


Goals and Indicators

Kaori has implemented the ISO 14064-1:2018 Greenhouse Gas Inventory Standard for two consecutive years and has obtained third-party verification certificates. The Company plans to conduct greenhouse gas inventories on a yearly basis going forward to keep track of emissions and trends. For details on Kaori's greenhouse gas emissions over the past two years, please refer to section 6.4.2 on Greenhouse Gas Management. In 2024, the inventory process for the Ningbo subsidiary in China will be completed to gain a comprehensive understanding of the entire group's greenhouse gas emissions, enabling the review of emissions and the setting of short-, medium-, and long-term carbon reduction targets.

In 2023, Kaori completed the first product carbon footprint inventory verification under ISO 14067:2018 (as shown in the image on the right). Based on the results of this inventory, the company will develop a product carbon footprint reduction plan. The Company also plans to survey carbon footprints for a broader range of products in the future. By learning the level of emissions at various stages of product life cycles, the Company will be able to better respond to carbon reduction trends and the needs of the market and the rest of the world. Kaori will continue committing resources and manpower to the research of low-carbon products and new technologies while taking the initiative to increase the percentage of low-carbon products offered for greater market exposure and improved competitiveness.

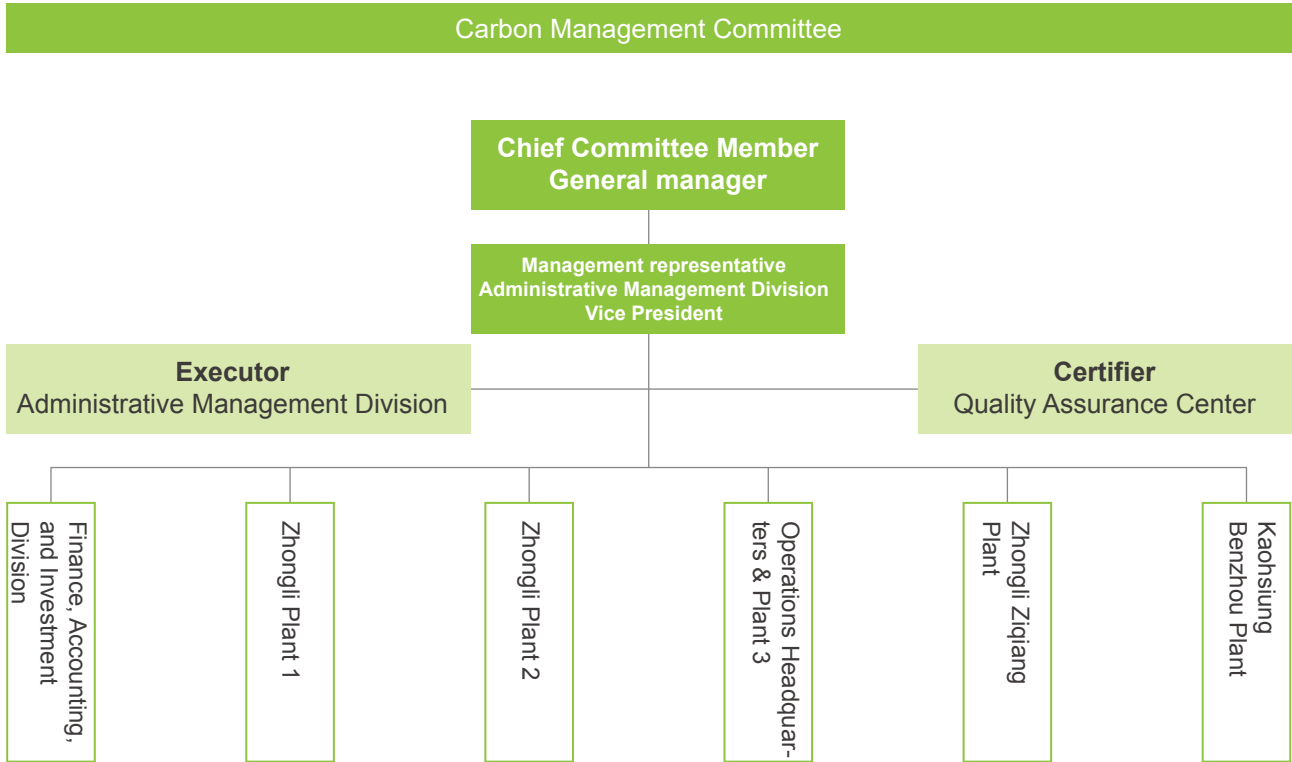


6.4 Environmental and Energy Management

Material topic	Management Approach
	Energy management policy Regulatory compliance and development of renewable energy
	Greenhouse gas management policy Energy and waste reduction, pollution prevention, and ongoing improvements
 Energy and GHG management	Goal Effectively monitor and manage energy consumption and GHG emissions
	Commitment Implement due diligence and early warning communication methods to implement the Company's energy management, energy conservation, and carbon reduction measures to reduce the financial impact of climate change on the environment.
	Measures <ul style="list-style-type: none"> Passed the "ISO 14001:2015 Environmental Management System" certification to effectively reduce electricity consumption and align with government policies to invest in green electricity. Passed the ISO 14064-1:2018 Greenhouse Gas Inventory verification, established a "Carbon Management Committee," and implemented the "Energy Saving and Carbon Reduction Management Procedures" to effectively manage energy.

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Climate change has emerged to become one of the most critical issues in the 21st century. Extreme weather, floods, and droughts in recent years have prompted government agencies, businesses, and private organizations to undertake more active mitigations of the risks. Meanwhile, Kaori contributes its part to environmental protection and social values by enforcing energy management throughout its operations and by investing into the research and development of new materials and production procedures. A Carbon Management Committee has also been assembled to oversee GHG reduction, energy/resource conservation, water conservation, waste recycling, and mitigation of environmental impact. At the same time, Kaori continues to invest into environmental protection facilities and incorporate green management and energy conservation practices into business activities for sustainable growth.



