we are taking measures to process and reuse wooden pallets that were used for products delivered from overseas. Through these measures, we are reducing the number of new wooden pallets procured and achieving effective utilization of resources. In fiscal 2024, approximately 25% of the wooden pallets used at the Gunma Plant were reused, leading to a reduction in new procurement. To contribute to the realization of a circular economy, the Group will continue working on waste reduction in effective resource utilization.



Processed wooden pallets

## TOPICS

## Environmentally Considered Road Paving

At our Gunma Plant, we have repaved the roads on the premises using asphalt modifiers generated from collected waste plastic bottles. In fiscal 2024, these modifiers were used on approximately 8,800m<sup>2</sup> of road surfaces, improving the durability of the asphalt pavement while achieving the effective use of resources. The GS Yuasa Group also promotes initiatives that take environmental impact into consideration for infrastructure improvements on our plant premises.



Environmentally considered road pavement on the premises (Gunma Plant)



## Recycling Plastic Resources

Since the GS Yuasa Group uses plastics for such things as product materials and packing materials, we recognize the importance of promoting initiatives for the streamlining of plastic resources, which do not easily decompose in the environment, and reducing and recycling waste plastics. The GS Yuasa Group, in the operational management of our environmental management system based on ISO 14001 certification, identifies the use and disposal of plastics as key environmental issues and promotes initiatives for recycling plastic resources.

### Examples of initiatives for recycling plastic resources

#### ■ Efficient use of plastic resources and utilization of alternative materials

- Reducing waste from resin parts through measures to reduce in-process defects
- Reducing the usage of product packing materials through employing high-elasticity stretch film
- Achieving long-term usage of cushioning materials used for storing semi-finished products through employing highly durable Styrofoam
- Manufacture of products using recycled resins
- Adoption of long-life pipe materials
- Raising awareness in design departments to achieve long-life products

#### ■ Reusing plastic materials

- Reusing plastic scraps generated in the production process for product materials
- Reusing plastic materials used in the production process (storage bags, PP band, stretch film, air packs, foam materials, resin pallets)
- Reusing resin pallets and plastic office supplies

#### ■ Recycling waste plastic

- Purchasing recyclable office supplies and simple packing supplies (printer ink, label printer cartridges, etc.)
- Thoroughly separating waste plastics (packing materials, PP band, office supplies, food packaging materials, etc.)
- Promoting material recycling for waste plastics (Eco Cap, Styrofoam, etc.)
- Utilizing thermal recycling for waste plastics


## Resource Recycling of Used Product

The GS Yuasa Group believes in the importance of creating and operating a system for recycling resources from our used products to help create a recycling-oriented society. To achieve this goal, the Group is promoting initiatives for processing used products and resource recycling by using the wide area certification system.

A wide-area certification system aims to involve the manufacturers of a product in the product's recycling and disposal once it reaches the end of its useful life. These systems make possible more efficient recycling and provide feedback on product design leading to easier disposal and reuse, while ensuring that discarded goods are disposed of properly.

In January 2008, the GS Yuasa Group in Japan acquired wide-area certification from the Ministry of the Environment for industrial batteries and power supplies, and in January 2009 started accepting orders in earnest for a recycling system based on this certification. Even following the start of operations, we continue to make improvements such as expanding the scope of covered products and reviewing operational rules to create mechanisms for the reliable and proper disposal of used industrial batteries.

In the future, we will promote even more effective operation of the wide-area certification system to improve customer service as well as to recycle and properly dispose of post-use products.

 [Refer here for data on the recycling of used products \(industrial batteries and power supplies\)](https://www.gs-yuasa.com/en/csr/env_performance.php#data1_1_01)  
([https://www.gs-yuasa.com/en/csr/env\\_performance.php#data1\\_1\\_01](https://www.gs-yuasa.com/en/csr/env_performance.php#data1_1_01))

## Chemical Substance Emissions Management


### Identifying chemical substance emissions

Today, chemical substances used at GS Yuasa group's business sites include those subjects to reporting under the PRTR Law\*. The Group incorporates the management of hazardous substances into environmental management and regularly assesses how they have been handled to reduce environmental risk and related legal compliance.