6.4.1 Environmental Management and Energy Conservation

Kaori (Kaohsiung Benzhou Plant) passed certification for ISO 14001:2015 Environmental Management System in 2019. From greenhouse gases, air pollution, and effluent discharge to waste treatment, Kaori is fully committed to making improvements and minimizing environmental impact. As a result, no major violations of environmental regulations have occurred in the year of the report.

Through the introduction of ISO 14001:2015 Environmental Management System, Kaori has been able to implement environmental management policies along with effective management processes at plant sites to enforce environmental compliance, order, safety, training, and so on to lessen the impact of organizational activities on the environment, while at the same time ensuring the safety of products and services offered as well as employees' health and safety at work.

In the early stages of ISO 14001:2015 adoption, Kaori requested a series of reviews to ensure compliance with environmental protection laws (including air, water, waste, soil, and noise). After making improvements in accordance with the opinions of the Environmental Protection Bureau, Kaohsiung City Government, the Company was deemed to have fully complied with legal requirements.

Environmental Policy



- Execution of Environmental Tests, Methods of Environmental Risk Assessment, and Outcomes
 1. Drinking fountains in plant areas are tested for quality every 3 months
 2. Kaori reports effluent volume to Benzhou Service Center every 6 months, and engages a certified environmental protection service provider to conduct tests
 3. Effluent values and reporting
 4. The effluents meter is calibrated (by certified service providers) on a regular basis each year

In 2022 and 2023, all the above-mentioned items complied with regulations and are being continuously implemented.

Energy Management and Goals

- Energy management

The Company introduces new energy conservation measures on a yearly basis, such as purchasing energy-efficient models, replacing outdated machinery, and optimizing production schedules. Kaori draws on the wisdom of many to achieve energy and carbon reduction goals. In the future, more attention will be directed toward improving production procedures and reducing energy consumption and promoting Kaori as a green, sustainable business. Electricity intensity was lowered by 33% in 2023 compared to 2022.
- Kaohsiung Plant Management Goals and Achievements:
 - 1% energy conservation:

The Company's vacuum furnace capacity enhancement project aims to increase the production capacity of each furnace by at least 50%, which has the potential to reduce excess vacuum furnace cycles and operating time by at least 50%, thereby lowering the cost of electricity and the volume of energy used in production.
 - Saving of energy in lighting:

Stair areas and motorcycle parking areas are installed with sensor tube lights; plant workers turn off lights during lunch hours and break times.
 - Reduced waste by 1%:

Kaori recycles and reuses 100% of its protective materials and containers.
 - Set an environmental goal to reduce the total usage of gasoline and diesel by 5% compared to the previous year. This goal was not achieved in 2023.

Energy usage	Unit	2021	2022	2023	YoY
Gasoline and diesel	Kiloliter (kL)	16.585	13.752	13.867	8.3%
	Gigajoule (GJ)	590.145	491.427	494.375	n/a

Energy Usage

Kaori persistently monitors the energy consumption of its equipment and makes appropriate adjustments to increase energy efficiency, reduce waste, and lower energy consumption. Renewable energy plan: The Kaohsiung Benzhou plant has installed a 744.51 kW commercial rooftop solar power system, which became operational in September 2022. In 2023, the total electricity generated by this system accounted for approximately 9.44% of the plant's electricity consumption. In the fourth quarter of the same year, the Company evaluated the feasibility of installing a 431.73 kW commercial rooftop solar power system at the Zhongli Plant 3 and Ziqiang Plant, aiming to further increase the proportion of renewable energy in the plant's electricity usage. Additionally, we will gradually phase out diesel-based forklifts and is currently evaluating the feasibility of using electric forklifts as a way to reduce carbon emissions and air pollution to implement sound energy management.

- Energy Efficiency and Electricity Intensity

Year	2021	2022	2023
Electricity intensity	6.62	5.50	3.67
Energy efficiency value	151.10	181.74	272.35

Calculation:

Electricity intensity (kWh/NT\$1,000) = power usage (kWh) / standalone revenue (NT\$1,000)

Energy efficiency (NT\$/kWh) = standalone revenues (NT\$) / power usage (kWh)

Energy Conservation Targets



- Replace diesel forklifts with electric forklifts
- Replace mercury vapor lamps with LED lights at the Zhongli Plant 1
- Replace conventional air compressors with variable-frequency air compressors at the Zhongli Plant 1
- Replace air conditioners with variable-frequency models for heat pumps at the Zhongli Plant 2



- Progressively replace 7.5-horse power reciprocating air compressors with energy-saving, variable-frequency air compressors at plant sites
- Replace air conditioners with variable-frequency models at plant sites
- Implementation of solar power system



- Implementation of energy storage systems



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Sustainable Environment

Progress of Energy Conservation and Improvement Solutions in 2023

Kaori is actively engaged in energy-saving and carbon reduction initiatives, consistently promoting projects focused on electricity conservation, energy efficiency, and carbon reduction. In 2023, five energy-saving measures were implemented, resulting in a total electricity savings of 1,171,554 kWh, with a financial benefit amounting to NTD 2,664,258.

Item No.	Energy Saving Measures	Execution Outcome	Before improvement	After improvement	Energy Conservation Benefits (NT\$)
I	Improvement of production processes for vacuum furnaces	<ul style="list-style-type: none"> Location: Zhongli Plant 1 - Vacuum furnace brazing area 	CR graphite-containing fixtures are put into the furnace at the same time, and the duration of each furnace is 7.5 hours.	<ul style="list-style-type: none"> Reduce the number of graphite fixtures, increase the product heating rate, and reduce the overall furnace time. The current production time per batch is now 5.5 hours. Total power saved: 165,000 kWh 	NT\$ 720,000
II	Replacement of chilled water chillers for air conditioners	<ul style="list-style-type: none"> Location: 4F, Zhongli Plant 2 Equipment: Chilled water system for air conditioners Practices: Change air-cooled chillers to water-cooled chillers 	Air-cooled ice machine 3 units in total with 2 different models <ul style="list-style-type: none"> Power consumption of air-cooled ice machines (2 units): 168,780 kWh/yr Power consumption of an air-cooled ice machine (1 unit): 100,900 kWh/yr Total power consumption = 168,780+100,900 = 269,680 kWh 	<ul style="list-style-type: none"> Replaced all 3 air-cooled ice machines with water-cooled ice machines. Power consumption of water-cooled ice machines: 214,644 kWh/yr Total power saved: 55,036 kWh 	NT\$ 165,108
III	Improvement of production processes for VA-12 vacuum furnace	<ul style="list-style-type: none"> Location: Kaohsiung Benzhou Plant 2 - Center part of Area 1 Equipment: VA-12 vacuum furnace Practices: The original manufacturing process of the VA-12 vacuum furnace used a diffusion pump, but it was not used after the improvement. 	<ul style="list-style-type: none"> Heater power: 24KW Annual operating hours: 6336H Before improvement 24 * 6336 = 152,064 kWh 	<ul style="list-style-type: none"> Heater power: 24KW Annual operating hours 6,336H Diffusion pump turned off after process improvement After improvement 0 * 6336 = 0 kWh Total power saved: 152,064 kWh 	NT\$ 593,050
IV	Improvement of production processes for VA-13 vacuum furnace	<ul style="list-style-type: none"> Location: Kaohsiung Benzhou Plant 2 - Center part of Area 1 Equipment: VA-13 vacuum furnace Practices: The original manufacturing process of the VA-13 vacuum furnace used a diffusion pump, but it was not used after the improvement. 	<ul style="list-style-type: none"> Heater power: 24KW Annual operating hours 6,336H Before improvement 24 * 6336 = 152,064 kWh 	<ul style="list-style-type: none"> Heater power: 24KW Annual operating hours 6,336H After improvement 0 * 6336 = 0 kWh Total power saved: 152,064 kWh 	NT\$ 593,050
V	Improvement of production processes for VA-14 vacuum furnace	<ul style="list-style-type: none"> Location: Kaohsiung Benzhou Plant 2 - Front part of Area 1 Equipment: VA-14 vacuum furnace Practices: The original manufacturing process of the VA-14 vacuum furnace used a diffusion pump, but it was not used after the improvement. 	<ul style="list-style-type: none"> Heater power: 24KW Annual operating hours 6,336H Before improvement 24 * 6336 = 152,064 kWh 	<ul style="list-style-type: none"> Heater power: 24KW Annual operating hours 6,336H After improvement 0 * 6336 = 0 kWh Total power saved: 152,064 kWh 	NT\$ 593,050