PRTR (Pollutant Release and Transfer Register) Law

This law covers identifying, etc., the emissions of specific chemical substances into the environment and promotes improved management. The law requires businesses to collect, tabulate and disclose data related to hazardous chemical substances, their sources, the amount of emissions and how much is transferred out of the plant, including as waste.

\*Class I Designated Chemical Substances (substances that may damage people's health or interfere with the growth of animals and plants) are subject to reporting under the PRTR system. Of these substances, those that have carcinogenic properties are classified as Specific Class I Designated Chemical Substances.

 [Refer here for data on chemical substance emissions](https://www.gs-yuasa.com/en/csr/env_performance.php#data1_1_05)  
([https://www.gs-yuasa.com/en/csr/env\\_performance.php#data1\\_1\\_05](https://www.gs-yuasa.com/en/csr/env_performance.php#data1_1_05))

### Preventing Atmospheric Pollution

The Group believes that to prevent any damage to the health and the living environment of local residents, it is crucial to appropriately process substances that are emitted into the atmosphere in the course of our business activities. For this, we are committed to thorough implementation of our environmental management system that conforms to international standards and which ensures that our operations are in compliance with atmospheric emission standards based on laws and regulations concerning soot and smoke, dust, volatile organic compounds, etc. as well as regional agreements. Also, by adopting appropriate measures to prevent atmospheric pollution (installation of dust collectors and maintenance and management of related equipment, etc.), we are making efforts to prevent adverse effects of atmospheric pollution in the vicinity of our business sites. Further, we regularly monitor, and adopt appropriate measures in response to, updated information on atmospheric pollution standards of national and local governments.

## Biodiversity Conservation

### Identifying Dependencies and Impacts on Nature of Business Activities

The Group recognizes that while we receive many benefits from ecosystems at each stage from procurement of raw materials, such as lead, to production, distribution, and disposal of products, we also impose certain burdens on ecosystems. Therefore, we view biodiversity conservation as a necessary initiative for sustainable business operations.

Based on this awareness, we begin a systematic analysis of the relationship between our business activities and nature in fiscal 2024 to understand and appropriately address the Group's dependencies and impacts on nature.

To perform this analysis, we first organized our business activities across the value chain and then comprehensively considered information on dependencies and impacts on nature obtained from ENCORE\* along with the actual conditions of the Group. In fiscal 2024, we selected the automotive lead-acid batteries business, which accounts for more than half of our sales. Considering information availability and other factors, we also focused on the domestic automotive lead-acid battery business. Next, based on distance from key biodiversity areas (KBA) and water risk assessment results, we identified priority business sites from among domestic business locations and identified the elements on which those sites depend on nature and the impact they have on nature based on ENCORE\* information and the conditions at each site.

In the future, we will investigate specific measures based on the analysis results, expand the scope of analysis, and continuously reinforce measures for biodiversity conservation throughout the Group.

\*ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) is a tool for analyzing and evaluating how business interacts with nature. The degree of dependency and impact is evaluated on a five-level scale (very high, high, medium, low, and very low).

#### ■ Business Activities in the Group's Value Chain

Value chain	Process	Business activities
Direct operations	Production	Manufacture of automotive lead-acid batteries, automotive lithium-ion batteries, industrial batteries, specialized batteries, and power supplies
	Sales	Sale of automotive lead-acid batteries, automotive lithium-ion batteries, industrial batteries, specialized batteries, and power supplies
Upstream	Procurement & distribution	Extraction of lead and lithium, lead refining
		Manufacture of sulfuric acid and plastic raw materials, etc.
		Transport of raw materials
Downstream	Assembly of final products	Manufacture of automobiles and electrical equipment
	Disposal & recycling	Recycling of end-of-life lead-acid batteries (lead refining, plastic recycling) and end-of-life lithium-ion batteries