Note: Data sourced from energy-saving declaration records.

Power Conservation Rate by Plant

All plant sites comply with the laws of the Bureau of Energy, Ministry of Economic Affairs. As a major energy user that Taiwan Power Company has signed a contract with to supply at least 800 kW of power, the Company reports annual energy performance and improvement plans in accordance with Article 9 of the Energy Administration Act. The Company has set goals to achieve an "annual power conservation rate" or "average annual power conservation rate" of more than 1%. The Zhongli Plant 2 and Kaohsiung Benzhou Plant have appointed dedicated energy management officers to enforce energy conservation plans and achieve an average annual power conservation rate of more than 1%.

Plant/Year	Power conservation rate 2021 (%)	Power conservation rate 2022 (%)	Power conservation rate 2023 (%)	2015 - 2023 Average power conservation rate (%)
Zhongli Plant 1	1.97	0.17	6.08	1.85
Zhongli Plant 2	1.75	3.03	1.42	1.76
Kaohsiung Benzhou Plant	1.19	3.05	6.19	3.67

6.4.2 GHG management

Since 2021, Kaori has been implementing the ISO 14064-1:2018 greenhouse gas inventory standard. For the second consecutive year, Kaori has passed SGS Taiwan Industrial Services Ltd.'s third-party inspection and verification with a 100% achievement rate. Furthermore, the subsidiary in Ningbo, China, has made plans to initiate its own inventory in sync with the parent company starting from 2024.

- 2023 greenhouse gas inventory operation status

The inventory is carried out in accordance with the ISO 14064-1:2018 greenhouse gas inventory standard and specification. The boundary scope covers all factory areas in Taiwan, with a total of five factory areas. The internal verification was completed from May 8 to May 9, 2024, and the external verification will be completed in the third quarter of the same year. Based on the results of internal verification, the total emissions for Scope 1 and Scope 2 emissions aggregated to 7,769.4688 tCO₂e in 2023; the carbon intensity was 33.50% lower compared to 2022.

Unit: tCO₂e

Carbon emissions\Year	2022		2023 (Note)	
Scope 1 (A)	292.4936	1.10%	254.1233	1.07%
Scope 2 (B)	7,275.9728	27.32%	7,515.3455	31.67%
Scope 3 (C)	19,059.0917	71.58%	15,961.9503	67.26%
Total volume	26,627.5581	100%	23,731.4191	100%
Parent company only revenue (D)	2,684	-	4,143	-
Carbon density (A+ B+) / (D)	2.82	-	1.88	-

Note: 1. In accordance with ISO 14064-1:2018, internal verification was completed on May 8-9, 2024, and third-party external verification is scheduled for the third quarter. Unit of measurement D) is defined as standalone revenue (NTD million) in the current year.

2. The 2022 inventory boundaries for a total of for plants in Taiwan: Headquarters & Plant 3, Zhongli Plant 1, Zhongli Plant 2, Kaohsiung Benzhou Plant.

3. The 2023 inventory boundaries for a total of five plants in Taiwan: Headquarters & Plant 3, Zhongli Plant 1, Zhongli Plant 2, Kaohsiung Benzhou Plant, Ziqiang Plant.