#### ■ Dependencies and Impacts on Nature in the Domestic Automotive Lead-Acid Battery Business

Value chain	Business activities	Number of sites that should be prioritized	Dependencies	Impacts
Direct operations	Manufacture of lead-acid batteries	2	Use of large volumes of fresh water in the charging and plate manufacturing processes for storage batteries	<ul style="list-style-type: none"> <li>● Soil contamination and water pollution from the release of wastewater that contains lead and other heavy metals</li> <li>● Depletion of water resources from the use of large volumes of water in the manufacturing process of storage batteries</li> </ul>
Upstream, downstream	Lead refining	2	Use of large amounts of fresh water for cleaning to prevent dust from scattering during the lead refining process and for wastewater treatment	<ul style="list-style-type: none"> <li>● Release into the atmosphere of substances and soot, such as SO<sub>x</sub>, NO<sub>x</sub>, and lead, generated during combustion</li> <li>● Negative impacts on the surrounding natural environment from noise and vibration caused by operation of machinery</li> <li>● Soil contamination and water pollution from the release of wastewater that contains lead and other heavy metals</li> </ul>

TOPICS

Initiatives for Biodiversity

■ Kyoto Plant

At our Kyoto Plant, we have participated since fiscal 2021 in the Futaba Aoi Cultivation Program organized by the Afuhi Project located in the premises of the Kamigamo Shrine in Kyoto City, and are involved in the cultivation of the Futaba Aoi, a plant endemic to Japan, in the plant premises. In addition, the cultivated Futaba Aoi plant was handed back to Kamigamo Shrine in May 2025, and this returned Futaba Aoi will be used for the Aoi Katsura at the Aoi Festival, one of the three major festivals in Kyoto. From next year as well, we plan to our participation in the Afuhi Cultivation Program and are committed to considering and promoting appropriate biodiversity initiatives to which the Group can contribute.

\* Afuhi Cultivation Program: The cultivation of Futaba Aoi by "Aoi no Mori" located in Kamigamo Shrine is a program to cultivate the Futaba Aoi externally (that is by individuals, companies etc.). This is because there is a high risk of animal damage attributed to deer and moles and abnormal weather, etc. A project that aims for external cultivation of Futaba Aoi (by individuals, companies etc.) to avoid the high risk of animal damage attributed to deer and moles and abnormal weather when the Futaba Aoi is cultivated in the "Aoi no Mori" situated within the premises of the Kamigamo Shrine.



Futaba Aoi



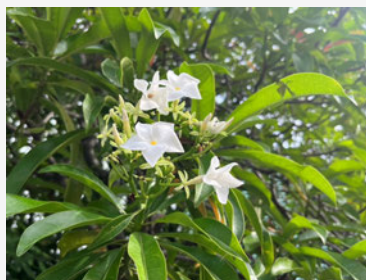
Offering the Futaba Aoi

■ GS Yuasa Siam Industry Ltd.

To protect the local ecosystem, GS Yuasa Siam Industry Ltd. (GYSI), an overseas Group company in Thailand, has planted and grows wild almond trees (a native species known locally as the samrong tree/ลำไย) around its factory in an effort to prevent the growth of alien species. This initiative has won high praise from Chachoengsao Province, where GYSI is located, and in fiscal 2023 the company received the Good Governance Environment Promotion Award presented to companies operating in the province that are making efforts toward the realization of a sustainable industry and society.



Trees planted at the factory site



Recent photo of wild almond tree blossoms



GYSI received the Good Governance Environment Promotion Award

### ■GS Yuasa Battery Manufacturing UK Limited

GS Yuasa Battery Manufacturing UK Limited (GYMUK), an overseas Group company in the United Kingdom, established a biotope of about 400 m<sup>2</sup>, with a pond and grassland, in the factory grounds, creating an ecosystem inhabited by various creatures, including birds, fish, and insects. This biotope secured the top place in the Blaenau Gwent in Bloom award from 1988 to 2020, presented to beautiful gardens by the county of Gwent in Wales, where GYMUK operates.



Biotope scenery (stone monument)



Biotope scenery (pond)



Blaenau Gwent in Bloom awards